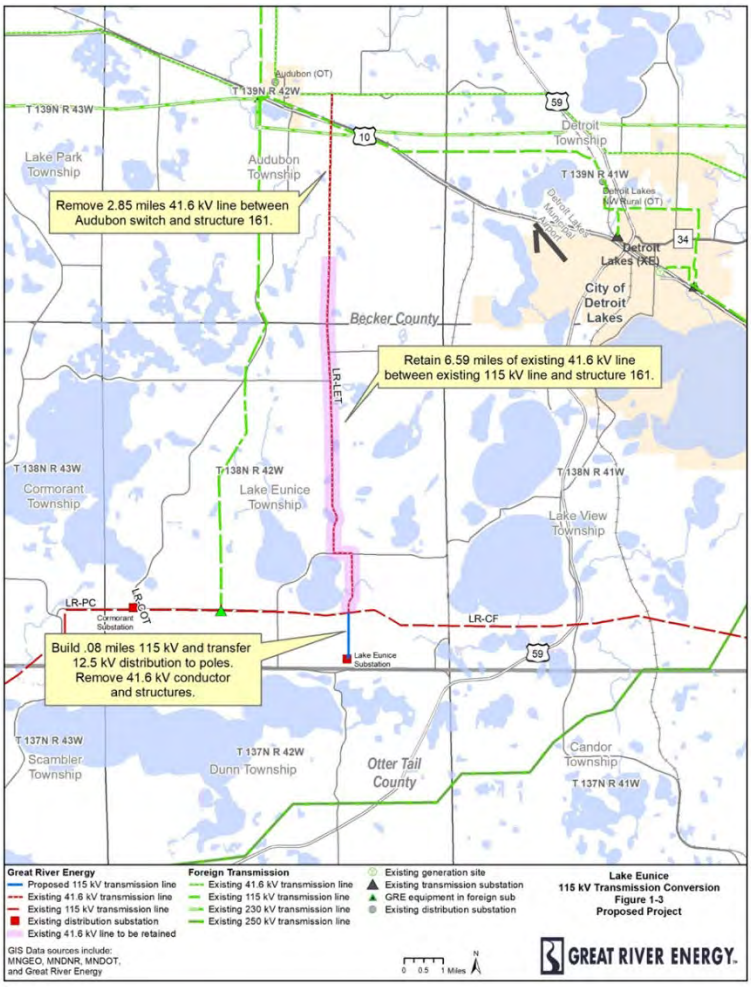
COMMERCE DEPARTMENT

Environmental Assessment

Lake Eunice 115 kV Conversion Project

Dockets no. ET2/TL-19-311



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Abstract

Under the Power Plant Siting Act, a route permit from the Minnesota Public Utilities Commission (Commission) is required to construct a high voltage transmission line (HVTL). Great River Energy (Applicant or GRE) filed an application with the Commission for a route permit to construct approximately 0.8 miles of new 115 kilovolt (kV) overhead electric transmission line in Becker County. The project is being proposed to improve electrical service to members in the rural area southwest of Detroit Lakes, Minnesota including Lake Eunice, Dunn and Lake View townships. These proposed upgrades will allow over ten miles of 41.6 KV radial transmission to be replaced by a 0.8 mile 115 KV loop fed transmission line. This new line will improve the reliability of the transmission feeding the existing Lake Eunice Substation and thus improve the reliability of the approximate 2,000 members served off of this substation.

After the conversion to 115 kV, the south 0.8 mile and north 2.85 miles of the 41.6 kV conductor will be removed. Lake Region Electric Cooperative will own the remaining 6.59 miles of the 41.6 kV line for distribution purposes and retain all existing distribution lines in the area.

GRE submitted its route permit application on June 4, 2019. The application was filed pursuant to the alternative review process outlined in Minnesota Statute 216E.04 and Minnesota Rules 7850.2800–3900. In an Order dated August 5, 2019, the Commission accepted the HVTL Route Permit Application as complete.

Department of Commerce (Commerce), Energy Environmental Review and Analysis (EERA) staff is responsible for conducting environmental review for route permit applications submitted to the Commission. Accordingly, EERA held a scoping meeting in Detroit Lakes on September 25, 2019, and has prepared this Environmental Assessment (EA) for the GRE Lake Eunice 115 kV

Project. This EA addresses the issues required in Minnesota Rules 7850.3700, subpart 4, and those identified in Commerce's November 12, 2019, EA Scoping Decision.

Following release of this EA, a public hearing will be held in the project area. The hearing will be presided over by an administrative law judge (ALJ) from the Office of Administrative Hearings. Upon completion of the environmental review and hearing process, the ALJ will provide the Commission with a Summary Report. A Summary Report provides a complete summary of the public comments received at hearing and during the public comment period; and transmits the complete hearing record, including all written comments, to the Commission within five days of the close of the record.

A decision on the route permit for the proposed project is anticipated in June 2020.

Persons interested in this project can place their name on the project mailing list by contacting the Public Utilities Commission at docketing.puc@state.mn.us or 651-201-2204 to sign up.

Additional documents and information can be found on the EERA website at: http://mn.gov/commerce/energyfacilities/Docket.html?Id=13653 or the Minnesota eDockets webpage at: https://www.edockets.state.mn.us/EFiling/search.jsp by selecting "19" for year and "311" for number.

Acronyms, Abbreviations and Definitions

ALJ	administrative law judge
BMPs	best management practices
Commerce	Minnesota Department of Commerce
Commission	Minnesota Public Utilities Commission
CSAH	County State Aid Highway
dBa	A-weighted sound level recorded in units of decibels
DNR	Minnesota Department of Natural Resources
EA	Environmental Assessment
EERA	Energy Environmental Review and Analysis
ELF-EMF	extremely low frequency electromagnetic fields
EMF	electromagnetic field
Enbridge	Enbridge Energy, Limited Partnership
HVTL	high voltage transmission line
KHz	kilohertz
kV	kilovolt or 1,000 volts
Minn. R.	Minnesota Rule
Minn. Stat.	Minnesota Statute
µG	milligauss
MHz	megahertz
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
NAC	noise area classification
NDPC	North Dakota Pipeline Company, LLC
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NEV	neutral-to-earth voltage
NLCD	National Land Cover Database
NLEB	Northern Long Eared Bat
NPDES/SDS	National Pollutant Discharge Elimination System /State Disposal System Construction Stormwater permit
NWI	National Wetland Inventory
OAH	Minnesota Office of Administrative Hearings

ppm	parts per million
Proposed Project	Minnkota Power MPL-Laporte 115 kV Transmission Project
pump station	NDPC's proposed pump station along its proposed Sandpiper Project
PWI	Public Waters Inventory
ROI	region of influence
ROW	right-of-way
RUS	USDA Rural Utilities Service
Scoping Decision	EA Scoping Decision
SHPO	State Historic Preservation Office
subd.	subdivision (Minnesota Statute)
subp.	subpart (Minnesota Rule)
SWPPP	Stormwater Pollution Prevention Plan
UHF	ultra-high frequency
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
VHF	very high frequency
WCA	Wetland Conservation Act
WMA	Wildlife Management Area

Contents

Tables

Diagrams

Figures

Appendices

1 Introduction

Great River Energy (GRE or Applicant) has made an application[1] to the Minnesota Public Utilities Commission (PUC or Commission) for a route permit for the proposed Lake Eunice 115 kilovolt (kV) Conversion project. The permit application was made pursuant to the alternative review process outlined in Minnesota Statute 216E.04 and Minnesota Rules 7850.2800–3900. The Commission docket number for this project is ET2/TL-19-31127.

The Minnesota Department of Commerce (DOC), Energy Environmental Review and Analysis (EERA) staff is tasked with conducting environmental review on applications for route permits before the Commission.[2] The intent of the environmental review process is to inform the public, decision-makers, local governments, state agencies, and applicants of the potential impacts and possible mitigation measures associated with the proposed project.

This document is an Environmental Assessment (EA). It addresses the issues required in Minnesota Rule 7850.3700, subpart 4, and those identified in Commerce's November 12, 2019, EA Scoping Decision (**Appendix A**). It is organized as follows:

Section 1 provides an overview of this document and the project. It also provides a summary of the potential impacts of the project and potential mitigation measures.

Section 2 explains the regulatory framework associated with the project, including the route permitting process and other permits and approvals required for the project.

Section 3 describes the project as proposed by GRE, including rights-of-way, structures, and conductors.

Section 4 addresses the issue of route alternatives developed or put forth during the scoping process.

Section 5 details the potential impacts of the project to both human and natural resources, and identifies measures that could be implemented to avoid, minimize or mitigate identified adverse impacts.

Section 6 describes any unavoidable impacts, and irreversible or irretrievable commitment of resources resulting from the proposed project.

[1] GRE, *Application to the Minnesota Public Utilities Commission for a Route Permit*, June 4, 2019, eDocket No. 20196-153349-01 and -02.

[2] Minn. Stat. 216E.04, subdivision 5.

1.1 Project Purpose

The project is being proposed to improve electrical service to members in the rural area southwest of Detroit Lakes, Minnesota including Lake Eunice, Dunn and Lake View townships (**Figure 1**). These proposed upgrades will allow over ten miles of 41.6 KV radial transmission to be replaced by a 0.8 mile 115 KV loop fed transmission line. This new line will improve the reliability of the transmission feeding the existing Lake Region Electric Cooperative (LREC) Lake Eunice Substation and thus improve the reliability of the approximate 2,000 members served off of this substation.

1.2 Project Description

The proposed 0.8 mile overhead 115 kV high voltage transmission line (HVTL) will be located in Becker County, Minnesota. GRE currently owns the 10.24 mile 41.6 kV LR-LET line with Lake Region Cooperative's 12.5 kV distribution under-build attached. The proposed project will convert 0.80 mile of the overhead line to 115 kV; after the conversion project is completed, the south 0.80 mile and north 2.85 miles of the existing 41.6 kV conductor will be removed. Lake Region Electric Cooperative will own the remaining 6.59 miles of the 41.6 kV line for distribution purposes and retain all existing distribution lines in the area.

The proposed 115 kV line will connect to the converted LREC Lake Eunice Substation, head north along St. Marys of the Lakes road for about 0.8 mile and connect to the existing LR-CF 115 kV transmission line owned by Great River Energy. The requested 200-foot route width would be centered on the existing 41.6 kV transmission line and a 400 feet around the existing Lake Eunice Substation. This will provide flexibility in developing a final alignment and 90-foot ROW for the proposed 115 kV HVTL inside that route (**Figure 2 & 3**).

Construction of the proposed project is expected to begin in the fall of 2020, and the Applicant anticipates a spring 2021 in-service date for the proposed facilities.

1.3 Sources of Information

Much of the information used in this EA derives from documents prepared by the Applicant, including the Route Permit Application. In addition to material provided by the Applicant, information from scoping comments, relevant environmental review documents for similar projects, spatial data, and other state agencies was used to prepare this document.

A number of spatial data sources, which describe the resources in the project area, were used in preparing this environmental Assessment (EA). Spatial data was imported into geographic information system (GIS) software, where the data was analyzed and potential impacts of the project quantified, e.g., acres of forested wetlands within the anticipated project ROW.

2 Regulatory Framework

In order to construct the proposed project, GRE must obtain a route permit from the Commission. Additional approvals from other state and federal agencies with permitting authority for actions related to the project may also be required.

2.1 Certificate of Need

The proposed project will operate at a voltage greater than 100 kV, but will have a length in Minnesota less than 10 miles. Therefore it does not qualify as a large energy facility under Minnesota Statute 216B.2421. Large energy facilities typically require a certificate of need (CN) under Minnesota Statute 216B.243. The proposed project does not require a CN.

2.2 Route Permit

In Minnesota, no person may construct a high voltage transmission line (HVTL) without a route permit from the Commission (Minnesota Statute 216E.03). A high voltage transmission line is defined as a conductor of electric energy designed for and capable of operation at a voltage of 100 kV or more and greater than 1,500 feet in length (Minnesota Statute 216E.01, Subd. 4).

The proposed project will consist of a new 115 kV transmission line in excess of 1,500 feet and therefore requires a route permit from the Commission.

Route Permit Application and Acceptance
Minnesota Rule 7850.2800 states applicants intending to submit a project under the Commission's alternative permitting process for transmission lines are required to provide a 10-day advance notice of this intent to the Commission before submitting their route permit application. GRE provided that notice[3] on May 8, 2019.

The voltage of the new transmission line will be between 100 and 200 kV, so the project qualifies for the Commission's alternative permitting process (Minnesota Rule 7850.2800, subp. 1C).

Route permit applications for HVTLs must provide specific information about the proposed project including, but not limited to, applicant information, route description, and potential environmental impacts and mitigation measures (Minnesota Rule 7850.3100). Review under the alternative permitting process does not require the applicant to propose alternative routes in the permit application. However, if the applicant has evaluated and rejected alternative routes they must include these and the reasons for rejecting them in the route permit application.

[3] Notice of Intent to Submit a Route Permit Application under the Alternative Permitting Process for the GRE 115 kilovolt conversion, May 8, 2019, eDocket no. 20196-153418-01.

The Commission may accept an application as complete, reject it and require additional information to be submitted, or accept it as complete upon filing of supplemental information (Minnesota Rule 7850.2000). The environmental review and permitting process begins on the date the Commission determines that a route permit application is complete. The Commission has six months from the date of this determination to reach a route permit decision; though the decision can be extended for three months for cause, or with the Applicant's agreement (Minnesota Rule 7850.3900).

In an Order dated August 5, 2019, the Commission accepted the HVTL Route Application as complete and authorized review under the alternative permitting process defined in Minn. Stat. § 216.04 and Minn. R.7850.2800 to 7850.3900 and referred the matter to the Office of Administrative Hearings for appointment of an Administrative Law Judge to prepare a Summary Report.[4]

Environmental Review

Applications for HVTL route permits are subject to environmental review conducted by EERA staff (Minnesota Rule 7850.3700). Projects proceeding under the alternative permitting process require the preparation of an EA.

An EA is a document which describes the potential human and environmental impacts of the proposed project and potential mitigative measures. This is the only state environmental review document required for the Project (Minnesota Statute 216E.04, subd. 5). Staff provides notice and conducts a public scoping meeting to solicit comments on the scope of the EA.

The Department of Commerce Commissioner (delegated to Assistant Commissioner Katherine Blauvelt) determines the scope of the EA. The Department may include alternative routes suggested by the public in the scope of the EA if such alternatives will aid in the Commission's decision on the route permit application.

Under Minn. R. 7850.3700, subp. 3, the scope of the environmental assessment must be determined by the Department within ten days after the closing of the public comment period.

Minn. Stat. § 216E.04, subd. 5 anticipates, however, that the Commission will have the opportunity to identify other routes for consideration prior to environmental review of a project. The statute states that the environmental assessment must contain information on the proposed project, as well as on other routes identified by the Commission. The rule's ten-day timeline for determining the scope of the environmental assessment after the close of the public comment period constrains the Commission's ability to evaluate public input and identify other possible routes prior to environmental review.

[4] Commission Order finding the application complete and referring the matter to the OAH, August 5, 2019. eDocket No. 20198-154930-01.

Under Minn. Rules, part 7829.3200, the Commission has the authority to vary its rules, and in this docket has chosen to vary Minn. R. 7850.3700, subp. 3, to extend the 10-day timeline.

Once the EA is completed and made available, the Commission shall hold a public hearing for the project.[5]

Under Minnesota Rule, 7850.3700, subp. 4, the Environmental Assessment must include the following:

A. A general description of the proposed project;
B. A list of any alternative sites or routes that are addressed;
C. A discussion of the potential impacts of the proposed project and each alternative site or route on the human and natural environment;
D. A discussion of mitigative measures that could reasonably be implemented to eliminate or minimize any adverse impacts identified for the proposed project and each alternative;
E. An analysis of the feasibility of each alternative site or route considered;
F. A list of permits required for the project; and
G. A discussion of other matters identified in the scoping process.

Scoping Summary

On September 9, 2019, Commission and EERA staff sent notice of the place, date and time of the Public Information and Scoping meeting to local government units and those persons on the Project contact/general list.[6]

Commission staff and EERA staff jointly held a Public Information and EA Scoping meeting at the Holiday Inn in Detroit Lakes on September 25, 2019. The purpose of the meeting was to provide information to the public about the proposed Project, to answer questions, and to allow the public an opportunity to suggest alternatives and impacts (i.e., scope) that should be considered during preparation of the environmental review document. A court reporter was present at the meeting to document oral statements.

Scoping Comments

Three people attended the public information and scoping meeting; during the comment period, which closed on October 9, 2019, no public comments were received, but two letters were received from state agencies.[7]

[5] Minnesota Rule 7850.3800, Subpart 1.
[6] Notice of Public Information/Scoping Meeting, September 9, 2019, eDocket no. 20199-155731-01 and -02.
[7] Public Scoping Comments through October 9, 2019, Close of Comment Period (Oral and Written Comments), eDocket No. 201910-156467-01, 201910-156468-01, and 201910-156470-01.

The Minnesota Department of Natural Resources (MNDNR) requested that EERA include, within the EA document, a discussion on the regulatory requirements, and the potential impacts/mitigative measures associated with Lake Region Cooperative's removal of the 41.6 kV line between Structure 161 and the Audubon Switch.

The Minnesota Department of Transportation (MnDOT) noted that the removal of the 2.85 miles of 41.6 kV line that crosses US 10 will likely require a Miscellaneous Permit (Form 1723) from MnDOT, accompanied by Traffic Control measures. Early coordination with MnDOT District 4 staff is recommended prior to commencement of this work.

Proposed Alternatives

The process for individuals to request that specific alternative routes, alternative route segments, and/or alignment modifications be included in the scope of the environmental review document was discussed at the public meeting.

No alternative routes, alternative route segments, and/or alignment modifications were put forth for consideration during the scoping comment period.

Applicant Comments

Pursuant to Minn. Rule 7850.3700, subpart 2(B), applicants have the right to review proposed alternatives. Since no requests for alternative routes, alternative route segments, and/or alignment modifications were received during the scoping comment period, the Applicant need not to have addressed this issue.

Commission's Consideration of Alternatives

Under Minn. Rules, part 7850.3700, subp. 3, the scope of the environmental assessment must be determined by the Department within 10 days after close of the public comment period. However, Minn. Stat. § 216E.04, subd. 5, anticipates Commission input into the identification of routes, in addition to the applicant's proposed route, for inclusion in the environmental review of a project. Since the rule's 10-day timeline for determining the scope of the environmental assessment after the close of the public comment period constrains the Commission's ability to provide input, the Commission varied the 10-day timeline. The Commission extended the 10-day timeline.

On October 30, 2019, the issue of what action the Commission should take regarding route alternatives to be evaluated in the environmental document was submitted to the Commission's Consent Agenda. In an Order served on November 7, 2019, the Commission elected to take no action with regards to route alternatives.[8]

[8] Commission Order, Route Alternatives, November 7, 2019. eDocket No. 201911-157326-01.

Scoping Decision

On October 14, 2019, EERA staff provided the Commission with a summary of the scoping process.[9] The summary provided the Commission with a brief description of the scoping process and indicated which issues and alternatives that EERA staff would recommend to the DOC Deputy Commissioner for inclusion in the *Scoping Decision*.[10]

On November 7, 2019,[11] the Commission elected to take no action on alternative routes recommended by EERA staff.

After considering public comments, input from the Commission, and recommendations from EERA staff, the DOC Deputy Commissioner issued the Scoping Decision on November 12, 2019 (**Appendix A**).[12] The Scoping Decision identifies the issues and routes or route segments to be evaluated in this EA.

2.3 Public Hearing

The Commission is required by Minnesota Rule 7850.3800, subpart 1, to hold a public hearing once the EA is complete.

The hearing will be presided over by an administrative law judge (ALJ) from the Office of Administrative Hearings. Interested persons will have the opportunity to speak at the hearing, present evidence, ask questions, and submit comments. The ALJ will provide a Summary Report to the Commission.

Comments received during the hearing on the EA become part of the record in the proceeding. EERA staff will respond to questions and comments about the EA at the public hearing, but staff is not required to revise or supplement the document.[13]

2.4 Permit Decision

The Minnesota Legislature directed the Commission to select HVTL routes that minimize adverse human and environmental impacts while insuring continuing electric power system reliability and integrity.[14] An HVTL route must be compatible with environmental preservation and the efficient use of resources while also insuring electric energy needs are met and fulfilled in an orderly and timely fashion.[15]

[9] EERA Comments and Recommendation –Scoping Summary, October 14, 2019. eDocket No. 201910-156525-01.
[10] Ibid.
[11] Minnesota Public Utilities Commission. *Order EA Scoping Process and Routes, November 7, 2019*. eDockets No. 201911-157326-01
[12] Minnesota Department of Commerce, *Environmental Assessment Scoping Decision*, November 12, 2019, eDockets No. 201911-157563-01
[13] Minn. R. 7850.3800, subp. 4.
[14] Minn. Stat. 216E.02, subd. 1.
[15] Minn. Stat. 216E.02, subd. 1.

Route permits issued by the Commission include a permitted route and anticipated alignment. The route permit also outlines conditions specifying construction and operational standards. A template HVTL route permit for the proposed project was submitted into the project record on July 18, 2019, and is included as **Appendix B** of this document.[16]

Minnesota Statute 216E.03, subdivision 7(b) identifies 12 considerations that the Commission must take into account when designating a route for a HVTL. These considerations are further clarified and expanded by Minnesota Rule 7850.4100, which identifies 14 factors the Commission must consider when making a permit decision.

These factors include:

A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;

B. effects on public health and safety;

C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;

D. effects on archaeological and historic resources;

E. effects on the natural environment, including effects on air and water quality resources and flora and fauna;

F. effects on rare and unique natural resources;

G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;

H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;

I. use of existing large electric power generating plant sites;

J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way;

K. electrical system reliability;

L. costs of constructing, operating, and maintaining the facility which are dependent on design and route;

M. adverse human and natural environmental effects which cannot be avoided; and

N. irreversible and irretrievable commitments of resources.

[16] Public Utilities Commission staff Briefing Papers, July 18, 2019, eDocket No. 20197-154266-01

At the time the Commission makes a final decision about the permit application, it must determine whether the EA and the record created at the public hearing address the issues identified in the scoping decision.[17] The Commission must also make specific findings that it has considered locating a route for a new HVTL along an existing HVTL route or parallel to existing highway rights-of way, and, to the extent these are not used for the route, the Commission must state the reason why they are not used.[18]

The Commission must make a final decision on the route permit within 60 days after receipt of the ALJ report.[19] A final decision must be made within six months after the Commission's determination the application is complete; however, this time limit may be extended for up to three months for just cause or upon agreement of the applicant.[20]

A decision by the Commission on a route permit application for the proposed project is anticipated in June 2020.

If issued a route permit by the Commission, GRE may exercise the power of eminent domain to acquire land for the project. Minn. Stat. 216E.12 describes the utility's and landowners' rights under the powers of eminent domain. [21]

2.5 Other Permits and Approvals

A route permit from the Commission is the only state permit required for the routing of the project. The Commission's route permit supersedes local planning and zoning and binds state agencies.[22] Thus, state agencies are required to participate in the Commission's permitting process to aid the Commission's decision-making and to indicate routes that are not permittable.[23]

Should the Commission issue a route permit, various federal, state, and local permits may be required for activities related to the construction and operation of the proposed project. All necessary permits subsequent to the Commission's issuance of a route permit (commonly referred to as "downstream permits") must be obtained by a permittee. **Table 1** includes a list of downstream permits that may be required for the proposed project.

[17] Minn. R. 7850.3900, subp. 2.
[18] Minn. Stat. 216E.03, subd. 7(e).
[19] Minn. R. 7850.3900, subp. 1.
[20] Ibid.
[21] EERA has developed a Fact Sheet (Easements Fact Sheet) to explain how electric utilities obtain ROW for new energy facilities and to inform landowners of their rights in negotiating easement agreements. See http://mn.gov/commerce/energyfacilities/documents/Easements%20Fact%20Sheet_08.05.14.pdf.
[22] Minn. Stat. 216E.10.
[23] Ibid.

Table 1: Potential Downstream Permits and Approvals

Permit	Jurisdiction
Local Approvals	
Road Crossing/ROW Permits	County, Township
Lands Permits, Building Permits	County, Township
Overwidth Loads Permits	County, Township
Driveway/Access Permits	County, Township
Minnesota State Approvals	
Endangered Species Consultation	Minnesota Department of Natural Resources – Ecological Services
Licenses to Cross Public Waters and Lands	Minnesota Department of Natural Resources – Lands and Minerals
Wetland Conservation Act	Board of Water and Soil Resources
National Pollutant Discharge Elimination System Permit	Minnesota Pollution Control Agency
Federal Approvals	
Section 404 Permit	US Army Corps of Engineers
Endangered Species Consultation	United States Fish and Wildlife Service
Other Approvals	
Crossing Permit	Other Utilities such as Pipelines

Federal

The United States Army Corps of Engineers (USACE) "regulates the discharge of dredged or fill material into waters of the United States, including wetlands."[24] Dredged or fill material, including material from construction sites, could impact water quality. A permit is required from USACE if the potential for significant adverse impacts exists.

A Section 404 program permit is not required for the proposed project as the construction at the location stated is not within the regulatory jurisdiction of the US Army Corps of Engineers (USACE).[25]

[24] Environmental Protection Agency (October 27, 2015) *Section 404 Permit Program*, http://www.epa.gov/cwa-404/section-404-permit-program.

[25] RPA Lake Eunice 115 kV Conversion Project, June 4, 2019, Appendix D. eDockets No. 20196-153346-01 and -02.

A permit may be required from the United States Fish and Wildlife Service (USFWS) for the incidental "taking"[26] of any endangered species. As a result, USFWS encourages project proposers to consult with the agency to determine if a project has the potential to impact federally-listed threatened and endangered species. Additionally, consultation can lead to the identification of general mitigation measures for the proposed project.

The USFWS indicated no significant concerns or comments to provide, regarding the project. No USFWS permits are expected for the project.[27]

State

Counties oversee the local implementation of the Wetland Conservation Act (WCA). The WCA requires that any person "proposing to impact a wetland to first, attempt to avoid the impact; second, attempt to minimize the impact; and finally, replace any impacted area with another wetland of at least equal function and value."[28]

There are no wetlands (NWI) in the proposed route.[29]

Construction projects that disturb one or more acres of land require a general National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater permit from the Minnesota Pollution Control Agency (MPCA). This permit is issued to "construction site owners and their operators to prevent stormwater pollution during and after construction."[30] The NPDES/SDS permit requires (1) use of best management practices, (2) development of a Stormwater Pollution Prevention Plan (SWPPP), and (3) adequate stormwater treatment capacity once the project is complete.

Potential impacts to state lands and waters and fish and wildlife resources are regulated by the MNDNR. Utilities are required to obtain a crossing license to cross state lands and waters.[31] Not unlike the USFWS, the MNDNR encourages project proposers to consult with the agency to determine if a project has the potential to impact state-listed threatened and endangered species. Additionally, consultation can lead to the identification of general mitigation measures for the proposed project.

The DNR has stated that no known occurrences of rare features will be negatively impacted by the proposed route.[32]

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[26] *See* U.S. Code § 1532(19) (defining "take" to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in such conduct).
[27] RPA Lake Eunice 115 kV Conversion Project, June 4, 2019, Appendix D. eDockets No. 20196-153346-01 and -02.
[28] Minn. R. 8420.0100, subp. 2.
[29] RPA Lake Eunice 115 kV Conversion Project, June 4, 2019, pp. 7-21-22. eDockets No. 20196-153346-01 and -02.
[30] Minnesota Pollution Control Agency (November 19, 2015) *Stormwater Program for Construction Activity*, Retrieved December 9, 2015, from: http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/construction-stormwater/index.html.
[31] Minn. Stat. 84.415.
[32] RPA Lake Eunice 115 kV Conversion Project, June 4, 2019, Appendix D. eDockets No. 20196-153346-01 and -02.

2.6 Applicable Codes

All transmission lines, regardless of route location, must meet requirements of the National Electrical Safety Code (NESC) for High Voltage Transmission Lines.[33] NESC standards are designed to safeguard human health "from hazards arising from the installation, operation, or maintenance of … overhead and underground electric supply and communication lines."[34] They also ensure that the transmission line and all associated structures are built from materials that will withstand the operational stresses placed upon them over the expected lifespan of the equipment, provided routine operational maintenance is performed.

HVTL route permits require permittees to comply with North American Electric Reliability Corporation (NERC) standards. NERC standards define the reliability requirements for planning and operating the electrical transmission grid in North America.[35]

2.7 Issues Outside the Scope of the EA

Consistent with the scoping decision for this EA (**Appendix A**), this document does not address the following topics:

- Any alternative not specifically identified in the scoping decision.
- A no-build alternative.
- Issues related to project need, size, type or timing.
- Impacts of specific energy sources.
- The manner in which landowners are compensated for ROW easements.

[33] *See* Minn. Stat. 326B.35; Minn. R. 7826.0300, subp. 1 (requiring utilities to comply with the most recent edition of the NESC when constructing new facilities or reinvesting capital in existing facilities); *see also* Appendix B Generic Route Permit Template, Section 4.4.1 (requiring compliance with NESC standards).

[34] IEEE Standards Association (n.d.) C2-2002 – National Electrical Safety Code 2002 Edition, http://standards.ieee.org/findstds/standard/C2-2002.html.

[35] North American Electric Reliability Corporation (n.d.) *Standards*: http://www.nerc.com/pa/stand/Pages/default.aspx.

3 Proposed Project

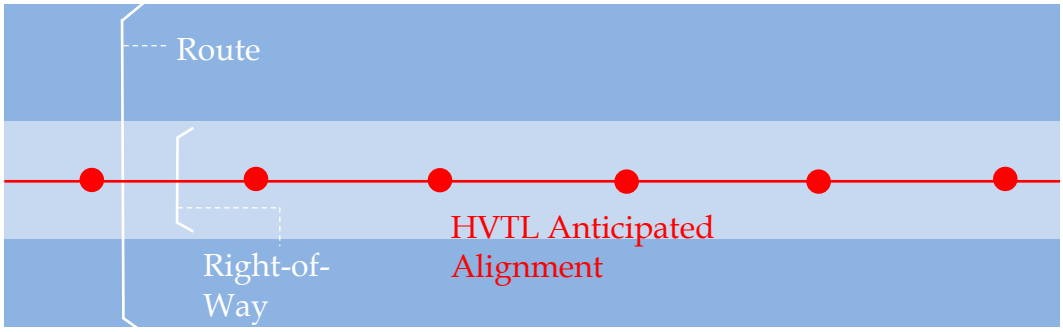
Section 3 describes the proposed project including the requested route width, ROW, construction, operation and maintenance, anticipated costs and schedule.

3.1 Route Width

When the Commission issues a route permit for a HVTL, the Commission approves a route, a route width, and an anticipated alignment within that route (**Diagram 1**). Minnesota Statute 216E.01, subdivision 8, defines "route" as "the location of a [HVTL] between two end points and further states "the route may have a variable width of up to 1.25 miles." The route width is typically wider than the actual ROW needed for the HVTL. This extra width provides flexibility in constructing the transmission line, but is not so wide that it is impossible to determine where the transmission line would be constructed. The approved transmission line must be constructed within the Commission's designated route and along the anticipated alignment unless subsequent permissions are requested and approved by the Commission.[36]

GRE requests a route width of 200 feet along the transmission line and 400 feet at the Lake Eunice Substation site.[37]

Diagram 1: Route and Right-of-Way Illustration*



*Not to scale.

3.2 Right-of-Way Requirements

Minnesota Rule 7850.1000, subpart 15, defines "right-of-way" (ROW) as the "land interest required within a route for the construction, maintenance, and operation" of a HVTL. The NESC establishes clearance requirements for objects, including vegetation, to ensure that the conductor will not contact objects during high wind events.

[36] Minn. Stat. 216E.03, subd. 2; *see also* RPA at 4-1 and Appendix B (maps including route width and preferred alignment).
[37] RPA at 4-1 and Appendix B (maps including route width and preferred alignment).

The proposed 115 kV transmission line project will employ a ROW of 90 feet (45 feet on either side of the transmission line centerline). Select locations may require a slightly wider ROW to accommodate transmission line guy wires and anchors.

3.3 Temporary Easements

In addition to permanent easements along the ROW for the operation and maintenance of the transmission line, if needed, GRE will negotiate voluntary, short-term agreements for the use of temporary work space for one or more marshalling yards for use in staging construction or storage of structures, vehicles, equipment and supplies. Marshalling yards are generally sited on previously disturbed or developed areas.

3.4 Substation and Associated Facilities

The converted Lake Eunice Substation will be on Lake Region Electric Cooperative's property, PID 170402000.[38] It will be equipped with breakers and relays located where the transmission line will connect to the substation. The protective equipment is designed to de-energize the transmission line should such an event occur.

3.5 Transmission Structures

The new 115 kV line will consist of single circuit with 12.5 kV distribution under-build, single pole wood structures spaced approximately 200 to 300 feet apart. Transmission structures will typically range in height from 70 to 80 feet above ground, depending upon the terrain and environmental constraints (**Diagram 2 and 3**). The average diameter of the wood structures at ground level is 20 inches.

The proposed 115 kV line (T'262) will connect to the existing LR-CF 115 kV transmission line owned by Great River Energy via switch structure (**Diagram 4**).

The switch structure will be installed on the same alignment as the existing LR-CF transmission line structures. Existing structures on the LR-CF line may also need to be changed out to grade the existing line into the new switch site, as the new switch structure will be taller than the existing LR-CF line structures. A typical switch structure ranges in height from 80 to 100 feet above ground; however, height will depend upon terrain as well as design and pole height on the existing 115 kV transmission line (LR-CF line).

[38] RPA at 4-5 and Appendix B (maps including route width and preferred alignment).

Diagram 2: Typical Transmission Structure Types[39]

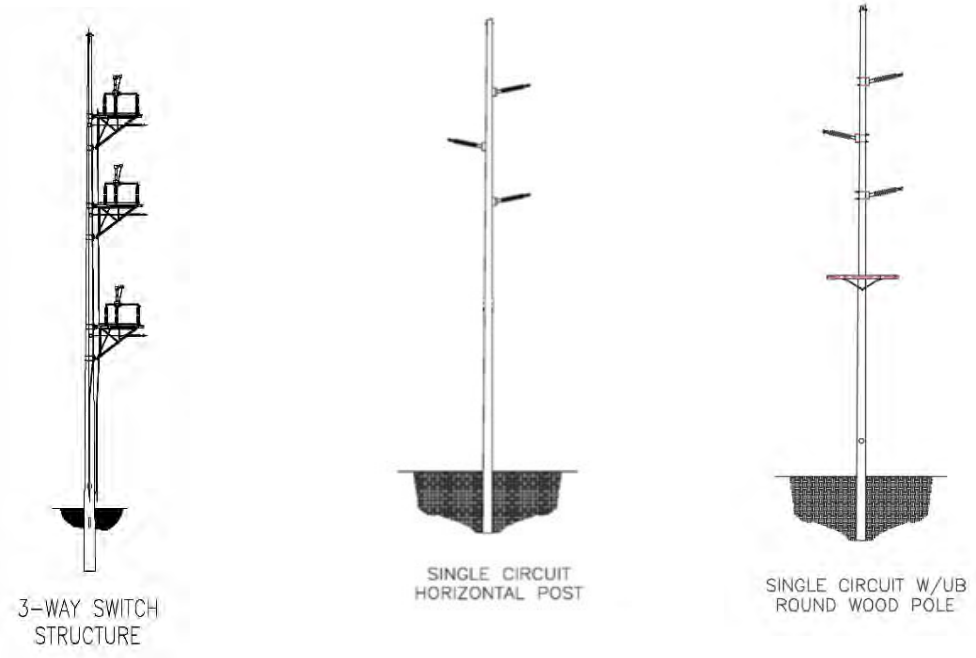
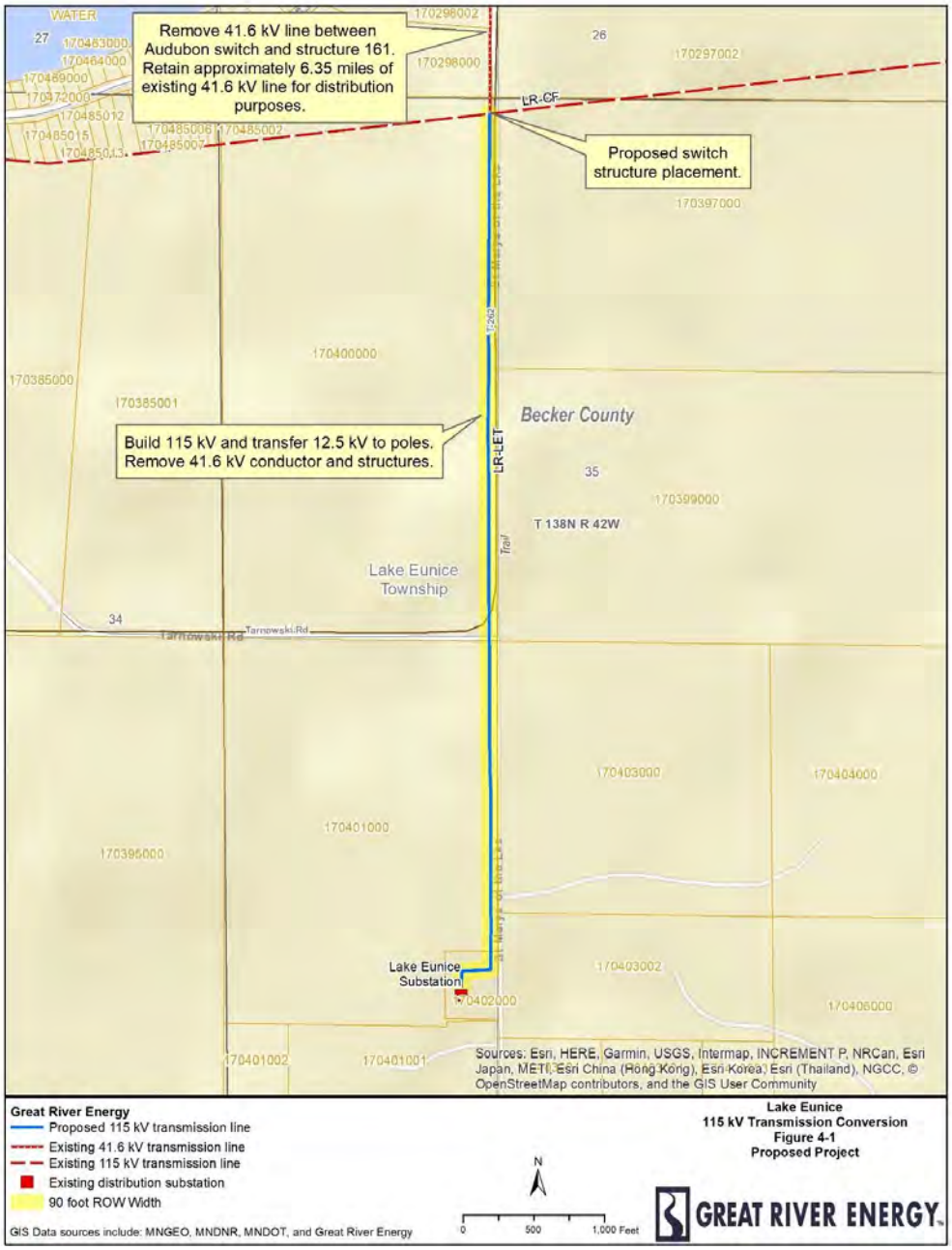


Diagram 3: Photos of Typical 115 kV Structures[40]

[39] RPA at 4-4.
[40] Ibid.

The single circuit structures will have three single conductor phase wires and one shield wire. It is anticipated that the phase wires will be 477 thousand circular mil aluminum conductor steel-reinforced (ACSR) with seven steel core strands and 26 outer aluminum strands. The shield wire will be 0.528 optical ground wire.

Diagram 4: Switch Structure Location [41]



[41] RPA at 4-2.

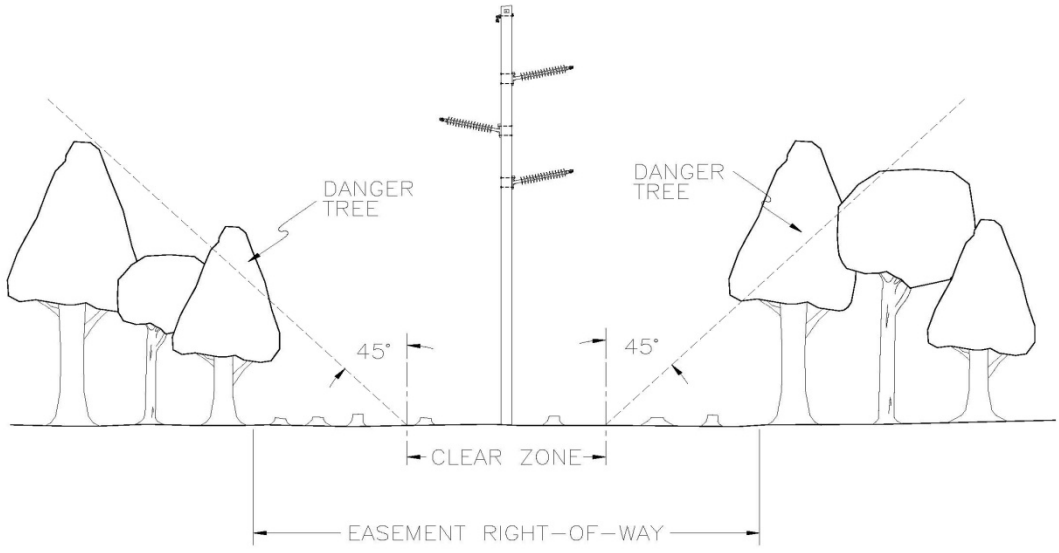
3.6 Construction

Construction will not begin until all necessary approvals are obtained and land rights secured. The construction timeline is dependent upon a number of factors including final surveys and project design, receipt of approvals and reviews, weather, and the availability of labor and materials. Equipment used in the construction process includes backhoes, cranes, boom trucks and assorted small vehicles.

The first phase of construction activities involves survey staking of the transmission line centerline and/or pole locations, followed by removal of trees and other vegetation from the ROW that will interfere with the safe operation of the transmission line. GRE may, if such language is included in an easement agreement, trim or remove unhealthy trees immediately adjacent to the transmission line ROW. Unhealthy trees near the ROW (commonly known as "danger trees") have the potential to endanger the line by falling on it. Standard route permit conditions require permittees to minimize tree removal and preserve windbreaks, shelterbelts and vegetation generally (**Appendix B**).

Diagram 5 provides a conceptual illustration of vegetation clearing within and along the ROW.

Diagram 5: Vegetation Clearing Along Transmission ROW[42]



[42] RPA at 6-4.

Setup and storage areas will be established along the route. The locations for these areas have not been determined but are typically selected for their location, access, security, and ability to efficiently and safely warehouse supplies. Any temporary staging areas outside of the ROW will be obtained by GRE through rental agreements with the property owner.

Transmission line structures will be installed directly into the ground at or near the existing grade. As a result, structure locations will not be graded or leveled unless it is necessary for construction activities. Upon completion of necessary grading, holes will be augured or excavated. Once the hole is dug, structures are set and the holes backfilled with excavated material, native soil, or crushed rock. In poor soil conditions, galvanized steel culverts are buried vertically surrounding the structure. In some limited instances, GRE may need to use concrete foundations. Where concrete foundations are used, concrete trucks from a local concrete batch plant would deliver concrete to the location of the structure.

Once structures are installed, conductors are strung along the transmission line. Conductors and a shield wire are strung and, once appropriate tension is obtained, secured to each structure. Temporary guard or clearance structures are installed as needed to provide adequate clearance over roads, existing lines, or other potential obstructions, as well as to protect the transmission line.

The proposed project is not anticipated to cross wetlands or waterways. Standard route permit conditions require permittees to minimize impacts to wetland and water resources (**Appendices B**).

GRE will employ standard construction and mitigation practices that were developed from experience with past projects as well as industry-specific Best Management Practices (BMPs). BMPs address ROW clearing, erecting transmission line structures and stringing transmission lines. BMPs for each specific project are based on the proposed schedules for activities, prohibitions, maintenance guidelines, inspection procedures and other practices. In some cases these activities, such as schedules, are modified to incorporate BMP installation that will assist in minimizing impacts to sensitive environments. Any contractors involved in construction of the transmission line will adhere to these BMP requirements.[43]

GRE will restore disturbed sections of the ROW or temporary work areas to pre-construction conditions to the greatest extent practicable. Restoration also includes removal of debris and all temporary facilities, employing erosion control measures, and reseeding with appropriate seed mixes, that is, similar types of vegetation, certified free of noxious and invasive weeds. In areas that have experienced soil compaction as a result of construction activities, the construction crew or a restoration contractor will alleviate compaction as negotiated with the landowner.

[43] RPA at 6-5.

After construction is complete, a ROW agent will contact landowners to determine if restoration has been completed to their satisfaction and identify damages, if any, which may have occurred during construction. GRE will compensate landowners for any damages or hire a contractor to restore damaged property.

Once the transmission line is constructed, GRE personnel will perform annual inspections of the line; and conduct any required maintenance and repairs. If post-construction monitoring of the ROW reveals a higher density of noxious weeds on the ROW as compared to adjacent off ROW areas, GRE will obtain landowner permission and work to mitigate noxious weed concerns.[44] GRE may use both herbicides and mechanical methods to control the spread of noxious weeds.

The estimated annual cost of ROW maintenance and operation and maintenance of GRE's transmission lines (69 kV to 500 kV) in Minnesota currently average about $2,000 per mile. Actual transmission line specific maintenance costs will depend on the environmental setting, the amount of vegetation management necessary, storm damage occurrences, structure types, and age of the line.[45]

GRE anticipates an approximate cost for the project to be $1.5 million; including an estimated cost of single pole construction at approximately $448,500 per mile.[46] GRE estimates that 15 to 20 workers at a time will be employed during construction of the Project.[47]

GRE plans to commence construction of the Project in fall 2020. Great River Energy anticipates that construction will take approximately two months and that the entire Project will be energized in spring 2021.

[44] RPA at 6-6.
[45] Ibid.
[46] Id. at 4-6.
[47] Id. at 4-7.

4 Route Alternatives

Minnesota Statutes Section 216E.04, subdivision 3 and Minnesota Rule 7850.3100 require an applicant to identify any alternative routes that were considered and rejected for the Project. GRE did not evaluate any alternative routes for the proposed transmission line.

The process for individuals to request that specific alternative routes, alternative route segments, and/or alignment modifications be included in the scope of the environmental review document was discussed at the public information/EA Scoping meeting.

No alternative routes, alternative route segments, and/or alignment modifications were put forth for consideration during the scoping comment period, thus none were evaluated within this EA.

Pursuant to Minn. Rule 7850.3700, subpart 2(B), applicants have the right to review proposed alternatives. Since no requests for alternative routes, alternative route segments, and/or alignment modifications were received during the scoping comment period, there was no need for the Applicant to address this issue.

5 Potential Impacts of the Proposed Project

This section provides an overview of the resources and potential impacts and mitigation measures associated with the proposed project. Specifically, this section discusses and analyzes:

- The human and environmental resources affected by the project,
- Potential impacts to human and environmental resources, and
- Opportunities to avoid, minimize, or mitigate potential impacts.

5.1 Consideration of Potential Impacts

A potential impact is the anticipated change to an existing condition caused either directly or indirectly by the construction and operation of a proposed project. Potential impacts can be positive or negative, short- or long-term, and, in certain circumstances, can accumulate incrementally. Impacts vary in duration and intensity, by resource, and across locations.

Direct impacts are caused by the proposed action and occur at the same time and place as the action. An indirect impact is caused by the proposed action, but is further removed in distance or occurs later in time. It must be reasonably foreseeable, which means a reasonable person would anticipate or predict the impact. Cumulative impacts are the result of the incremental effects of the project in combination with other past, present, and reasonably foreseeable future projects.

In addition, impacts are put into context using the following concepts:

Duration. Impacts vary over time. Short-term impacts are generally associated with project construction. Long-term impacts are associated with the operational life of the project and usually end with project decommissioning. Permanent impacts extend beyond the decommissioning stage of the project.

Size. Impacts vary by size. Size is a measure of how big something is. To the extent possible, potential impacts are described quantitatively, for example, the number of impacted acres or the percentage of affected individuals in a population.

Intensity. Impacts vary in intensity. Intensity is a measurement of the severity of an impact on a resource condition or function. To the extent possible, potential impacts are described quantitatively, for example, the percentage of affected individuals in a population.

Location. Impacts are location dependent. For example, noise impacts decrease as distance from the source increases, or common resources in one location might be uncommon in another.

Uniqueness. Resources are different. Common resources occur frequently, while uncommon resources are not ordinarily encountered.

In combination with the anticipated on-the-ground effect, the above context is used to determine an overall resource impact level, which can range from highly beneficial to highly harmful. Impact levels are described using a qualitative scale, which is explained below. These terms are used as a means to both ensure a common understanding among readers and, typically, to compare resource impacts between alternatives.

Minimal. Minimal impacts do not considerably alter an existing resource condition or function. Minimal impacts might, for some resources and at some locations, be noticeable to an average observer. These impacts generally affect common resources over the short-term.

Moderate. Moderate impacts alter an existing resource condition or function, and are generally noticeable or predictable to the average observer. Effects might be spread out over a large area making them difficult to observe, but can be estimated by modeling or some other means. Moderate impacts might be long-term or permanent to common resources, but generally short- to long-term to uncommon resources.

Significant. Significant impacts alter an existing resource condition or function to the extent that the resource is severely impaired or cannot function. Significant impacts are likely noticeable or predictable to the average observer. Effects might be spread out over a large area making them difficult to observe, but can be estimated by modeling. Significant impacts can be of any duration, and affect common or uncommon resources.

This section also discusses opportunities to avoid, reduce, or mitigate the level of impact. These actions are collectively referred to as mitigation.

Avoid. Avoiding an impact means it is eliminated altogether by moving or not undertaking parts or all of a project.

Minimize. Minimizing an impact means to limit its intensity by reducing project size or moving the project from a given location.

Mitigate. Impacts that cannot be avoided or further minimized might be mitigated. Mitigating an impact means fixing it by repairing, rehabilitating or restoring the affected environment, or compensating for it by replacing or providing a substitute resource elsewhere.

Some impacts are avoidable or can be minimized; some might be unavoidable but can be mitigated; others might be unavoidable and unable to be mitigated.

5.2 Regions of Influence

Potential impacts to human and environmental resources are analyzed in this EA within specific spatial bounds or regions of influence (ROI). The ROI for each resource is the geographic area within which a particular impact may exert some influence. This EA uses the ROI concept as the basis for assessing the potential impacts to each resource as a result of the proposed project. The ROI for the impacts analyzed in this EA are summarized in **Table 2**.

The ROI for most human and environmental resources is the permanent footprint of the proposed Project, as represented by the transmission line ROW. Resources within the footprint, such as soils and trees, are more likely to be impacted by the construction and operation of the proposed Project. For example, soils could be compacted; trees may be removed. Other resources may be impacted at a greater distance from the project. In this EA, the following ROIs will be used:

- **ROW:** A distance of 90 feet (45 feet on either side of the proposed alignment) is used to analyze the impacts of displacement, agriculture, forestry, mining, topography, soils, and vegetation. Although the actual alignment may differ from that proposed by GRE and the ROW may be somewhat smaller or larger in certain areas, use of a standard ROW along the centerlines of the route alternatives provides for a consistent assessment of potential impacts.

- **500 feet:** A distance of 250 feet either side of the proposed alignment is used as the ROI for analyzing potential impacts to aesthetics, noise, property value and electric and magnetic fields impacts.

- **One Mile:** A distance of one mile from the proposed alignment is used as the ROI for analyzing potential impacts to surface water resources, wildlife, archaeological and historic resources, and rare and unique species. Direct impacts, if they occur, are anticipated to diminish relatively quickly such that the potential impacts outside the route would be minimal to moderate. However, indirect impacts may extend beyond the route. For example, indirect impacts to rare and unique species may extend beyond the Project footprint, particularly for wildlife species. Wildlife may move throughout the project area and may be impacted by limitations on their movement and their ability to access cover, food, and water.
- **County:** Becker County are used as the ROI for analyzing potential impacts to cultural values, socioeconomics, public utilities, airports, air quality, and emergency services. These are resources for which impacts may extend throughout communities in the project area.

Table 2: Regions of Influence for Human and Environmental Resources

Type of Resource	Specific Resource / Potential Impact to Resource	Region of Influence
Human Settlement	Displacement	ROW/Route
	Aesthetics, Electronic Interference, Noise, Property Values, Zoning and Land Use Compatibility,	500 feet
	Public Utilities, Emergency Services, Roads	One Mile
	Socioeconomics, Cultural Values, Airports	County
	Corridor Sharing	One-quarter Mile
Public Health and Safety	Electric and Magnetic Fields, Implantable Medical Devices, Stray Voltage, Induced Voltage	500 feet
Land-based Economies	Agriculture, Forestry, Mining	ROW
	Tourism and Recreation	One Mile
Archaeological and Historic Resources	Artifacts and Historic Places	One Mile
Natural Environment	Surface Waters, Ground Water, Wetlands, Vegetation, Soils, Wildlife	ROW[48]
	Air	County
Rare and Unique Resources	Listed Species	One Mile

5.3 Environmental Setting

The proposed project is located in Becker County in Lake Eunice Township and in the vicinity of Detroit Lakes. The proposed project's area of study is bounded on the south by the Lake Region Electric Cooperative's Lake Eunice Substation and on the north by the existing LR-CF 115 kV transmission line.

The proposed project area is located within the Hardwood Hills Subsection of the Eastern Broadleaf Forest Province, according to the DNR Ecological Classification System.[49] The Eastern Broadleaf Forest (EBF) Province in Minnesota covers nearly 12 million acres of the central and southeastern parts of the state and serves as a transition between semi-arid portions of the

[48] Avian species can move easily throughout the project area and are susceptible to collision with transmission line conductors. Consequently, impact to avian species will be considered and discussed with a ROI larger than the ROW.

[49] DNR. *Ecological Land Classification Hierarchy,* http://www.dnr.state.mn.us/ecs/index.html.
The Ecological Classification System (ECS) was developed for Minnesota by the DNR and the U.S. Forest Service for ecological mapping and landscape classification.

state that were historically prairie and semi-humid mixed conifer-deciduous forests to the northeast. The western boundary of this province is sharply defined along much of its length as an abrupt transition from forest and woodland to open grassland. The northeastern boundary is more diffuse, with a gradual transition between eastern deciduous forests and the mixed conifer-hardwood forests of northern Minnesota. The topography and surface geology is largely the product of Pleistocene glacial processes; the northwestern and central portions of the province were covered by ice in the last glaciation and are characterized by thick (100–300 feet) deposits of glacial drift. Glacial lakes associated with the last glacial advance contributed large volumes of meltwater to rivers that cut deep valleys along the present course of the Minnesota, St. Croix, and lower Mississippi rivers.[50]

The Hardwood Hills Subsection has ice stagnation moraines, end moraines, ground moraines, and outwash plains as major landforms. Kettle lakes are numerous, both on moraine and outwash deposits. Parent material is primarily calcareous glacial till and outwash sediments. The glacial till is calcareous loamy sediment deposited by the last major glaciation.[51]

The environmental setting of the proposed route and surrounding area includes hydrologic features such as rivers, creeks, lakes, wetlands and riparian areas. Land use along the proposed route consists of agricultural land/grassland and small bands of forest and shrub land. One residence is within 350 feet of the proposed route (PID 170401001). There are also five residences (PID 170403000, 170403001, 170403002, 171075000, and 170298002), a church compound with a parsonage (PID 177019000), and one machine shed (PID 170397000) within 1,000 feet of the proposed route (**Figure 4**). The closest communities to the Project include the cities of Detroit Lakes, Audubon, Frazee and Pelican Rapids.

There are two existing transmission lines within the project area. The line to the north is the LR-CF 115 kV Transmission Line, which has an average height above ground of 70 feet and an average span length of 700 feet. The other line is the LR-LET 41.6 kV line on the proposed ROW which has an average height above ground of 45 feet and an average span length of 260 feet. Once the proposed 115 kV line is operational, approximately 3.65 miles of the 41.6 kV line will be removed; approximately 6.59 miles will be retained by Lake Region Electrical Cooperative for distribution purposes.

Prior to European settlement, the area was dominated by maple-basswood forests interspersed with oak savanna, tallgrass prairie, and oak forest. Currently, land uses within the overall area are farming, tourism and outdoor recreation.[52]

[50] Ibid.
[51] Ibid.
[52] Ibid.

5.4 Impacts to Human Settlement

Construction and operation of new transmission lines have the potential to impact human settlement. These impacts might be short-term, for example, an influx of construction jobs during construction, or long-term, for example, changes to land use.

5.4.1 Aesthetics

Aesthetic, or visual resources, are generally defined as the natural and built features of a landscape that may be viewed by the public and contribute to the visual quality and character of an area. Aesthetic resources form the overall impression that an observer has of an area or its landscape character. Distinctive landforms, water bodies, vegetation, and human-made features that contribute to an area's aesthetic qualities are elements that contribute to an area's visual character. Visual quality is generally defined as the visual significance or appeal of a landscape based on cultural values and the landscape's intrinsic physical elements.

Visual sensitivity is a measure of viewer interest and concern for the visual quality of the landscape and potential changes to it, which is determined based on a combination of viewer sensitivity and viewer exposure. Viewer sensitivity varies for individuals and groups depending on the activities viewers are engaged in, their values and expectations related to the appearance and character of the landscape, and their potential level of concern for changes to the landscape. High viewer sensitivity is typically assigned to viewer groups engaged in: recreational or leisure activities; traveling on scenic routes for pleasure or to and from recreational or scenic areas; experiencing or traveling to or from protected, natural, cultural, or historic areas; or experiencing views from resort areas or their residences. Low viewer sensitivity is typically assigned to viewer groups engaged in work activities or commuting to or from work.

Viewer exposure varies for any particular view location or travel route depending on the number of viewers and the frequency and duration of their views. Viewer exposure would typically be highest for views experienced by high numbers of people, frequently, and for long periods. Other factors, such as viewing angle and viewer position relative to a feature or area, can also be contributing factors to viewer exposure.

The landscape within the project area is a mixture of rural residential development, forested land, agriculture, and utility infrastructure. The 500 foot ROI for aesthetic resources was identified because the proposed project is most likely to be visible within this near-foreground distance zone and views of the proposed project from aesthetic resources within this distance zone have the greatest potential to result in visual impacts for sensitive viewers.

Approximately 2.85 miles of the most northern portion of the existing 41.6 kV line (LR-LET Structure 161 to County Road 144 east of the city of Audubon) will be permanently removed.

The first 6.59 miles of the LR-LET line north of the LR-CF line (Structures 19 through 162) will remain for distribution purposes.

The 0.80 mile of 41.6 kV line south of the LR-CF line (Structures 1 through 18) will be removed and replaced with 115 kV structures. The majority of the structures will be wood poles approximately 70 to 80 feet above ground with spans between poles ranging from 200 to 300 feet. A maximum span will be used between the structures as necessary while still keeping the conductor within the ROW under maximum blowout conditions. The ROW required for this 115 kV transmission line is 90 feet wide.

Potential Impacts

General impacts on existing aesthetic resources may be caused by construction and operation of the new HVTL and LR-CF switch, and could include short term and long-term impacts. Impacts on aesthetics are assessed based on the extent of changes to landscape character and scenic quality, the level of contrast introduced by the new HVTL/LR-CF switch, its proximity to viewers, and the visual sensitivity related to the view-shed within the project area.

The future HVTL will introduce new visual elements in the form of transmission structures, conductors and the new LR-CF switch to the landscape in the project area. The new infrastructure will be visible in the general area of the Project. The visual effect will depend largely on the perceptions of the observers across these various landscapes. The visual contrast added by the taller transmission structures (approximately 25 feet) and lines may be perceived as a visual disruption or as points of visual interest. The transmission lines that already exist in the vicinity of the proposed Project (**Diagram 6 and 7**) will limit the extent to which the new infrastructure is viewed as a disruption to the area's scenic integrity.

Mitigation

Aesthetic impacts of the project can be minimized by: (1) maximizing, to the extent practical, sharing/paralleling existing linear infrastructure ROWs, and (2) avoiding residences by placing the alignment of the transmission line away from residences.

Adverse impacts can be mitigated by ensuring that damage to natural landscapes during construction is minimized, by minimizing vegetation removal and, to the extent that it does not interfere with safe operation of the transmission line, planting lower-growing woody vegetation in a transition area near the edge of the ROW. Aesthetic impacts can also be mitigated by placing structures at the maximum feasible distance from road, trail, and driveways, within the limits of structure design.

Diagram 6: Existing Lake Eunice Substation

Diagram 7: Existing 41.6 kV Line at Tamowsi Road (north)

5.4.2 Cultural Values

The project area incorporates parts of Becker County. The communities in this county are not marked by significant cultural differences. They are part of a larger area within the United States that Colin Woodard has termed "*Yankeedom*", and are described as sharing general values with communities in the New England states.[53] According to Woodard, these values can be described as a middle-class character, a general belief that government should be used for improving the lives of its citizens, and the exertion of local political control.

In the book, *Our Patchwork Nation*, authors Chinni and Gimpel draw on two years of research, interviews and U.S. Census data to offer regional portraits of the U.S. that look at political, social, economic, and cultural perspectives of the entire country county by county. They provide a list of 12 distinct types of communities that comprise the nation.[54] In Chinni and Gimpel's analysis, Becker Counties is characterized by Service Worker Center communities, defined as tourism-dependent places.

The project area is located in a region that was inhabited by numerous American Indian Tribes before Euro-American settlement. Presently, the Anishinabe Tribe, which is the most prominent of these Tribes, is still residing in the area. The Anishinabe reside in several reservations within northern Minnesota. One of these federally recognized bands, the Red Lake Band of Chippewa, hold more than 840,000 acres of land, most of which is within two large contiguous areas around Upper and Lower Red Lake, but whose holdings also include hundreds of small parcels spread throughout Beltrami, Clearwater, Lake of the Woods, Koochiching, Roseau, Pennington, Marshall, Red Lake, and Polk counties. In Hubbard County, portions of the Leech Lake Indian Reservations extend into the county. Becker County contains a portion of the White Earth Indian Reservation.

Because the Anishinabe, and the Dakota people before them, once controlled all of the area, their concerns and values are likely to be more consistent throughout the project area. Although not all American Indian populations share the same values, American Indian communities, and the Red Lake Band of Chippewa in particular, generally value a respect for the natural environment and consideration of plants and animals that are embedded in traditional cultural and spiritual expressions and practices. In this area of the country, cultural values are particularly strong with respect to wild rice; cultivated wild rice paddies are located north of the project area in Clearwater County.

Cultural values are learned community beliefs and attitudes. These values provide a framework for individual and community thought and action. Cultural values are informed, in part, by ethnic heritage. Residents of Becker County self-reported having primarily European ancestry

[53] Woodard, Colin. American Nations: A History of the Eleven Rival Regional Cultures of North America. ISBN: 978-1-101-54445-7.
[54] Chinni and Gimpel. Our Patchwork Nation: The Surprising Truth About the "Real" America. ISBN 1-101-46213-2.

(63.4 percent), with German, Norwegian and Swedish being the most commonly reported ancestries; approximately seven percent of county residents report being American Indian.[55]

The Becker County website states that recreation is very popular due to abundant lakes, streams, forest, trails, and top-notch facilities. Cultural representation in community events appears to be more closely tied to geographic features, seasonal events, national holidays, and municipal events than to those based in ethnic heritage. Becker County is home of the WE Fest Country Music Festival, Antique Boat Show, Water Carnival, Ice Fest, Polar Fest, and numerous other events throughout the year.

Potential Impacts

The construction and operation of the HVTL is not anticipated to impact or alter cultural values within Becker County; impacts to cultural values due to the construction and operation of the new 115 kV HVTL in the project area are anticipated to be minimal.

The transmission line will not impact the work and leisure pursuits of residents or geographic features in such a way as to impact the underlying culture of the project area.

Mitigation

Impacts to cultural resources are not anticipated, therefore mitigation is not proposed.

5.4.3 Displacement

In the context of transmission line routing proceedings, displacement refers to the removal of a residence or building to facilitate the safe operation of a transmission line. The National Electric Safety Code (NESC) standards require certain minimum clearances between transmission lines and objects such as trees, buildings, or other structures to ensure that the transmission line can be operated safely. For electrical safety code and maintenance reasons, utilities generally do not allow residences or other buildings within the ROW of a transmission line. Any residences or other buildings located within a proposed ROW are generally removed, or "displaced."

Consistent with its standard for 115 kV transmission lines, GRE proposes to acquire a permanent ROW of 90; in some areas a slightly wider ROW may be acquired to accommodate guyed structures.

Potential Impacts

No displacement of residential homes, structures or businesses will occur as a result of the Lake Eunice Conversion Project. The NESC and Great River Energy standards require certain

[55] U.S. Census Bureau, 2010-2014 American Community Survey 5-year Estimates, http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

clearances between transmission line structures and buildings or structures within the ROW for safe operation of the proposed transmission line. Displacement of residential homes, structures or businesses in the ROW would occur only if a transmission line alignment and design could not accomplish these necessary clearances. The requested route (200-foot route width centered on the existing 41.6 kV line and 400-foot width around the existing Lake Eunice Substation) provides sufficient design flexibility and distances from existing homes and structures for a transmission line design that achieves the requisite clearances.

One residence and associated agricultural outbuildings (PID 170401001) are within 340 feet southwest of the Lake Eunice Substation and proposed transmission line ROW. There is also one agricultural building (PID 17039700) within 112 feet east of the proposed transmission line ROW. All other buildings are over 500 feet from the project (**Figures 2 and 3**).

Displacement impacts due to the construction and operation of the new 115 kV HVTL in the project area are not anticipated.

Mitigation

Displacement of existing homes and other structures can often be avoided through design refinements to the project. These refinements could include modifications to the transmission line alignment or design modifications (e.g. changes in structure design).

No displacement is anticipated, and therefore no mitigation is required.

5.4.4 Electronic Interference

Transmission lines have the potential to interfere with the normal operation of electronic devices. Interference can result from electromagnetic noise created by the ionization of air molecules surrounding conductors. This ionization is commonly known as corona. Interference can also result from transmission line poles blocking line-of-sight communications.

Radio Interference

Corona from transmission line conductors can generate electromagnetic noise in the Amplitude modulation (AM) radio frequency range (**Diagram 8**). This noise may cause interference with radio communications. AM radio interference typically occurs immediately under a transmission line and dissipates rapidly on either side. If radio interference from transmission line corona does occur, satisfactory reception from AM radio stations can be restored by appropriate modification of the receiving antenna system.

Frequent modulation (FM) radio receivers usually do not pick up interference from transmission lines because corona-generated radio frequency noise decreases in magnitude with increasing frequency and is quite small in the FM broadcast band (**Diagram 8**). Additionally, the interference rejection properties inherent in FM radio systems make them virtually immune to electromagnetic noise.

Two-way radios used for emergency services typically operate at frequencies greater than 150 MHz. Minnesota is currently moving to a statewide emergency communications system that operates at 800 MHz.[56] Corona-generated electromagnetic noise is minimal at these frequencies (**Diagram 8**).

Television Signals

It is possible to receive television broadcasts through a digital antenna, satellite dish, or a local cable provider. How an individual receives their television broadcast dictates the potential interference that might occur from a transmission line.

Digital broadcast frequencies are higher than frequencies generated by corona noise. Additionally, digital broadcasts use packets of binary information as opposed to waveforms to transfer content. These binary signals are less susceptible to corruption and can be corrected for errors. Digital broadcasts are susceptible to freezing and pixilation due to multipath reflections or low signal strength.

Satellite television is broadcast at radio frequencies in the 12 to 18 gigahertz range.[57] These signals are also higher than corona generated noise. Satellite television is susceptible to line-of-sight interference, for example, rain or snow can result in the loss of signal. If the obstruction is removed, the signal interference will be removed also.

Cable broadcasts are redistributed satellite broadcasts and are generally not susceptible to interference due to the use of shielded coaxial cable.

Impacts to television broadcasts from the new HVTL are not anticipated for any of the routing options. Transmission frequencies are higher than those of corona-generated noise, which makes interference unlikely. Multipath reflections due to the structures supporting the project's conductors are unlikely. Line-of-site obstructions could occur if a structure was directly in the path of a transmission signal (e.g. satellite signal).

Wireless Internet and Cellular Phones

Wireless internet and cellular phones use frequencies in the UHF range and vary based on phone service provider. UHF signals begin at 900 MHz and are higher than frequencies generated by corona noise.

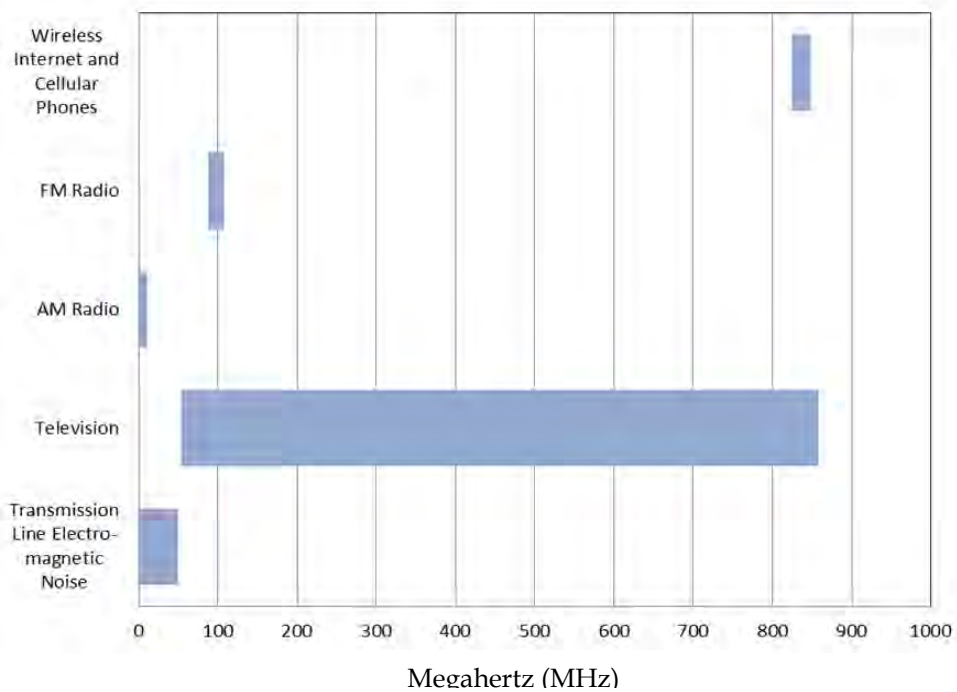
Potential Impacts

No impacts to electronic devices are anticipated as a result of the construction and operation of the new HVTL. Interference due to electromagnetic noise is not anticipated. Interference due to line-of-sight obstruction is not anticipated and can be mitigated through structure placement. In situations where a transmission line does cause electronic interference,

[56] Emergency Medical Services Regulatory Board, EMS Radio Project, http://www.emsrb.state.mn.us/comm.asp.

[57] National Telecommunications and Information Administration (August 2011).

Diagram 8: Electronic Communication & Transmission Line Frequencies



Commission route permits require permittees to take those actions which are feasible to restore or provide reception equivalent to reception levels before construction of the line (**Appendix B**).

Mitigation

Any impacts to AM radio reception can be mitigated by distance from the conductor or by antenna modifications.

Uses of different antennas or satellite dishes, or adjusting their locations, will typically resolve any impacts to television signals that may be impacted.

Impacts to wireless internet and cellular phones are not anticipated and mitigation is not proposed.

Commission permits require permittees to mitigate impacts on communications devices and to restore reception to pre-project quality (**Appendix B**).

5.4.5 Land Use and Zoning

Land use is the use of land by humans, such as residential, commercial or agricultural uses, and often refers to zoning. Zoning is a regulatory tool used by local governments (cities, counties,

and some townships) to promote or restrict certain land uses within specific geographic areas. Land in Becker County is zoned agricultural, residential, high density residential, commercial, water oriented commercial, industrial or special protection. These classifications determine what type of activity is allowed to occur on the property.

The Commission's route permit decision must be guided, in part, by potential impacts to local zoning and land use in order to fulfill the legislative goal of "minimizing human settlement and other land use conflicts."[58]

The Project area consists of a variety of land use patterns in a rural environment. Land use along the proposed route is mainly agricultural/grassland with small slivers of forestland (**Figure 5**). Zoning information for the Project area is depicted in **Figure 6**. The Project is located in the Cultivated and Deciduous Forest zoning classifications in Becker County.

Potential Impacts

The existence of a transmission line easement restricts certain uses of a property. Most commonly, existing structures and trees typically need to be cleared within the ROW. Easement agreements typically preclude the erection of permanent structures and would preclude the planting of trees or other tall vegetation that might grow into the transmission line; however, planting agricultural crops or using the ROW for pasture land is not generally precluded.

Direct impacts to land use and zoning due to the construction and operation of the new HVTL are anticipated to be minimal. While the impact will be long-term, the transmission line is of a relative small size and the proposed project overlays an existing transmission line ROW. The new transmission line will not obstruct or alter current farming practices.

Mitigation

Impacts from the construction and operation of the new transmission line to current and future land uses are expected to be minimal. The proposed transmission line ROW will overtake the existing 41.6 kV line ROW; the major land use impacts will be tree clearing and minor agricultural impacts. No impacts to residential or commercial/industrial land uses are anticipated; therefore no mitigation is proposed.

Encumbrances to individual parcels can be mitigated through negotiated easement agreements. These agreements are not within the scope of this EA.

[58] Minn. Stat. 216E.03, subd. 7.

5.4.6 Noise

Noise can be defined as any undesired sound.[59] It is measured in units of decibels on a logarithmic scale. The A-weighted scale (dBa) is used to duplicate the sensitivity of the human ear.[60] A three dBa change in sound is barely detectable to average human hearing, whereas a five dBa change is clearly noticeable. A 10 dBa change is perceived as a sound doubling in loudness.

Minnesota's noise standards differ based on noise area classifications (NAC), which correspond to the location of the listener (or receptor) and the time of day (**Table 3**).[61] Although the NACs are based on the land use activity (e.g. residential, educational, and manufacturing) of the location where the noise is heard, the NACs do not always reflect the zoning of the location. Noise standards are expressed as a range of permissible dBa over a one-hour time period. L_{10} may be exceeded 10 percent of the time, or six minutes, while L_{50} may be exceeded 50 percent of the time, or 30 minutes. Standards vary between day and nighttime hours.[62]

Table 3: Noise Area Classifications (dBa)[63]

Noise Area Classification (NAC)	Daytime (7:00 a.m. to 10:00 p.m.)		Nighttime (10:00 p.m. to 7:00 a.m.)	
	L_{10}	L_{50}	L_{10}	L_{50}
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

The proposed project is in a rural area. Ambient noise levels in these types of locations are generally between 30 and 40 dBa during daytime hours, with higher ambient noise levels of 50 to 60 dBA expected near roadways. The primary noise receptors within the route would be residences.

Potential Impacts

Potential noise impacts due to the new transmission line can be grouped into two categories: (1) noise from construction of the transmission line, and (2) noise from operation of the transmission line. Noise impacts for both categories are anticipated to be minimal.

59 MPCA (n.d.) *Noise Program*: https://www.pca.state.mn.us/air/noise-program.
60 MPCA (November 2015) *A Guide to Noise Control in Minnesota*: https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf.
61 Minn. R, 7030.0050, https://www.revisor.leg.state.mn.us/rules/?id=7030.0050
62 MPCA (November 2015), page 2.
63 Minn. R. 7030.0040

Construction

Construction noise is not anticipated to exceed state noise standards; however, this does not mean that direct noise impacts will not occur from construction related activities. These minimal impacts will be short-term and sporadic. GRE would be expected to restrict construction activities to daytime hours, limiting the impact of construction noise on local residences.

Noise from heavy equipment and increased vehicle traffic will occur during daytime hours. These impacts are anticipated to be short-term and intermittent. Noise associated with heavy equipment can range between 80 and 90 dBa at full power 50 feet away from the source. Heavy equipment generally runs at full power up to 50 percent of the time.[64] Point source sounds decrease six dBa at each doubling of distance.[65] This means an 80 dBa sound at 50 feet is perceived as a 50 dBa sound at 1,600 feet. Any exceedance of noise standards would be short-term and confined to daytime hours.

Operation

Noise from transmission lines is due to small electrical discharges at specific locations along the surface of the conductor that ionize surrounding air molecules. This phenomenon—common to all transmission lines—is known as corona. In general, any imperfection on the surface of the conductor might be a source for corona. Examples include: dust and dirt, or nicks and burrs from construction. Resulting noise levels are dependent upon voltage level (corona noise increases as voltage increases) and weather conditions.

In foggy, damp or rainy conditions, corona noise, a subtle crackling sound, caused by water droplets striking a transmission line is common. In light rain, dense fog, snow or other relative moist conditions, corona noise might be higher than rural background levels. In heavy rain, corona noise increases, but because of the increased background noise associated with heavy rain, the corona noise is undetectable. During dry weather, corona noise is essentially imperceptible (**Table 4**).

Table 4: Estimated Corona Effect Noise[66]

L_5	L_{50}	Location
17.7 dBA	14.2 dBA	edge of right-of-way
18.8 dBA	15.3 dBA	directly under line

The substation is subject to Minnesota Noise Standards (Minnesota Rules Chapter 7030) that establishes the most stringent standard at 50 dBA. The upgraded substation would meet this

[64] Federal Highway Administration (November 30, 2015) *Highway Traffic Noise: Construction Noise Handbook*, Retrieved March 22, 2016, from: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm.
[65] Minnesota Pollution Control Agency (2015), page 10.
[66] SPA at 7-8.

limit at approximately 75 feet from the 115 kV transformer.[67] The nearest residences is approximately 350 feet from the proposed location of the 115 kV transformer. At 350 feet, noise from the transformer would attenuate to approximately 27 dBA,[68] which the Minnesota Pollution Control Agency describes as the level of noise in a bedroom at night ("A Guide to Noise Control in Minnesota - Acoustical Properties, Measurement, Analysis, and Regulation", MPCA, November 2015).

With implementation of state design and construction standards, the new transmission line is not anticipated to result in adverse or significant impacts on the public as a result of noise.

Mitigation

The project would be expected to adhere to noise constraints laid out in the route permit (**Appendix B**) during construction.

No noise impacts are anticipated during operation of the proposed project; therefore, no mitigation is proposed.

5.4.7 Property Values

The placement of infrastructure near human settlements has the potential to impact property values. The impacts can be positive and negative. The type and extent of impacts depends on the relative location of the infrastructure and existing land uses in the project area. For example, a new highway may increase the value of properties anticipated to be used for commercial purposes, but decrease the value of nearby residential properties.

Potential impacts to property values due to transmission lines are related to three main concerns: (1) potential aesthetic impacts of the line, (2) concern over potential health effects from electric and magnetic fields (EMF), and (3) potential interference with agriculture or other land uses. Research on the relationship between property values and proximity to transmission lines has not identified a clear cause and effect relationship. Rather, the presence of a transmission line is one of many factors that affect the value of a specific property. The research has revealed trends which are generally applicable to properties near transmission lines:[69]

- When negative impacts on property values occur, the potential reduction in property values is in the range of 1 to 10 percent.

[67] RPA at 7-7.
[68] Ibid.
[69] Final Environmental Impact Statement, Arrowhead–Weston Electric Transmission Line Project, Volume I, Public Service Commission of Wisconsin Docket 05-CE-113, October 2000, p. 212-215.

- Impacts on property values decrease with distance from the line. Thus, impacts on the sale price of smaller properties are usually greater than impacts on the sale price of larger properties.
- Other amenities, such as proximity to schools or jobs, lot size, square footage of a house, and neighborhood characteristics, tend to have a much greater effect on sale price than the presence of a power line.
- Negative impacts appear to diminish over time.
- The value of agricultural property is likely to decrease if the power line poles are placed in an area that inhibits farming operations.

A recent literature review examined 17 studies on the relationship between transmission lines and property values.[70] The reviewers concluded that the studies indicate small or no effects on the sale price of properties due to the presence of transmission lines.[71]

Potential Impacts

Direct impacts to property values from the new transmission line are anticipated to be minimal. While impacts to property values could occur, any potential impact would be difficult to attribute to the proposed project specifically. For most of its length, the new transmission line, for all routing options considered, would follow existing infrastructure. As proximity to roadways would be one factor of many affecting the value of an individual property, any impact from the transmission line would be incremental. The new transmission line would not significantly reduce future agricultural uses and aesthetic impacts from the transmission line would be incremental to the aesthetic impact of the other linear infrastructure features (streets/avenues, county roads, state highway, or pipeline corridor) present.

Mitigation

Impacts to property values can be mitigated by reducing aesthetic impacts, perceived health risks, and encumbrances to future land use. Property values can also be mitigated through inclusion of specific conditions (restoration and vegetation management) in individual easement agreements with landowners along the proposed route. This could include negotiation for compensation for any real or perceived loss.

5.4.8 Socioeconomics

The proposed project is located in a rural part of the state, away from major population centers. Significant industries in the project area include agriculture, manufacturing and construction and maintenance, including work in the pipeline and crude oil industry.

[70] The Effects of Transmission Lines on Property Values: A Literature Review, Journal of Real Estate Literature, 2010, www.real-analytics.com/Transmission Lines Lit Review.pdf.
[71] Ibid.

U.S. Census data was used to develop **Table 5**, which provides information regarding total population, household income, percentage minority population and percentage of individuals below the poverty level. The median household income in the county is lower than Minnesota as a whole, although the percentage of individuals living below the poverty level is not. Minority groups make up a small percentage of the total population.

The new transmission line is not located in an area of disproportionately high minority populations or low-income populations.

Potential Impacts

GRE anticipates a temporary force of approximately 20 workers for transmission construction.[72] It is unknown if any of these jobs will be local jobs. Operation of the new transmission line will not create any permanent jobs. Communities and businesses near the project can expect a short-term increase in revenues due to project construction, and construction will not disrupt these communities and businesses.

The construction of the new transmission line will generate a minimal positive direct economic impact due to expenditures at local businesses during project construction from purchases of goods and services and long-term through an incremental increase in utility taxes.[73]

Table 5: Socio-Economic Matrix of Proposed Project Area[74]

LOCATION	POPULATION 2010	POPULATION 2017 EST	CHANGE (%)	MEDIAN HOUSEHOLD INCOME	POPULATION BELOW POVERTY LEVEL (%)
State of Minnesota	5,303,925	5,576,606	5.8%	$65,699 (2013-2017)	9.5 (2013-2017)
Becker County	32,504	34,098	4.9%	$55,884 (2013-2017)	11.7 (2013-2017)
City of Detroit Lakes	8,702	9,216	5.5%	$38,197 (2013-2017)	19.8 (2013-2017)

Mitigation

Adverse socio-economic impacts are not expected, therefore no mitigation is proposed.

5.5 Human Health and Safety

Construction and operation of new transmission lines may have the potential to impact human health and safety.

[72] SPA at 4-7.
[73] Ibid.
[74] Ibid.

5.5.1 Electric and Magnetic Fields

Electric and magnetic fields (EMF) are invisible forces that result from the presence of electricity. EMF occurs naturally and is caused by weather or the geomagnetic field. Man-made EMF is caused by all electrical devices and is found wherever people use electricity. EMF are characterized and distinguished by their frequency, that is, the rate at which the field changes direction each second. Electrical lines in the United States have a frequency of 60 cycles per second or 60 Hertz (Hz). EMF at this frequency level is known as extremely low frequency EMF (ELF-EMF).

Electric fields are created by the electric charge (i.e. voltage) on a conductor. The strength of the electric field produced is associated with the voltage of the transmission line and is measured in kilovolts per meter (kV/m), not the current (amps). The strength of an electric field decreases rapidly as it travels from the conductor, and is easily shielded or weakened by most objects and materials, such as trees and buildings.

Magnetic fields are created by the electrical current (i.e. amps) moving through a conductor. The strength of a magnetic field produced is proportional to the electrical current moving through the transmission line and is measured in milliGauss (µG). Similar to electric fields, the strength of a magnetic field decreases rapidly as the distance from the source increases. However, unlike electric fields, magnetic fields are not easily shielded or weakened by objects or materials. **Table 6** provides examples of magnetic fields associated with common electric household appliances.

Health Studies

A concern related to EMF is the potential for adverse health effects due to EMF exposure. In the 1970s, epidemiological studies indicated a possible association between childhood leukemia and EMF levels. Since then, various types of research have been conducted to examine EMF and potential health effects including animal studies, epidemiological studies, clinical studies, and cellular studies. Scientific panels and commissions have reviewed and studied this research data. These studies have been conducted by, among others, the National Institute of Environmental Health.

Table 6: Magnetic Fields of Common Electric Appliances (µG)[75]

Appliance	Distance from Source (feet)		
	0.5	One	Two
Can Opener	600	150	20
Computer	14	5	2
Copy Machine	90	20	7
Shaver	100	20	-
Stove	30	8	2
Hair Dryer	300	10	-

[75] United States Environmental Protection Agency (1992) *EMF in Your Environment:* http://nepis.epa.gov

Portable Heater	100	20	4
Vacuum Cleaner	300	60	10

Sciences,[76] the World Health Organization,[77] the Scientific Committee on Emerging and Newly Identified Health Risks,[78] and the Minnesota State Interagency Working Group on EMF Issues.[79] In general, these studies concur that:

- Based on epidemiological studies, there is a statistical association between childhood leukemia and EMF exposure. There is no consistent association between EMF exposure and other diseases in children or adults.
- Laboratory, animal, and cellular studies fail to show a cause and effect relationship between disease and EMF exposure at common EMF levels. A biological mechanism for how EMF might cause disease has not been established.
- Because a cause and effect relationship cannot be established, while a statistical association between childhood leukemia and EMF exposure has been shown, there is:
    - Uncertainty as to the potential health effects of EMF,
    - No methodology for estimating health effects based on EMF exposure,
    - A need for further study of the potential health effects of EMF,
    - A need for a prudent avoidance approach in the design and use of all electrical devices, including transmission lines.

Regulations and Guidelines

Currently, there are no federal regulations regarding allowable electric or magnetic fields produced by transmission lines in the United States; however, some state governments have developed state-specific regulations (**Table 7**).

Additionally, international organizations have adopted standards for exposure to electric and magnetic fields (**Table 8**).

The Minnesota Public Utilities Commission limits the maximum electric field directly under all transmission lines in Minnesota to 8.0 kV/m. A standard for magnetic fields has not been adopted. However, the Commission has adopted a prudent avoidance approach in routing transmission lines and, on a case-by-case basis, considers and may require (through the HVTL Route Permit) mitigation strategies for minimizing EMF exposure levels associated with transmission lines (see discussion of mitigation strategies, below).

[76] National Institute of Environmental Health Sciences, Electric and Magnetic Fields, http://www.niehs.nih.gov/health/topics/agents/emf/.
[77] World Health Organization, Electromagnetic Fields, http://www.who.int/peh-emf/en/.
[78] Scientific Committee on Emerging and Newly Identified Health Risks, http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_022.pdf.
[79] A White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options, Minnesota State Interagency Working Group on EMF Issues, http://energyfacilities.puc.state.mn.us/documents/EMF White Paper - MN Workgroup Sep 2002.pdf [hereinafter MSIWG White Paper on EMF Issues].

Table 7: State Electric and Magnetic Field Standards[80]

State	Electric Field (kV/m)		Magnetic Field (µG)
	Within Right-of-Way	Edge of Right-of-Way	Edge of Right-of-Way
Florida	8.0[a]	2.0	150[a] (max load)
	10.0[b]	—	200[b] (max load)
	—	—	250[c] (max load)
Massachusetts	—	—	85[g]
Montana	7.0[d]	1.0[e]	—
New Jersey	—	3.0	—
New York	11.8	1.6	200
	11.0[f]	—	—
	7.0[d]	—	—
Oregon	9.0	—	—

a 69 kV to 230 kV transmission lines
b 500 kV transmission lines
c 500 kV transmission lines on certain existing Rights-of-Way
d Maximum for highway crossing
e May be waived by landowner
f Maximum for private road crossings
g A level above 85 µG is not prohibited, but may trigger a more extensive review of alternatives.

Potential Impacts

No adverse health impacts from electric or magnetic fields are expected for persons living or working near the proposed project. GRE has modeled and calculated the electric and magnetic fields associated with the proposed 115 kV transmission line project.

The calculated maximum electric field (**Table 9**) ranges from 0.36 directly under the transmission line.[81] These values are considerably below the Commission standard of 8.0 kV/m.

The calculated magnetic field from the transmission line is dependent upon line design, but also depends upon the current passing through the line. **Table 10** shows calculations for the expected peak load on the line and also calculations at the peak loads. The field generated by the expected peak load using the monopole transmission configuration is 12.97 mG at the transmission. Under average load conditions, the calculated field would be 1.15 mG at the transmission centerline.[82]

[80] National Institute of Environmental Health Sciences (2002).
[81] SPA at 6-7.
[82] Ibid.

Table 8: International Electric and Magnetic Field Guidelines

Organization	Electric Field (kV/m)		Magnetic Field (µG)	
	General Public	Occupational	General Public	Occupational
Institute of Electrical and Electronics Engineers	5.0	20	9,040	27,100
Int'l Commission on Non-Ionizing Radiation Protection	4.2	8.3	2,000	4,200
American Conference of Industrial Hygienists	—	25	—	10,000/ 1,000[a]
National Radiological Protection Board	4.2	—	830	4,200

a For persons with cardiac pacemakers or other medical electronic devices

Table 9: Calculated Electric Fields (kV/m) One Meter above Ground

Scenario	Max. Operating Voltage (kV)	Distance to Proposed Centerline										
		-300'	-200'	-100'	-50'	-25'	0' Max.	25'	50'	100'	200'	300'
115 kV Single Circuit, with Distribution Underbuild	121	0.01	0.02	0.07	0.19	0.24	0.36	.32	.16	.06	0.02	0.01

Mitigation

The Commission has adopted a prudent avoidance approach in routing transmission lines and, on a case-by-case basis, considers and may require (through the HVTL Route Permit) mitigation strategies for minimizing EMF exposure levels associated with transmission lines. No health impacts due to EMF are anticipated; therefore, no mitigation is proposed.

5.5.2 Implantable Medical Devices

EMF may interfere with implantable electromechanical medical devices, such as pacemakers, defibrillators, neurostimulators and insulin pumps. Most of the research on electromagnetic interference and medical devices is related to pacemakers. Laboratory tests indicate that interference from magnetic fields in pacemakers is not observed until 1,000 mG, a field strength greater than that associated with high voltage transmission lines.[83] Therefore, the focus of research has been on electric field impacts.

[83] Electric Power Research Institute (2004) Electromagnetic Interference with Implanted Medical Devices.

Table 10: Calculated Magnetic Fields One Meter above Ground (mG)

Scenario	Max. Operating Voltage (kV)	Line Current (Amps)	Distance to Proposed Centerline										
			-300'	-200'	-100'	-50'	-25'	0' Max.	25'	50'	100'	200'	300'
115 kV Single Circuit Line with Distribution Underbuild Peak Load	121	46	.10	0.22	0.76	2.37	5.84	12.97	7.68	3.27	0.97	0.25	0.11
115 kV Single Circuit Line with Distribution Underbuild Average Load	121	18	0.02	0.05	0.16	.44	0.79	1.15	0.89	0.49	0.18	0.05	0.02

Electric fields may interfere with a pacemaker's ability to sense normal electrical activity in the heart. In the unlikely event a pacemaker is impacted, the effect is typically a temporary asynchronous pacing (commonly referred to as reversion mode or fixed rate pacing). The pacemaker returns to its normal operation when the person moves away from the source of the interference.

Medtronic and Guidant, manufacturers of pacemakers and implantable cardioverters/ defibrillators, indicate that electric fields less than 6 kV/m are unlikely to affect operation of modern bipolar devices. Older unipolar designs, however, are more susceptible to interference from electric fields, with research suggesting that interference may occur with electric fields ranging from 1.2 to 1.7 kV/m.

There are no residences, businesses, or sensitive receptors such as hospitals or nursing homes located within the anticipated ROW, therefore the regular presence of implantable medical devices within the ROW is not expected.

Potential Impacts

Impacts to implantable medical devices from the proposed project are not expected to occur. The calculated maximum electric field strength for the project is 0.36 kV/m. This field strength is below the 6.0 kV/m interaction level for modern, bipolar pacemakers, and also below the range of interaction for older, unipolar pacemakers.

Mitigation

No health impacts due to EMF are anticipated from the operation of the new transmission line; thus, no mitigation measures are proposed. However, consistent with the Commission's prudent avoidance approach to potential EMF impacts, basic mitigation measures are prudent.

Electric and magnetic fields diminish with distance from a conductor. Thus, EMF exposure levels can be minimized by routing transmission lines away from residences and other locations where citizens congregate. EMF exposure levels can also be minimized by conductor configurations that facilitate phase cancellation between circuits.[84]

5.5.3 Stray Voltage

In general terms, stray voltage can be defined as "voltage caused by an electric current in the earth, or in ground water, resulting from the grounding of electrical equipment or an electrical distribution system."[85] Stray voltage encompasses two phenomena: neutral-to-earth (NEV) voltage and induced voltage.

Neutral-to-Earth Voltage

NEV is a type of stray voltage that can occur where distribution lines enter structures. "Electrical systems—farm systems and utility distribution systems—are grounded to the earth to ensure safety and reliability. Inevitably, some current flows through the earth at each point where the electrical system is grounded and a small voltage develops."[86] This extraneous voltage appears on metal surfaces in buildings, barns and other structures.

NEV is typically experienced by livestock that contact one or more metal objects on a farm, for example, feeders, waterers, or stalls. Metal objects on a farm are grounded to earth through electrical connections. Livestock, by virtue of standing on the ground, are also grounded to earth. If an animal touches two points at different voltages (one at neutral voltage and the other near true ground),[87] a small current will flow through the livestock to the ground because the animal completes the electrical circuit.[88]

Despite livestock and metal objects both being grounded to the earth there are a number of factors that affect the effectiveness of the ground, that is, a good or poor ground. In metal objects these include wire size and length, the quality of connections, the number and resistance of ground rods, and the current being grounded.[89] Likewise, a number of factors also determine the extent to which livestock are grounded, for example, if the animal is standing on wet versus dry ground.[90] Stray voltage results from this difference in the effectiveness of grounding and on the resulting electrical currents. It can exist at any farm, house or business that uses electricity, independent of whether a transmission line nearby.

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[84] MSIWG White Paper on EMF Issues.
[85] Edison Electric Institute (April 2005) *Glossary of Electric Industry Terms*, Washington, DC: Edison Electric Institute (2005).
[86] Wisconsin Public Service Commission (2011) Answers to Your Stray Voltage Questions: Backed by *Research*: http://www.wisconsinpublicservice.com/business/pdf/farm_voltage.pdf, page 1.
[87] North Dakota State University Agricultural Engineering Department (1986) *Extension Publication #108: Stray Voltage*: https://www.ag.ndsu.edu/extension-aben/epq/files/epq108.pdf.
[88] Michigan Agricultural Electric Council (October 2008) *Stray Voltage: Questions and Answers*: http://maec.msu.edu/Stray%20Voltage%20Brochure%202008.pdf.
[89] North Dakota State University Agricultural Engineering Department (1986).
[90] Ibid.

If NEV is prevalent in an agricultural operation it can affect livestock health. This concern has primarily been raised on dairy farms because of its potential to affect milk production and quality. NEV is generally associated with electrical distribution lines and electrical service at a residence or on a farm. Transmission lines do not create stray voltage as they do not directly connect to businesses, residences, or farms.

Induced Voltage

The electric field from a transmission line can extend to nearby conductive objects, such as a metal fence, and induce a voltage upon them. This phenomenon is dependent on many factors, including the shape, size, orientation, capacitance, and location of the object along the ROW. If the objects upon which a voltage is induced are insulated or semi-insulated from the ground and a person touches them, a small current will pass through their body to the ground, which may be accompanied by a spark discharge and mild shock. This is similar to what can occur when an individual walks across a carpet and touches a grounded object or another person.

The primary concern with induced voltage is not the voltage, but the current that flows through a person to the ground when touching the object. To ensure the safety of persons in the proximity of transmission lines, the NESC requires that any discharge be less than five milliamperes.

In addition, the Commission's electric field limit of 8 kV/m is designed to prevent serious shock hazards due to induced voltage. Proper grounding of metal objects or buildings under or adjacent to transmission lines is the best method of avoiding these shocks.

Transmission lines may cause additional current to flow on distribution lines where these lines parallel. When distribution lines and electrical service are properly wired and grounded, these additional currents are not significant. However, if distribution lines and electrical service are not properly wired and grounded, these additional currents could create stray voltage impacts.

A frequent request among the various stakeholder groups participating in the routing proceedings of energy infrastructure projects is the evaluation of collocating of these linear projects within a common corridor. While there are numerous benefits to common utility corridors, there are also concerns. Collocated steel pipelines that share, parallel, or cross HVTLs may be subject to electrical interference from electrostatic coupling, electromagnetic induction, and conductive effects.[91] If these interference effects are high enough, they may pose a safety hazard to personnel or compromise the integrity of the pipeline.[92]

[91] http://www.who.int/peh-emf/meetings/archive/en/paper02shwehdi.pdf
[92] Id.

Potential Impacts

Impacts to residences or farming operations resulting from NEV are not anticipated. The proposed project is a 115 kV transmission line that does not directly connect to businesses or residences at any point along the route, and does not change local electrical service.

Impacts due to induced voltage are not anticipated to occur as a result of the operation of the new transmission line. The new transmission line may induce a voltage on insulated metal objects near the transmission line ROW; however, the Commission requires that transmission lines be constructed and operated to meet NESC standards as well as the Commission's own electric field limit of 8 kV/m, reducing these impacts.

Transmission lines can induce a current on a distribution circuit that is parallel and immediately under the transmission line. Typically lines 200 kV and above are at greater risk for induction than 115 kV transmission lines. The presence of the distribution line immediately under the transmission line will act as a collector of any induced voltage and will be designed with grounding and insulation to account for any induced voltage from the transmission line.

Mitigation

Impacts from NEV as a result of the proposed project are not anticipated; therefore, no mitigation is proposed. If a person has a question or concern about stray voltage on their property they should contact their electrical service provider to discuss the situation and the possibility of an on-site investigation.

Potential impacts as a result of induced voltage are reduced or avoided by Commission permit requirements (**Appendix B**). As a result, potential impacts are not anticipated and further mitigation is not proposed.

Other mitigation measures can be developed if it is determined that electrical interference is present. In general, all of these measures involve a low resistance grounding system to pass interfering AC to ground. Typical mitigation designs can be either surface or deep grounding designs.[93]

5.6 Public Services

Transmission lines have the potential to impact public services, such as roads or airports. These impacts are usually temporary, for example, road closures or restrictions associated with stringing conductors; however, impacts can be long-term if they change the project area in a way that precludes or limits public services.

[93] https://www.nace.org/uploadedFiles/Corrosion_Central/Industries/SP016907PHMSA.pdf

Public services and facilities in the project area generally include emergency services provided by government entities, including hospitals, fire departments, and police departments, water supply or wastewater disposal systems, and gas and electricity services, and existing and future transportation corridors and projects.

5.6.1 Airports

Transmission line structures and conductors have the potential to interfere with safe operation of an airport if they are too tall for the applicable safety zone. Airports have different safety zones, which are based on several characteristics, including runway dimensions, the type of aircraft intended to use the runway, and the type of approach procedures used by the aircraft.[94] These characteristics determine necessary setback distances for transmission line structures.

Potential Impacts

The closest airports to the project area include the Detroit Lakes-Wething Field Airport (>6 miles northeast), Kaiser's Airstrip Airport (>7 miles northwest), and the Pelican Rapids Municipal Airport (>8 miles southwest).

Since tall HVTLs can conflict with the safe operation of public and private airports and air strips, the Federal Aviation Administration (FAA) and MnDOT have each established development guidelines on the proximity of tall structures to public use airports. The FAA has also developed guidelines for the proximity of structures to Very-High-Frequency Omni-Directional Range (VOR) navigation systems. Due to the distance between the nearby airports and their air strips, and the project area, construction and operation of the proposed HVTL and proposed LR-CF switch are not anticipated to impact safe operation and use of the airport.

The Minnesota Department of Transportation (MnDOT) Office of Aeronautics was contacted[95] requesting information on the possible effects of the proposed Project on airports or airstrips in the project area. MnDOT indicated "[t]his project will not have any adverse impacts to Minnesota Airports."[96]

Mitigation

No impacts to airports will occur as a result of the construction of the new transmission line; therefore, no mitigation is proposed.

[94] *See generally* Minn. R. 8800.
[95] RPA at Appendix D.
[96] Ibid.

5.6.2 Emergency Services

Transmission lines have the potential to impact access to emergency services, for example, through interference with electronic communication systems or traffic delays. The Dispatch/Communications section of the Becker County Sheriff's Office takes all incoming calls, answers 911 lines from Detroit Lakes, Lake Park, Frazee, Callaway, Ogema, White Earth, Richwood, Osage, Two Inlets, and Pine Point. The Sheriff's Office is also responsible for dispatching the volunteer fire departments from the aforementioned towns. Impacts to emergency services in the project area could result from (1) an inability to communicate that there is an emergency or (2) an inability to respond to an emergency.

Potential Impacts

Potential impacts to electronic communication systems due to the project are discussed in Section 5.4.4. No impacts to communications systems are anticipated; therefore no impacts to the community's ability to communicate regarding an emergency are anticipated. During construction of the project, there may be temporary impacts to roads in the form of traffic delays which could impede responses to an emergency. Short-term localized traffic delays are anticipated during construction. However, these impacts are anticipated to be minimal and manageable through traffic control standard practices (see 5.6.3).

No impacts to emergency services are anticipated once the project is operational.

Mitigation

Potential impacts can be mitigated by notifying emergency responders of traffic interruptions. No long-term impacts are anticipated; therefore, no other mitigation is proposed.

5.6.3 Roads and Highways

State routing policy indicates a preference for consolidating transmission with existing infrastructure including roads. MN Statute 216E.03, directs the Commission to consider locating routes located on existing HVTL route and parallel existing highway ROW and if the route selected does not follow existing HVTL and highway ROWs, the Commission must state the reasons those ROWs are not followed.

Minnesota Rules, part 7850.4100, subparts H and J require that MN PUC consider corridor sharing in determining whether to issue a permit for a high voltage transmission line. Corridor sharing can include use or paralleling of existing infrastructure ROW including existing transportation, pipeline, and electrical transmission systems or rights-of-way, or use of established boundaries such as survey lines or agricultural field lines. Sharing corridors with existing infrastructure or paralleling existing ROWs minimizes fragmentation of the landscape and can minimize impacts to adjacent property.

While paralleling an existing transmission line generally presents a routing opportunity, there is also some risk that a single incident could affect service on both lines.

A review of the aerial photograph maps (**Figures 2 and 3**) shows that the proposed route parallels a road ROW (St. Mary's of the Lakes) and will overlay an existing 41.5 kV LR-LET transmission ROW.

The ROI for corridor sharing generally includes infrastructure corridors within approximately 0.25 miles of the proposed routes and variations. This ROI was selected because as distance from existing corridors increases, the benefits of corridor sharing diminish and at a distance greater than approximately 0.25 mile, benefits are unlikely to be observed.

In its October 19, 2019, comment letter, MnDOT noted that the removal of the 2.85 miles of 41.6 kV line that crosses US 10 will likely require a Miscellaneous Permit (Form 1723) from MnDOT, accompanied by Traffic Control measures. Early coordination with MnDOT District 4 staff was recommended prior to commencement of this work.[97]

Potential Impacts

During project construction, short-term, localized traffic delays due to construction activity, material delivery and worker transportation could impact transportation in the project area. The exposure of traffic to potential hazards is a function of the traffic volume and the length of time that the closure will be in effect. The goals common to all traffic control zones are:

- to minimize crashes and crash severity; and
- to minimize inconvenience and conflicts as a result of the work

For all construction projects within or adjacent to roadways attention must be given to traffic control from the early stages of development of the project, through the completion of the actual construction, including the preliminary layout studies, detailed design, and the drafting of the special provisions. It is considered essential that the appropriate district of MnDOT be involved in order to provide their specialty input so that a traffic control plan (TMP) can be developed. Careful consideration of the TMP should result in minimizing confusion and delays to motorists and pedestrians as well as reduce crashes, provide greater safety to the various parties involved in the project, and improve the image of the construction industry.[98]

Impacts to the operations of the areas roads and highways from the new transmission line are anticipated to be minimal.

[97] Public Scoping Comments through October 9, 2019, Close of Comment Period (Oral and Written Comments), eDocket No. 201910-156467-01, 201910-156468-01, and 201910-156470-01.

[98] MN MUTCD Field Manual for Temporary Traffic Control Zone layouts and the Standard Signs Manual.

Mitigation

Impacts to roads and vehicular traffic can be mitigated through coordination with the appropriate state and local authorities (TMP) during construction, as well as by alignments and pole placements that minimize interference with roadways.

5.6.4 Utilities

Transmission lines have the potential to damage or interfere with the use of public utilities. The presence of a transmission line could also preclude construction and operation of new utility infrastructure.

The proposed project is in a rural area, and water and sanitary services are supplied to area residences by individual wells and septic systems. Electrical service is provided by Lake Region Electric Cooperative in the project area. Natural gas service may be provided in some towns/cities in the region, but most residences in the area are served by propane.

Potential Impacts

Impacts to water utilities could occur if transmission line structures damaged or impeded the use of wells or septic systems. The proposed route is primarily located along roadway and existing transmission line ROW, minimizing the potential to impact wells and septic systems.

Impacts to utilities from construction and operation of the HVTL are expected to be minimal.

Mitigation

Construction impacts to utilities can be avoided by marking underground utilities prior to construction and avoiding these areas during construction. The location of natural gas and oil pipelines, septic tanks, wells, and underground distribution lines can be identified during engineering surveys once a route is determined.

5.7 Land-Based Economies

Transmission lines have the potential to impact land-based economies. Transmission lines and poles are a physical presence on the landscape that can prevent or otherwise limit use of the landscape for other purposes. In general, and for safe operation of the line, buildings and tall growing trees are not allowed in transmission line ROWs, while many agricultural uses can continue within the ROW. These limitations can create impacts for commercial businesses and forestry.

Impacts to land-based economies due to the proposed project are anticipated to be minimal. Impacts to agriculture are anticipated to be minimal. Impacts to forested lands and to forestry are also anticipated to be minimal. No impact to mining activities is anticipated, as there are no

identified gravel pits or mines within any of the anticipated alignments/ROWs for the route alternatives evaluated.

5.7.1 Agriculture

According to the 2017 United States Department of Agriculture (USDA) Census of Agriculture, Becker County has 943 individual farms with an average farm size of 390 acres, and farmland covers 255,999 acres in the county. Over $174 million was generated from both crop and livestock sales in 2017.

Agricultural lands within the proposed route consist primarily of tilled land and pastureland/grassland (**Figure 5**). In total, the transmission line would cross about 3,200 feet of agricultural land (approximately 3.3 acres).[99]

Impacts to agricultural operations due to transmission lines fall generally into two types – temporary and permanent impacts. Temporary impacts are impacts due to construction activities. These activities could temporarily limit the use of fields or could cause direct impacts to crops and also damage soils due to soil compaction or disruption of drainage infrastructure.

Permanent agricultural impacts are impacts due to the physical presence of transmission line structures in agricultural fields. The footprint of a pole can be relatively small – e.g., approximately four square feet. However, the impact of such poles can be greater than their footprint in that they can (1) impede the use of farm equipment, (2) interfere with aerial spraying, and (3) impede the use of irrigation systems. These physical impacts can lead to financial impacts, e.g., loss of farming income, decrease in property value.

Potential Impacts

Impacts to agricultural operations as a result of the proposed project are anticipated to be minimal. Agricultural impacts along the proposed route are predominantly along edges of existing road ROW**.** However, as agricultural land within a transmission line ROW is generally available for agricultural production, the permanent impact to agricultural operations is much less. The amount of land that will be permanently removed from agricultural production as a result of the project is nominal.

If structures are placed within fields, they can obstruct the use of farm equipment and have a more significant impact on agricultural production. Structures within fields can also prevent the use of larger-scale agricultural equipment. Where this is the case, farmers may be impacted by the cost of adjusting for equipment that is appropriately sized to work fields with transmission line structures.

[99] RPA at 7-13.

Temporary impacts, such as soil compaction, crop damage, and disruption to drainage systems may occur during construction of the project. Construction vehicles are relatively large and can cause rutting and compaction of soils at structure locations and along the transmission line ROW.

Mitigation

Impacts to agricultural operations can be avoided and mitigated by prudent routing – i.e., by selecting an alignment that avoids agricultural fields to the extent possible and minimizes intrusion into agricultural fields by following existing infrastructure ROW, field lines, and property lines. Where poles are placed in fields, impacts can be mitigated by not placing structures diagonally across a field, but rather parallel to existing infrastructure ROW or field lines.

Agricultural impacts can also be mitigated by construction and remediation measures. Standard measures to mitigate agricultural impacts from a project include:

- Scheduling construction during lulls in agricultural activity to the extent possible.
- Limiting movement of crews and equipment to the transmission line ROW to the greatest extent possible and obtaining permission from the landowner for construction activities outside of the ROW.
- Repairing and restoring areas disturbed by construction to pre-construction contours so that all surfaces drain naturally.
- Repairing ruts and soil compaction; filling, grading, scarifying, harrowing, disking.
- Placing structures to accommodate existing or proposed irrigation systems.
- Promptly repairing or replacing fences, gates, drain tile, and other improvements that may be removed or damaged during construction.
- Providing compensation to landowners for any crop and property damage.

Commission route permits require permittees to compensate landowners for damage to crops and drain tile (**Appendix B**).

5.7.2 Forestry

Becker County has about 360,000 acres forested land, much in public control including substantial private woodlands. According to county inventories, the county is composed of approximately 12 percent conifers and 70 percent hardwoods.

Forested areas in the project area are shown on **Figure 5**. The transmission line will cross approximately 480 linear feet of forested land (about 4,800 additional square feet from the existing LR-LET ROW). Forests in the project area have routinely been logged for personal use,

such as for firewood for heating, and it is expected that this practice will continue into the future.

Potential Impacts

While trees will be cleared and removed from the ROW, resulting in a loss, direct impacts to forestry operations, including timber harvest, are not anticipated.

Mitigation

Impacts to forested areas and forestry operations, including timber harvest, can be avoided or minimized by prudent routing and placement of structures within the route.

No long-term impacts are anticipated, therefore, no other mitigation is proposed.

5.7.3 Mining

Impacts to mining operations can occur if transmission lines interfere with access to, or the removal of, sand, gravel or mineral resources.

A review of aerial photographs (**Figures 2 and 3**) shows a gravel pit to the west of the Project; however MNDOT aggregate source information[100] does not indicate an active operation at this location.

Potential Impacts

No known mining operations exist within the proposed route. No impacts are anticipated to mining economies.

Mitigation

No impacts to mining resources are anticipated and, therefore, no mitigation measures are proposed.

5.7.4 Tourism and Recreation

Tourist activities within the project area are generally associated with the recreational opportunities. Transmission lines may have a negative impact on recreational activities if the transmission line interferes with the natural resources that provide these activities, for example, changing the aesthetic of a recreational destination in a way that reduces visitor use. Alternatively, a transmission line might increase recreational opportunities, for example, a ROW through a previously wooded area might provide increased opportunities for hunting or wildlife viewing. Transmission lines can impact tourism if they affect the overall experiences of visitors,

[100] http://www.dot.state.mn.us/materials/maps/copitmaps/becker1.pdf

either through aesthetic impacts, noise, or degradation of the natural or man-made resources that provide for tourist-type activities.

Tourist destinations near the proposed route include many lakes in the area (**Figure 4**). The Detroit Lakes area has numerous activities for recreation. Popular activities in the area include fishing, birding, tubing, scuba diving, boating, swimming, biking, motorcycling, hiking, golfing, skiing, ice skating, hockey, curling, snowshoeing and snowmobiles. Places to visit are resorts, flea markets, amusement parks, winery, syrup production and resorts. Historic areas, like the Lake Agassiz Regional Library provide the chance to learn about the regional and local history.

The proposed route intersects a portion of the Midnite Riders Snowmobile Trail which lies within the existing LR-LET transmission ROW. The Midnite Riders Trail (total length 57 miles) provides an excellent loop trail system connecting the communities of Cormorant Village, Lake Park, and Audubon. These trails run through the lakes and fields of southwestern Becker County and provide connections to Lake Runners Trail Association and Clay County Trails. Many of the trails traverse area road ditches and agricultural fields, interspersed with sections through area woodlots.[101]

Temporarily impacts to the Midnite Riders Snowmobile Trail should be minimal and long-term impacts are not expected.

The proposed route avoids all other areas that would be considered tourist destinations, and the Project would not preclude tourism activities or appreciably diminish the use or experience at tourist destinations. Although some tree clearing will be required, it will be adjacent to existing ROWs and should not affect wildlife viewing opportunities.

There are no State Parks, State Forests, Scientific and Natural Areas (SNA), Wildlife Management Areas (WMA), county parks, or federal forests or refuges within the proposed route.

Potential Impacts

Impacts to tourism and recreational opportunities from the proposed project are anticipated to be minimal.

Noise impacts from project construction are anticipated to be short-term and intermittent, and operational noise will be below ambient noise levels. The proposed route generally parallels existing infrastructure (roadways and electric transmission/distribution lines) so new impacts to recreation areas would be minimal. Some tree clearing would be required along all the routing options, and may be particularly obvious (alter the visual aesthetic) along those portions of the route containing the Midnite Riders Snowmobile Trail.

[101] https://www.co.becker.mn.us/dept/parks_recreation/snowmobile.aspx
https://www.co.becker.mn.us/dept/parks_recreation/PDFs/Snowmobile%20Trail%20Map.pdf

Mitigation

No impacts to tourism and recreational opportunities are anticipated and, therefore, no mitigation measures are proposed.

5.8 Archaeological and Historic Resources

Archeological resources are locations where objects or other evidence of archaeological interest exists, and can include aboriginal mounds and earthworks, ancient burial grounds, prehistoric ruins, or historical remains.[102] Historic resources are sites, buildings, structures or other antiquities of state or national significance.[103]

GRE retained Wenck to perform a Phase I archaeological survey of the proposed route/alignment for the Lake Eunice Transmission Conversion project.[104] The Wenck review contained a brief history on the cultural development of the region adopted from "historic context" developed by the Minnesota State Historic Preservation Office (SHPO) for the state of Minnesota and the Upper Midwest.[105]

There are no previously recorded archaeological sites and no previously recorded standing historic structures within the study area. Wenck concluded that there will be no adverse impact on known or suspected cultural resources as a result of the Project.[106]

The State Historical Preservation Office (SHPO) was contacted[107] requesting information on the possible effects of the proposed Project on historic properties in the project area. In a letter dated April 18, 2019[108], SHPO "determined that there are no properties listed in the National or State Registers of Historic Places, and no known or suspected archaeological properties in the area that will be affected by this project".

Potential Impacts

Construction of transmission lines can disrupt or remove archaeological resources. Placement of a transmission line near historic resources has the potential to impair or decrease the historic value of the resource. Based on the cultural resource review and survey, no direct or indirect impacts to archaeological or historic resources are anticipated within the project area.

Mitigation

Avoidance of known archaeological and historic resources is the preferred mitigation strategy.

[102] *See* Minn. Stat. 138.31, subd. 14.
[103] *See* Minn. Stat. 138.51.
[104] RPA at Appendix D.
[105] Ibid.
[106] Ibid.
[107] RPA at Appendix D.
[108] Ibid.

As a standard HVTL permit condition, if previously unidentified archaeological sites are found during construction, the applicant would be required to stop construction and contact SHPO to determine how best to proceed. Should human remains be discovered, ground disturbing activity will stop and local law enforcement will be notified.

No impacts to archaeological and historic resources are anticipated; therefore, no mitigation beyond that specified in the generic Route Permit (**Appendix B**) is proposed.

5.9 Natural Resources

Transmission lines have the potential to impact the natural environment. These impacts are dependent upon many factors, such as the type of transmission line and how it is designed, constructed and maintained. Other factors such as the environmental setting must also be taken into account. Impacts can and do vary significantly both within, and across, projects.

5.9.1 Air Quality

Overall air quality in Minnesota has improved over the last 20 years, but current levels of air pollution still contribute to health impacts.[109] Air quality in the project area is relatively better than more populated areas of the state, e.g., Minneapolis and St. Paul.

Potential Impacts

Potential air quality impacts due to the project are of two types: (1) emissions of ozone and nitrous oxide during operation, and (2) dust caused by construction activities.

Ozone and Nitrous Oxide

Transmission lines have the potential to produce small amounts of ozone (O_3) and nitrous oxide (NO_X). These compounds are created by the ionization of air molecules surrounding the conductor. Ozone production from a conductor is proportional to temperature and sunlight and inversely proportional to humidity.

Ozone and nitrous oxide are reactive compounds that contribute to smog and can have adverse impacts on human respiratory systems.[110] Accordingly, these compounds are regulated and have permissible concentration limits. The State of Minnesota has an ozone limit of 0.08 parts per million (ppm).[111] The federal ozone limit is 0.07 ppm.[112] Ozone and nitrous oxide emissions from the new 115 kV line are anticipated to be well below these limits.[113]

[109] Air Quality in Minnesota, 2015 Report to the Legislature, http://www.pca.state.mn.us/index.php/about-mpca/legislative-resources/legislative-reports/air-quality-in-minnesota-reports-to-the-legislature.html.
[110] https://www.epa.gov/criteria-air-pollutants
[111] Minn. R. 7009.0800, https://www.revisor.mn.gov/rules/?id=7009.0080.
[112] https://www.epa.gov/ozone-pollution/2015-national-ambient-air-quality-standards-naaqs-ozone
[113] RPA at 7-19.

Construction Dust

Fugitive dust is a particulate air pollutant. Construction activities along the proposed route, such as clearing vegetation and driving utility poles, may create exposed areas susceptible to wind erosion. Construction of the project will create dust and cause emissions from construction vehicles, i.e., diesel exhaust. The magnitude of emissions is dependent on weather conditions and the specific construction activity taking place. Any adverse impacts are anticipated to be localized, minimal, and temporary.

Mitigation

Impacts to air quality from project construction are expected to be short-term and minor; therefore. GRE indicates that appropriate dust control measures will be implemented to reduce potential fugitive dust emissions.[114] No additional mitigation is proposed.

5.9.2 Geology and Topography

The topography along the project area is relatively level. Depth of glacial drift over bedrock in the Pine Moraines and Outwash Plains Subsection varies from 200 to over 600 feet, with the greatest depths in the southwestern portion of the subsection. Underlying bedrock is a variety of Precambrian rock. There are some localized cretaceous marine shale, sandstone and variegated shale in the southwestern portion of the subsection.

Potential Impacts

Transmission structures will generally be direct-embedded in the soil. The proposed project will not impact topography or geology.

Mitigation

No impacts to topographic or geologic resources will occur, therefore, no mitigation is proposed.

5.9.3 Surface Water

Hydrologic features in the project area and along the proposed route are shown in **Figure 7**. Hydrologic features, such as wetlands, lakes, rivers and floodplains perform several important functions within a landscape, including flood attenuation, groundwater recharge, water quality protection and wildlife habitat production. The Project lies within the Otter Tail River watershed, in the south portion of the Red River Basin.

There are no rivers or streams that intersect the proposed route.

[114] Id.

The route is closest to Lake Eunice, approximately 1,222 feet to the northwest. Lakes near the proposed route include:

- Northwest: Lake Eunice (370 acres),
- South: Little Pelican Lake (385 acres), and
- South: Pelican Lake (516 acres)[115].

The MPCA designates certain waters as impaired based on violations of water quality standards.[116] A body of water is considered "impaired" if it fails to meet one or more water quality standards. Minnesota water quality standards protect lakes, rivers, streams, and wetlands by defining how much of a pollutant (bacteria, nutrients, turbidity, mercury, etc.) can be in water before it is no longer drinkable, swimmable, fishable, or useable in other, designated ways (called "beneficial uses"). Waters that do not meet their designated uses because of water quality standard violations are impaired.[117]

The closest impaired water to the project is Pelican Lake at approximately 2,100 feet south of the project.

Potential Impacts

Because the proposed project avoids surface waters in the project area, impacts to surface waters as a result of the proposed project are anticipated to be minimal. During construction of the project, there is potential for adverse impacts to surface waters due to vegetation clearing, ground disturbances, and construction traffic. These activities can speed water flow and expose previously undisturbed soils, increasing erosion and the potential for sediment to reach surface waters. Disturbed soils will generally be limited to pole locations; however, areas outside these locations may be disturbed by construction traffic and by removal of vegetation.

Mitigation

The primary means of mitigating impacts to surface waters is to select routes, alignments, and pole placements that avoid or span surface waters. The use of best management practices to control erosion and minimize impacts to water resources is a standard Commission route permit condition (see **Appendix B)**.

Construction of the project will require a number of permits from state and federal agencies, beyond a route permit from the Commission, e.g., NPDES/SDS stormwater construction permit (see Section 2.6). Many of these permits and approvals are directed at the prevention and mitigation of water resource impacts.

[115] http://www.dnr.state.mn.us/lakefind/index.html; http://www.dnr.state.mn.us/maps/compass.html (2010)
[116] https://www.pca.state.mn.us/water/minnesotas-impaired-waters-list
[117] Id.

5.9.4 Groundwater

Transmission line structures have the potential to impact groundwater directly. These impacts are generally associated with project construction, particularly when foundations require drilling or excavation to depths that penetrate shallow water tables. Indirect impacts to groundwater, such as increased sedimentation through erosion, can also occur through impacts to surface water.

The proposed project is located in the Central Groundwater Province and is characterized by sand aquifers in generally thick sandy and clayey glacial drift overlying Precambrian and Cretaceous bedrock.[118] Fractured and weathered Precambrian bedrock is used locally as a water source. Groundwater in this province is linked with the lakes, streams and wetlands of the region and is generally considered to have good availability.[119]

The project area is located within a general area of low to medium groundwater susceptibility to contamination, based on a model from the MPCA.[120]

Potential Impacts

Impacts to groundwater due to the proposed project are anticipated to be minimal. Potential impacts to groundwater from the proposed project could occur indirectly through surface water or directly from structure foundations. Impacts to surface waters can lead to impacts to groundwater; thus, concerns are similar – i.e., construction activities which lead to sedimentation, directly or through disturbed soils and vegetation.

Direct impacts to groundwater could occur as a result of the construction and placement of transmission line structures. As noted earlier, structures are anticipated to be directly embedded. If concrete foundations are used, some portion of the soluble components of the concrete can leach into groundwater prior to the setting and hardening of the concrete. If dewatering is necessary to place the foundations, the water removed from foundation sites could contain sediments or pollutants that may be introduced into surface waters, which can have an impact on groundwater.

Mitigation

Impacts to groundwater can be mitigated by measures to prevent impacts to surface waters (see the discussion of the required stormwater protection plan in Section 2.6).

Direct impacts to groundwater, (leaching from concrete) are anticipated to be minimal due to limited use of concrete foundations for the project.

[118] DNR *Groundwater Provinces*. http://dnr.state.mn.us/groundwater/provinces/index.html.
[119] DNR (2005). Where is Groundwater and is it Available for Use? http://files.dnr.state.mn.us/waters/groundwater_section/sustainability/whereisGW.pdf
[120] http://www.dnr.state.mn.us/whaf/about/scores/geomorphology/gw_contamination.html

5.9.5 Wetlands

Wetlands provide valuable ecological services such as floodwater retention, nutrient assimilation, sediment entrapment, and wildlife habitat. Wetlands can be found in a variety of ecoregions and vary with soil, hydrology, and vegetation. Wetlands that are hydrologically connected to the nation's navigable rivers are protected federally under Section 404 of the Clean Water Act. Under the Clean Water Act, Section 401 water quality certification is also required for activities that may result in a discharge to waters of the United States. The MPCA administers Section 401 water quality certification on non-tribal lands in Minnesota. If the USACE authorizes the project under its General Permit/Letter of Permission permitting program, the MPCA waives its Section 401 Water Quality Certification authority. In Minnesota, wetlands are also protected under the Wetland Conservation Act, which is administered by the Board of Water and Soil Resources (BWSR) and the identified Local Government Unit.

The USFWS began producing maps of wetlands based on aerial photographs and Natural Resources Conservation Service soil surveys starting in the 1970s; these wetlands are known as the National Wetland Inventory (NWI). It is important to note that NWI wetlands are based on aerial imagery and are not field verified. Nevertheless, NWI wetlands provide a useful starting point for identifying potential wetland areas.

NWI maps show no wetlands in the proposed route (**Figure 7**). The closest wetland is over 1,200 feet west of the project. The USACE was contacted[121] requesting information on the possible effects of the proposed Project on wetlands in the project area. The USACE indicated "[t]he work proposed at the location stated is not within the regulatory jurisdiction of the Corps of Engineers."[122]

Potential Impacts

Construction and maintenance of the proposed project has the potential to result in long-term and temporary loss of wetlands or wetland function. Direct impacts would occur in areas where construction activities occur within wetlands. During construction, there is also the possibility for indirect impacts to wetlands from sediment as the ground is disturbed by excavation, grading and construction traffic.

Crossing a wetland does not necessarily mean that the wetland will be impacted; in some cases a wetland could be crossed by spanning it. However, where a wetland is crossed and such crossing requires construction activities within the wetland, there is a strong potential for impacts. Construction of transmission line structures typically includes vegetation clearing, movement of soils, and construction traffic. These activities could impair the functioning of wetlands. Even small changes in hydrology (e.g., periods of inundation, changes in flow, sedimentation) can impair the functioning of wetlands.

[121] RPA at Appendix D.
[122] Ibid.

Even in areas where wetlands can be span, tree clearing may be required along the ROW. This may result in the conversion from one wetland type (Forested/Shrub wetland) into another wetland type (Emergent wetland) within the ROW. The potential of habitat conversion due to the removal of woody vegetation and the associated continual maintenance of vegetation within the ROW would result in the permanent conversion of the cover types. Consequently, the types and magnitude of wetland functions would change. Typical examples of changed wetland functions could include wildlife habitat, flood flow attenuation, and sediment stabilization and retention. Areas affected by the removal of forest vegetation could also be subjected to increased thermal variations during the summer and winter.[123]

Mitigation

Potential impacts to wetlands can be mitigated by selecting routes and pole placements that avoid wetlands. If wetlands cannot be avoided, impacts can be mitigated by a variety of strategies including: use of construction mats, constructing during winter months when the ground is frozen, assembling structures on upland areas prior to site installation, and transporting crews and equipment, to the extent possible, over improved roads and via routes which minimize transit over wetlands.

Commission route permits require permittees to avoid and minimize wetland impacts (**Appendix B**). Implementation of best management practices includes, but is not limited to:

- Minimizing travel though wetlands by accessing wetlands using the shortest route and, where possible, accessing poles located near or in wetlands by roadways.
- When practicable, assembling structures on upland areas before bringing them to the site for installation.
- Placing staging and stringing setup areas away from water resources to the extent possible.
- Completing construction activities during frozen ground activities, when possible.
- Using construction mats to protect wetland vegetation.
- Potentially using all-terrain construction vehicles, designed to minimize impacts to soils in damp areas.

Due to the lack of wetlands intersecting the proposed route, impacts to wetlands is not anticipated from the construction or operation of the transmission line.

[123] WGC Demonstration Project EIS, DOE/EIS-0361. November 2007

5.9.6 Floodplains

Floodplains are low-lying areas that are subject to periodic inundation due to heavy rains or snowmelt. Floodplain areas are generally found adjacent to lakes, rivers and streams. In their natural state, floodplains provide for temporary water storage during flooding events.

Although the area of the proposed route has not yet been mapped for floodplains by the Federal Emergency Management Agency (FEMA),[124] a review of aerial photographs indicates that the proposed route does not intersect any floodplain areas.

Potential Impacts

Impact to the function of floodplains in the project area is not anticipated.

Mitigation

No impacts to floodplains are anticipated from the proposed project, therefore no mitigation measures are proposed.

5.9.7 Soils

Transmission lines have the potential to directly and indirectly impact soils. Direct impacts to soils result from movement or compaction. Removal of vegetative cover can cause indirect impacts to soils through increased susceptibility to erosion.

Soils in the project area have been formed by glaciation and alluvial deposits. The depth of glacial drift over bedrock varies from 100 to 500 feet. Soils in the area are generally very deep.

The Soil Survey Geographic Database (SSURGO) contains information about soil as collected by the National Cooperative Soil Survey over the course of a century. The information can be displayed in tables or as maps and is available for most areas in the United States and the Territories, Commonwealths, and Island Nations served by the USDA-NRCS. The information was gathered by walking over the land and observing the soil. Many soil samples were analyzed in laboratories. The maps outline areas called map units. The map units describe soils and other components that have unique properties, interpretations, and productivity.[125]

There are five soil associations along the proposed route. These soil associations are listed in **Table 11** and shown in **Figure 8**.

[124] Federal Emergency Management Agency, FEMA Flood Map Service Center, https://msc.fema.gov/portal/
[125] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053627

Potential Impacts

Construction activities have the potential to compact the soil as the result of the movement of heavy construction equipment. Vegetation will be cleared to facilitate construction of the project. This clearing will temporarily expose soils to the elements, which could cause soil erosion. Loss of soils during construction could adversely impact water resources in the area.

Table 11: Soil Associations in the Vicinity of the Project

Soil Association	General Description
Dorset-Corliss complex, 1 to 6 percent slopes (778B) Dorset-Corliss complex, 6 to 12 percent slopes (778C)	**Dorset-Corliss complexes** are flats with deep, well drained soils (loams over very gravelly coarse sand). Considered prime farmland soils.
Arvilla-Sandberg complex, 2 to 6 percent slopes (711B) Arvilla-Sandberg complex, 6 to 12 percent slopes (711C)	**Arvilla-Sandberg complexes** are hillslopes on outwash plains with somewhat excessively drained soils (sandy loams over gravelly coarse sand).
Pits, gravel-Udipsamments complex (1030)	**Pits, gravel-Udipsamments complexes** are lake plains, moraines, outwash plains with deep excessively drained sands over gravelly coarse sand.
Sandberg-Arvilla complex, 12 to 20 percent slopes (1242D)	**Sandberg-Arvilla complexes** are hillslopes with outwash plains that have a thin layer of coarse loamy sand over gravelly loamy coarse sand and gravelly coarse sand. Soils are somewhat excessively drained.
Fordville loam (339)	**Ford loams** are flats with deep, well drained soils (loams over very gravelly coarse sand). Considered prime farmland soils.

Mitigation

Potential impacts to soils can be mitigated by using BMPs and standard construction practices. A variety of methods can be employed to minimize soil erosion, including the prompt revegetation of disturbed soils. Common mitigation measure employed to minimize soil erosion include:

- Scheduling construction in wetland areas during frozen ground conditions where possible.
- Use of construction mats in wetland areas when construction cannot be performed during frozen ground conditions.
- Seeding to establish temporary and permanent vegetative cover on exposed soil.
- Using mulch to form a temporary and protective cover on exposed soils. Mulch can help retain moisture in the soil to promote vegetative growth, reduce evaporation, insulate the soil, and reduce erosion. A common mulch material used is hay or straw.

- Erecting or using sediment control fences that are intended to retard flow, filter runoff, and promote the settling of sediment out of runoff via ponding behind the sediment fence.
- Using erosion control blankets and turf reinforcement mats that are typically single or multiple layer sheets made of natural and/or synthetic materials that provide structural stability to bare surfaces and slopes.

Measures to mitigate soil erosion are standard Commission route permit conditions (see **Appendix B**).

5.9.8 Vegetation

Construction of transmission lines often requires the removal or disturbance of vegetation during construction. Additionally, vegetation may be impacted if invasive or non-native species is introduced to the ROW during construction or restoration, or by changes in habitat (e.g., soils, water flows) that adversely impact plant growth.

Construction and operation of the proposed project may cause short-term and/or long-term impacts on vegetation. The EA assesses impacts on vegetation by primarily using the USGS GAP land cover mapping (See Section 5.3 Environmental Setting) to identify vegetation cover within the proposed route.

Potential Impacts

The use of construction equipment during site preparation (grading, excavation, and soil stockpiling) may result in short-term adverse impacts on existing vegetation, including localized physical disturbance and compaction. Construction activities, such as site preparation and installation of structures, may have short-term impacts on vegetation. Construction activities involving establishment and use of access roads, staging, and stringing areas would also have short-term impacts on vegetation by concentrating surface disturbance and equipment use.

Construction activities would cause long-term impacts on vegetation by permanently removing vegetation at each structure footprint (24 to 36 inches diameter per structure) and within portions of the ROW that are currently dominated by forest or other woody vegetation. The Applicant would permanently convert forested areas and shrub lands to low-stature vegetation by clearing woody vegetation throughout the entire ROW.

Permanent loss of forest may lead to fragmentation by reducing intact blocks of forest vegetation and create long-term, regional, adverse, indirect impacts to species dependent on large contiguous blocks of interior forest. Construction-related removal of vegetation and conversion to open habitats could have indirect impacts on native vegetation by increasing the potential for spread of invasive species as well as increasing the effects of light penetration, wind, and humidity that occur more prominent at edges between habitats.

Construction-related clearing of woody vegetation within the ROW would result in the widening of existing corridors or bisecting (fragmenting) forests and shrub lands to establish new ROWs. Alteration of vegetation community composition and structure would occur at the edge of newly cleared forests or shrub lands.

In areas where the new transmission line would be located adjacent to an existing ROW (roadways, pipelines, electrical distribution lines), these effects would largely be limited to one side of the ROW and would not create newly fragmented areas. Impacts related to the permanent conversion of forest vegetation to low-stature open vegetation are expected to in areas where new or expanded ROW would be created and less so in situations where an existing ROW is overlaid.

Construction of any transmission line could lead to the introduction or spread of noxious weeds or other invasive species. Construction activities that could potentially lead to introduction of noxious weeds and invasive species include ground disturbance that leaves soils exposed for extended periods, introduction of topsoil contaminated with weed seeds, vehicles importing weed seed from a contaminated site to an uncontaminated site, and through conversion of landscape type, particularly from forested to open settings. Noxious weeds have potential to dominate and displace native plants and plant communities, permanently altering ecosystem functions.

In Minnesota, noxious weeds are managed at the state level through the Minnesota Department of Agriculture (MDA), which administers the Minnesota Noxious Weed Law. The MDA lists four categories of noxious weeds with differing levels of eradication, control, reporting, transport, sales, and propagation requirements. There are 12 weeds on the eradicate list, 8 on the control list, 5 restricted species, and 4 specially regulated plants. Prohibited noxious weeds "are known to be detrimental to human or animal health, the environment, public roads, crops, livestock or other property". None of the plants on these lists is to be transported, propagated, or sold in the state. Weeds on the list include annual, biennial, and perennial plants. Counties may create and administer their own lists of noxious weeds; however, the counties across the proposed project have not listed any species or rules above and beyond the MDA noxious weed lists.

The Applicant would routinely clear woody vegetation from the transmission line ROW in order to maintain low-stature vegetation that would not interfere with the transmission line. Maintenance and emergency repair activities could result in direct impacts on vegetation from removal of vegetation, localized physical disturbance, and compaction caused by the use of equipment. Maintenance and emergency repair-related impacts on vegetation would be short-term and more localized than construction-related impacts.

The GAP land cover data identified cropland, grassland, and forest areas as the dominate cover types throughout the project area (**Figure 5**).

Mitigation

The proposed route follows existing infrastructure (road and transmission ROW) for the majority of its length. By so doing, the proposed route places new HVTL where there is already existing linear infrastructure, this tends to minimize the impacts of vegetation loss, the creation of fragmented areas, the clearing of trees to facilitate access to the transmission line ROW, and conversion of forested areas to low-stature ground cover.

Impacts to non-forested areas will be temporary and will primarily occur during construction of the proposed project. To minimize impacts to trees the Applicant will limit tree clearing and removal to the HVTL ROW and areas that impact the safe operation of the facilities.[126] Trees (danger trees) outside the ROW that may need to be trimmed or removed will primarily include trees that are unstable and could potentially fall into the transmission facilities; the Applicant will work with and compensate landowners for removal of trees not in the ROW.[127]

Potential impacts to vegetation can be mitigated by using BMPs and standard construction practices to minimize soil erosion (including the prompt revegetation of disturbed soils) and conducting surveys for sensitive plants during appropriate periods of the growing season to properly identify their presence and/or absence along the selected ROW before clearing begins. If sensitive plants or communities are identified during surveys, individual avoidance and minimization measures would be evaluated and submitted to the appropriate resource agencies. Preparation and development of a Vegetation Management Plan, in consultation with resources agencies, is a common condition of Commission HVTL route permits (see **Appendix B**).

Mitigation measures to reduce the spread of nonnative plant species during construction include: regular frequent cleaning of construction equipment and vehicles; minimization of ground disturbance to the greatest degree practicable and rapid revegetation of disturbed areas with native or appropriately certified weed-free seed mixes; conducting field surveys of the ROW prior to construction to identify areas that currently contain noxious weed (weed surveys during construction would identify infestations of the ROW and staging sites); attending to new infestations within the ROW by identifying and eradication as soon as practicable in conjunction with property owners input.

5.9.9 Wildlife

The landscape types and vegetation communities throughout the project area provide forage, shelter, nesting, overwintering, and stopover habitat for a wide range of resident and migratory wildlife species; wildlife species may include ruffed grouse, sharp-tail grouse, partridge, rabbits, squirrels, red and gray fox, raccoon, deer, bear, muskrat, mink, beaver, migratory waterfowl (geese, ducks, trumpeter swans, herons) and various birds (meadowlark, field sparrow, thrush,

[126] RPA at 6-4.
[127] Ibid.

woodpeckers, shore birds). Habitat types in the project area are diverse and range from grassland habitat types to forested habitat types.

Construction and operation of the proposed project may cause short-term and long-term impacts on wildlife resources. The EA assesses impacts on wildlife by evaluating the vegetation cover/habitat in the ROW, the proximity of the ROW to sensitive wildlife habitats, and known occurrences of sensitive wildlife species.

Potential Impacts

Construction activities that generate noise, dust, or disturbance of habitat may result in short-term indirect impacts on wildlife. During construction of the proposed project, wildlife would generally be displaced within the anticipated ROW. These impacts are expected to be short-term and localized. Common species habituated to human presence may continue to utilize habitats adjacent to the ROW during construction.

Construction of the proposed project may result in long-term adverse impacts on wildlife from the loss or conversion of habitat and habitat fragmentation. The proposed project would expand an existing cleared corridor, which may convert some areas from forest and shrub land to low-stature vegetation. The Applicant would permanently clear woody vegetation within the anticipated ROW by widening an existing ROW. Wildlife species previously occupying forested communities in the ROW would be displaced in favor of species that prefer more open vegetation communities.

Impacts are expected to be incremental and localized in situations where an existing ROW is expanded.

Conversion of vegetation cover type alters species use by changing plant community composition and structure. When forested plant communities are converted to open communities, there are corresponding changes in wildlife communities. Species that rely on well-developed forest canopies for nesting, foraging, or shelter are displaced from the portion of the landscape where this alteration occurs. Species that rely on shrubby or grassland habitats may be less susceptible to, and may even benefit under alterations associated with transmission lines because they would undergo fewer changes in vegetation community structure and environmental factors, such as light intensity.

Habitat fragmentation reduces the size of contiguous blocks of vegetation, such as forest; this reduces the total area of contiguous habitat available to wildlife species and increases the isolation of the habitat. Opportunistic and adaptable animals often succeed in highly fragmented habitats. Non-native invasive or pioneering plant species may encroach where disturbance provides a competitive advantage and an avenue of introduction, such as where habitat fragments occur. The alteration of plant community composition and structure can adversely affect those species that rely on the presence of certain plant species or vegetative cover. Fragmentation effects are greatest where large contiguous blocks are broken up into

smaller patches that reduces interior forest habitat necessary for some species such as song birds. The effects would generally be greatest where new corridor is created, rather than where the transmission line expands or parallels existing infrastructure ROWs (roadways and electrical transmission/distribution lines).

The Applicant would routinely maintain the ROW to support low-stature non-woody vegetation; emergency repairs may require additional vegetation clearing. Operation, maintenance, and emergency repair activities may have long-term indirect impacts on wildlife, including the displacement of birds, burrowing animals, and other species utilizing the ROW or its vicinity for foraging, breeding, or nesting. These impacts are expected to be long-term and localized.

Operation of the proposed project may result in long-term impacts on wildlife, including the potential risk of avian collisions with transmission conductors and equipment, which could result in injury or death of individuals.

Increased risk of avian collisions and potential electrocution with transmission conductors and equipment is possible with the development of all transmission lines. Electrocution occurs when an arc is created by contact between a bird and energized lines or an energized line and grounded structure equipment. Electrocution occurs more frequently with larger bird species, such as hawks, because they have wider wingspans that are more likely to create contact with the conductors.

Transmission lines may present the possibility for avian collisions. Several factors, such as body size, weight, and flight behavior, affect the potential for birds to collide with overhead power lines. Larger birds, such as waterfowl, are generally the most likely to collide with transmission lines. Impacts are likely to be higher around features that attract birds, such as wetlands, lakes, and feeding sites.

Mitigation

Displacement of fauna is anticipated to be minor and temporary in nature, and no long-term population-level impacts are anticipated from the proposed project.

Electrocution occurs more frequently with distribution lines than transmission lines, because the conductors are often closer together or closer to grounded hardware on distribution lines. Because the structures would be larger and the phase spacing for the proposed project's conductors greater compared to distribution lines, avian electrocutions are unlikely.

The Applicant will construct the HVTL according to Avian Power Line Interaction Committee (APLIC) recommended safety design standards regarding avian collisions and avian electrocution with HVTLs.

5.9.10 Rare and Unique Natural Resources

The ROI for rare and unique natural resources varies for species and communities. The ROI for an analysis of impacts to federally and state-listed species includes a one-mile buffer surrounding the proposed routes in order to obtain a broad view of species that may be present, since no formal surveys have been conducted for the proposed project. The ROI for the analysis of impacts to rare communities includes the anticipated ROW of the proposed transmission line and the footprint of the other elements of the proposed project.

Minnesota Statutes, Section 84.0895, Protection of Threatened and Endangered Species, requires the MNDNR to adopt rules designating species as endangered, threatened, or species of special concern. The resulting list of these species is codified in Minnesota Rules, Chapter 6134, Endangered Threatened, and Special Concern Species. The Endangered Species Statute also authorizes the MNDNR to adopt rules that regulate treatment of species designated as endangered and threatened at the state level at Minnesota Rules, part 6212.1800 to part 6212.2300, Threatened and Endangered Species.

A state-listed endangered species is defined as a species threatened with extinction throughout all or a significant portion of its range within Minnesota. A state-listed threatened species is defined as being likely to become endangered in the foreseeable future throughout all or a significant portion of its range in Minnesota. A species is considered to be of special concern if, although the species is not endangered or threatened at the state level, it is extremely uncommon in Minnesota or has unique or highly specific habitat requirements that deserves careful monitoring of its status. Minnesota's Endangered Species Statutes and the associated rules impose a variety of restrictions, including a take permit program, and several exemptions pertaining to threatened or endangered species. Species of special concern, though often ecologically important, are not protected by Minnesota's Endangered Species Statue or the associated rules.

The MNDNR has established several classifications of rare communities across the state, including SNAs, MBS Sites of Biodiversity Significance, MNDNR High Conservation Value Forest, and MBS native plant communities.

SNAs are areas of land designated to preserve natural features and rare resources of exceptional scientific and educational values.

The MNDNR MBS assigns a biodiversity significance rank to all sites surveyed across the state. These ranks are used to communicate statewide native biological diversity of each site and help to guide conservation and management activities. There are four biodiversity significance ranks: outstanding, high, moderate, and below. A site's biodiversity significance rank is based on the presence of rare species populations, the size, and condition of native plant communities within the site, and the landscape context of the site.

The MNDNR MBS also identifies native plant communities across the state. A native plant community is a group of native plants that interact with each other and their environment in ways that have not been greatly altered by modern human activity or introduced organisms. Native plant communities provide a range of ecological functions that are increasingly recognized as valuable for the quality of life in Minnesota. In addition to the habitat value native plant communities provide, they have also played an important role in the development of Minnesota's cultural history and heritage.

MNDNR High Conservation Value Forests are broadly defined as areas of outstanding biological or cultural significance. The MNDNR is required by Minnesota Statutes, chapter 89, State Forests; Tree Planting; Forest Roads and Minnesota Statutes, Chapter 89A, Sustainable Forest Resources, to manage a broad set of objectives and forest resources, including the management and protection of rare species, communities, features, and values across the landscape.

A desktop review of the Natural Heritage Inventory System (NHIS) records provided by the DNR indicates no rare features within the proposed route. The DNR was contacted[128] requesting information on the possible effects of the proposed Project on rare and unique features in the project area. The DNR responded they "do not believe the proposed Project will negatively affect any known occurrences of rare features."[129]

The USFWS list of federally threatened, endangered, proposed, and candidate species was reviewed by the Applicant to obtain information on federally-listed species that could be present in the project area.[130] Within Becker County, the gray wolf (*Canis lupus*; federally threatened), the northern long-eared bat (*Myotis septentrionalis;* federally threatened*)* and the Canada lynx (*Lynx Canadensis*; federally threatened) are known to occur.

Gray wolf. The gray wolf was federally listed as an endangered species in 1974 and was reclassified as threatened in 1977 (42 Federal Register 29527-29532). In 2011, the wolf was delisted by the USFWS (76 Federal Register 57943-57944). However, in 2014, a federal court reversed the USFWS decision to delist the gray wolf, restoring federal threatened status and designated critical habitat in Minnesota. Gray wolves occupy a diversity of habitats, including forests, prairies, and swamps. There is no designated critical habitat for gray wolf in the project area.[131]

Northern long-eared bat. The northern long-eared bat was proposed for listing as a federally endangered species in 2013 (78 Federal Register 61046-61080). In April of 2015, the USFWS listed the northern long-eared bat as federally threatened (80 Federal Register 18023-18028). The northern long-eared bat inhabits caves and mines in winter; in summer northern long-

[128] RPA at Appendix D.
[129] Ibid.
[130] Ibid.
[131] http://ecos.fws.gov/docs/frdocs/1978/78-6192.pdf

eared bats roost in live and dead trees with loose, flakey, or shaggy bark, crevices, or hollows. The USFWS has not identified designated critical habitat for the northern long-eared bat at this time.[132]

Canada lynx. The Canada lynx was listed as a federally threatened species in several states in the Northeast, Great Lakes Region (including Minnesota), and Southern Rockies in 2000 (65 Federal Register 16052-16086). Canada lynx inhabit boreal and mixed coniferous and deciduous forests, where snowshoe hare, their preferred diet, are present. There is no designated critical habitat for the Canada lynx in the project area.[133]

The USFWS was contacted[134] and in their response, indicated that they "have no significant concerns and no comments to provide."

There are no State Parks, State Forests, Scientific and Natural Areas (SNA), Wildlife Management Areas (WMA), Conservation Value Forest, county parks, or federal forests or refuges within the proposed route.

Potential Impacts

Construction and operation of the proposed project may cause short-term and long-term impacts on rare and unique natural resources. The EA assesses impacts on rare and unique natural resources by evaluating the presence of rare species and their associated habitats within or near the ROW.

Mitigation

The proposed route follows or overlays existing infrastructure for the majority of its length. By so doing, the proposed route places the new HVTL where there is already existing linear infrastructure (roadways and electrical transmission/distribution lines), this tends to minimize the impacts on rare and unique natural resources (flora, fauna, and communities).

As part of the standard Vegetation management Plan requirement, or as a Special Condition in the HVTL route permit (**Appendix B**), the Applicant may be required to conduct field surveys to identify any rare species prior to construction within the ROW of the selected route.

The bald eagle is not protected by the state or federal threatened and endangered species programs in Minnesota; however, under the Bald and Golden Eagle Act, bald eagle nest structures may not be removed, regardless of bird activity or time of year. As a potential Special Condition within the HVTL Route permit (**Appendix B**), if a nest is identified in a tree which would otherwise require removal for construction of the transmission line, this tree must

[132] https://www.fws.gov/Midwest/endangered/mammals/nleb/index.html
[133] https://www.fws.gov/midwest/Endangered/mammals/lynx/lynxMNmapCh.html
[134] RPA at Appendix D.

be marked for preservation and appropriate avoidance measures employed, including buffer zones, time of year work restrictions, or project realignment if necessary.

5.10 Cumulative Impacts

In addition to analyzing the direct and indirect impacts of the proposed project, Minnesota's environmental review rules require the evaluation of "cumulative potential effects" which is defined as "the effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects" (Minnesota Rules, part 4410.0200, subpart 11).

When making the determination as to what is "reasonably likely to occur", EERA considers whether any applications for permits have been filed with any units of government or whether detailed plans and specifications have been prepared for the project, among other considerations.[135] A project need not be permitted to be reasonably likely to occur.

Past actions are those actions and their associated impacts that occurred within or influenced the geographic region of influence of each resource and have shaped the current affected environment of the proposed project area. For the purposes of this EA, actions that have occurred in the past (e.g., conversion of the Lake Eunice Substation) and their associated impacts are now part of the existing environment and are included in the affected environment described in Chapter 5.

5.10.1 Associated Actions – Lake Eunice Substation

The Lake Region Electric Cooperative Lake Eunice Substation is located at 10168 St. Mary's of the Lakes Road, Lake Eunice Township, Becker County Minnesota (**Figure 2**). The LREC property consists of approximately two-acres (PID 170402000).

In order to improve electrical service to their members LREC is planning to upgrade the existing Lake Eunice Substation. The upgrade project will include grading an area of approximately 90 feet wide by 170 feet deep to accommodate a substation fenced area situated on the existing two-acre LREC parcel.

The primary components of the substation will include:

- 8-foot-high chain link fence and topped with one-foot-high barbed wire;
- Grounding components;

[135] Minn. R. 4410.0200, subp. 11a

- 10 MVA 115-kV / 12.47-kV transformer;
- High side structure with switch and breaker equipment;
- Distribution feeder bays with distribution rated protection equipment; and
- Control building, structural steel, and other electrical equipment.

The equipment will sit on concrete foundations, while the remainder of the fenced-in area surface is covered with three inches of crushed rock.

LREC is plan was to perform some grading of the site by the end of 2019. The remaining design and construction activities are planned to take place in late 2020. Finally, upon the completion of the project the old substation will be dismantled, and the property will be restored.

Construction projects such as the Lake Eunice Substation upgrade have the potential to impact the surrounding areas through exposing soils to wind and water erosion. Implementation of BMPs serve to minimize these potential impacts, and may include containing excavated materials, protecting exposed soils, and stabilizing disturbed areas with appropriate vegetative cover.

Projects that disturb one or more acres of land require a general National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater permit from the Minnesota Pollution Control Agency (MPCA). This permit is issued to "construction site owners and their operators to prevent stormwater pollution during and after construction."[136] The NPDES/SDS permit requires (1) use of best management practices, (2) development of a Stormwater Pollution Prevention Plan (SWPPP), and (3) adequate stormwater treatment capacity once the project is complete.

No long term impacts are anticipated from the upgrading of the LREC Lake Eunice Substation.

5.10.2 Associated Actions – Removal 2.85 Miles 14.6 kV Line

Upon completion of the conversion of that portion of the existing 41.6 kV line between the Lake Eunice Substation and the existing LR-CF transmission line (the Project), the portion of the existing 14.6 kV line between structure 161 and the Audubon Switch (2.85 miles) will be removed by Lake Region Electric Cooperative (**Figure 1**).

The DNR Public Waters Work Permit Program applies to those lakes, wetlands, and streams identified on DNR Public Water Inventory maps. Proposed projects potentially affecting the course, current, or cross-section of these water bodies require a Public Waters Work Permit from the DNR.

[136] Minnesota Pollution Control Agency (November 19, 2015) *Stormwater Program for Construction Activity*, Retrieved December 9, 2015, from: http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/construction-stormwater/index.html.

Public waters are present along the existing 14.6 kV line from the Audubon Switch to Structure 161 and may require Lake Region Electric Cooperative to obtain a DNR license to cross public waters and a DNR public waters work permit prior to removal of the line to ensure that adequate measures are taken to be protective of public lands and waters.

Lake Region Electric Cooperative is aware that there are public waters present on the 2.85 mile segment and will work with the Minnesota Department of Natural Resources to acquire all permits that may be required prior to any work starting.

Additionally, the 2.85 mile segment of the 14.6 kV scheduled for removal by Lake Region Electric Cooperative crosses US highway 10 and will require a MnDOT Miscellaneous Permit (Form 1723), along with the requisite Traffic Control measures (Traffic Control Manual).

Lake Region Electric Cooperative is aware of the potential requirements associated with working within the US Highway 10 ROW and will work with the Minnesota Department of Transportation on any permit that may be required.

5.10.3 Cumulative Impacts

In addition to temporal factors, the potential for cumulative impacts also depends on spatial factors within the environment, which can vary for the resources evaluated in this EA. For example, the geographic area of consideration for cumulative impacts could be limited to the discrete area of disturbance for vegetation resources but also include all vantage points for visual resources. The geographic ROI for cumulative impacts includes the areas in which the proposed project and reasonably foreseeable future actions directly and indirectly impact resources, and corresponds to the ROIs described in *Regions of Influence for Human and Environmental Resources.*

Cumulative impacts analysis must be conducted within the context of the resources evaluated in this EA. The magnitude and context of the effect on a resource depends on whether the cumulative effects exceed the capacity of a resource to sustain itself and remain productive.[137] If cumulative impacts are expected to exceed these thresholds, they would be considered significant.

Given the relative small size of the proposed project, its anticipated minimal human and/or environmental impact, and the geographical location, EERA is unaware of any compounding projects within the region of influence.

[137] Council on Environmental Quality – Executive Office of the President. Considering Cumulative Effects under the National Environmental Policy Act. January 1997.

6 Unavoidable Impacts

During construction of the proposed HVTL, there would be temporary unavoidable adverse impacts on the existing flora and fauna, soil, and traffic; in those locations where construction would occur adjacent to an existing ROW (roadways and electrical distribution/transmission lines) the impacts would be expected to be minimized. Some of these impacts may occur, on a lesser scale, during maintenance of the transmission line. Longer-term, adverse impacts related to construction and maintenance of the proposal transmission line include loss of forested areas within the ROW; visual impacts; impacts to migratory birds from collisions with the lines; and potential impacts to property values.

There are few commitments of resources associated with the proposed 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 replaced 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.

The proposed project will require the commitment of land (a ROW of approximately 0.8 miles in length and 90 feet wide) and while it is possible that the structures and conductors could be removed, and the ROW returned to the natural landscape, this is unlikely to happen in the foreseeable future.

The proposed project may result in the loss of some forest areas. While these are not irreplaceable, replacing them will take a significant amount of time. The ROW for certain land uses will be lost, but since the new HVTL will overlay the existing 14.6 kV line's ROW, the increased land area would be incremental. In most cases, this ROW can continue to be used for many purposes; however, some other areas, such as forested areas or areas that could have been used for other construction, will be converted during the lifetime of the project.

Construction resources that could be used include aggregate resources, concrete, steel, and hydrocarbon fuel. These resources would be used to construct the project. During construction, vehicles would be traveling to and from the site utilizing hydrocarbon fuels. However, once built, the proposed HVTL will not consume raw materials.

FIGURES

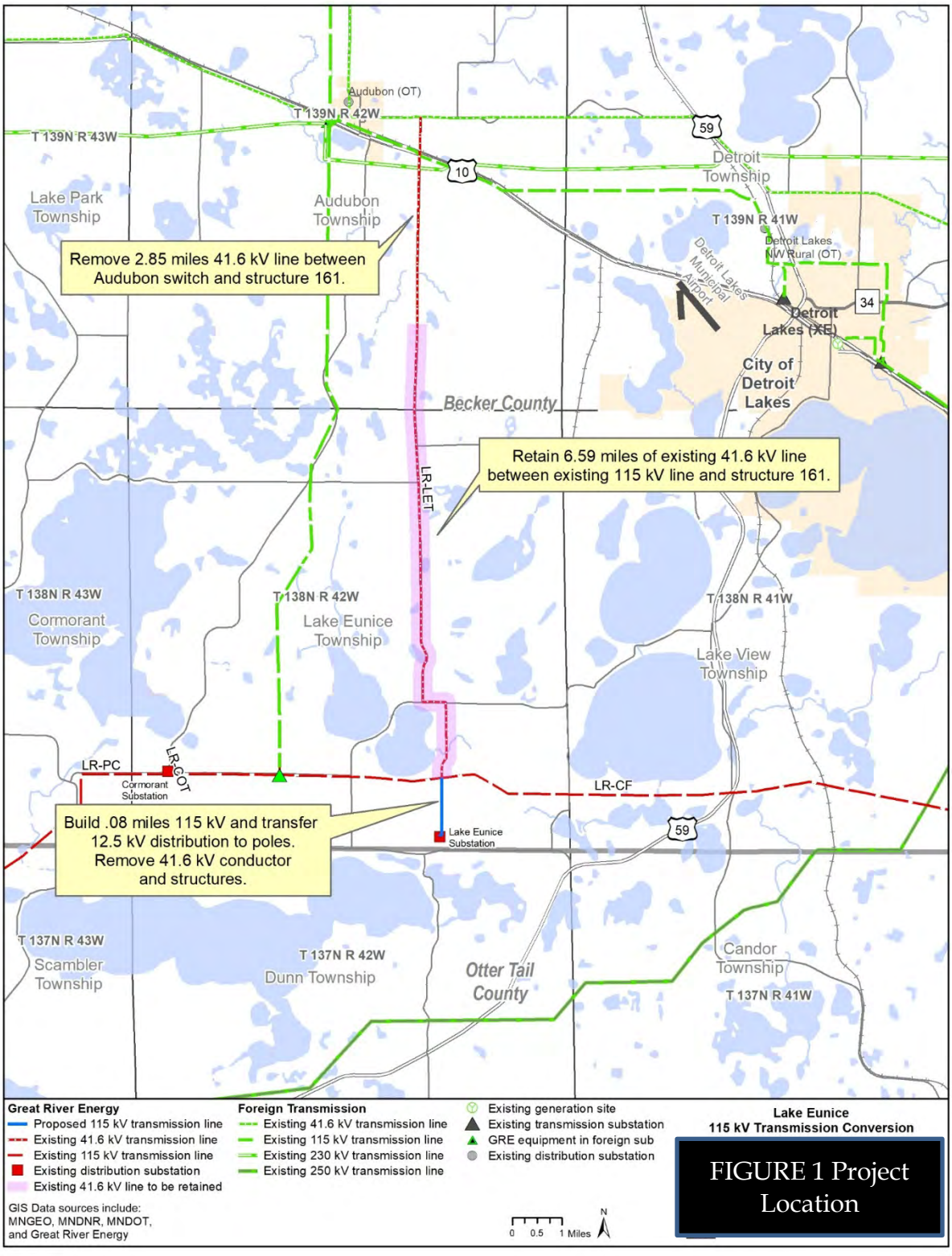
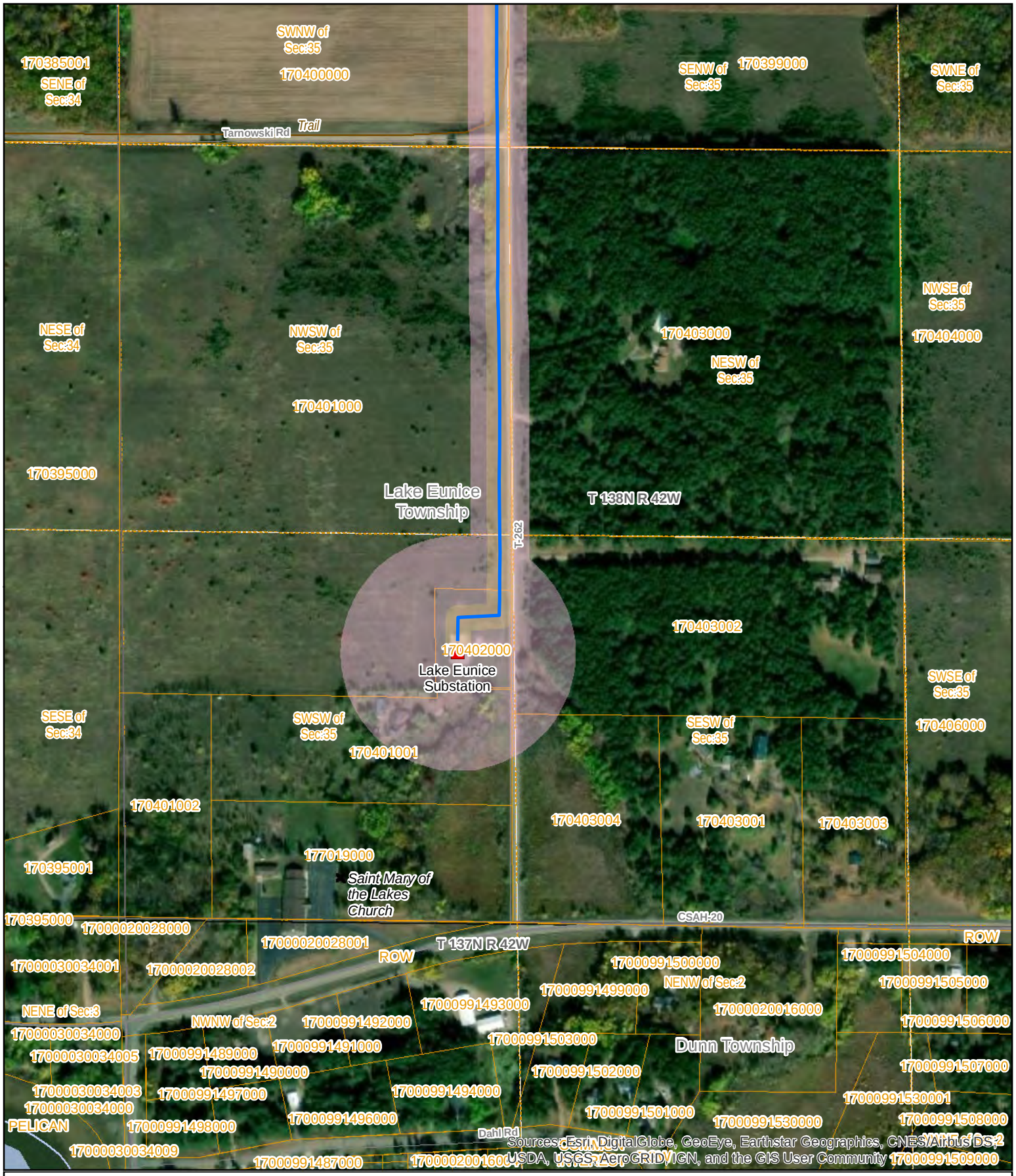


FIGURE 1 Project Location



Great River Energy

- Proposed 115 kV transmission line
- Existing 41.6 kV transmission line
- Existing distribution substation
- 90 ft ROW width
- 200 ft project width
- 400 ft substation buffer

N

0 250 500 Feet

GIS Data sources include: MNGEO, MNDNR, MNDOT, and Great River Energy

Lake Eunice
115 kV Transmission Conversion
FIGURE 2 - Detailed Route Map

Great River Energy

- Proposed 115 kV transmission line
- Existing 41.6 kV transmission line
- Existing 115 kV transmission line
- 90 ft ROW width
- 200 ft project width

GIS Data sources include: MNGEO, MNDNR, MNDOT, and Great River Energy

N

0 250 500 Feet

Lake Eunice
115 kV Transmission Conversion
FIGURE 3 - Detailed Route Map

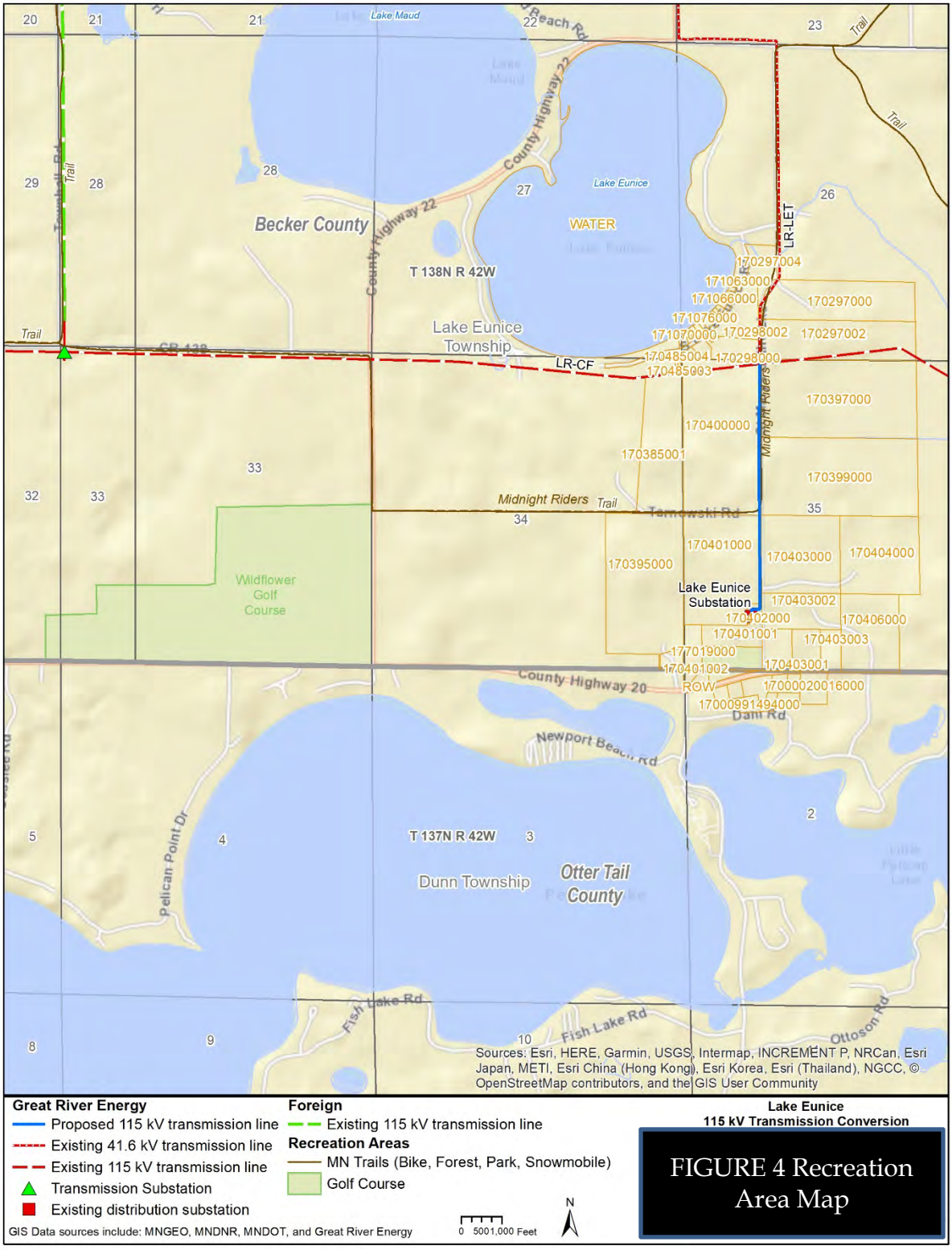


FIGURE 4 Recreation Area Map

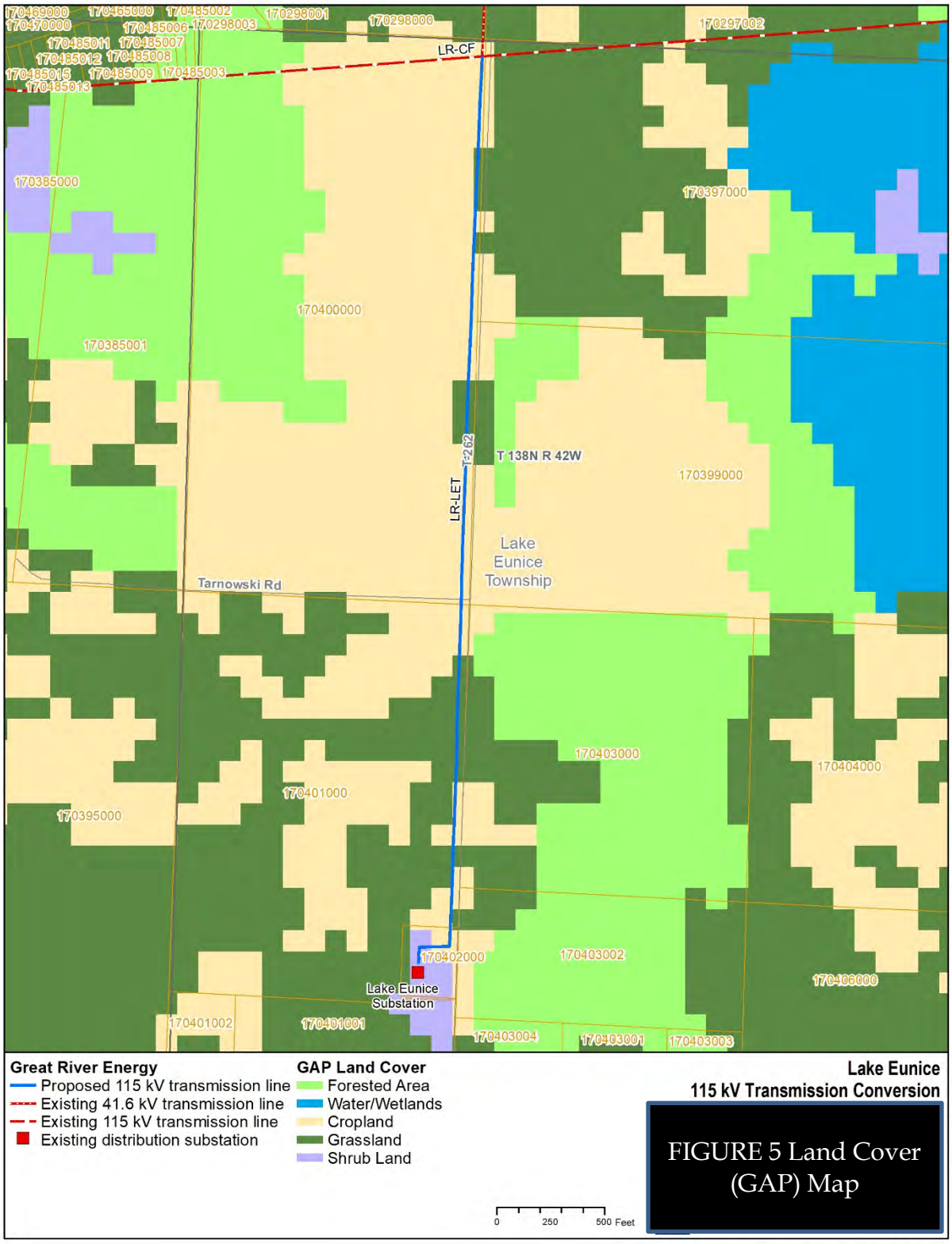


FIGURE 5 Land Cover (GAP) Map

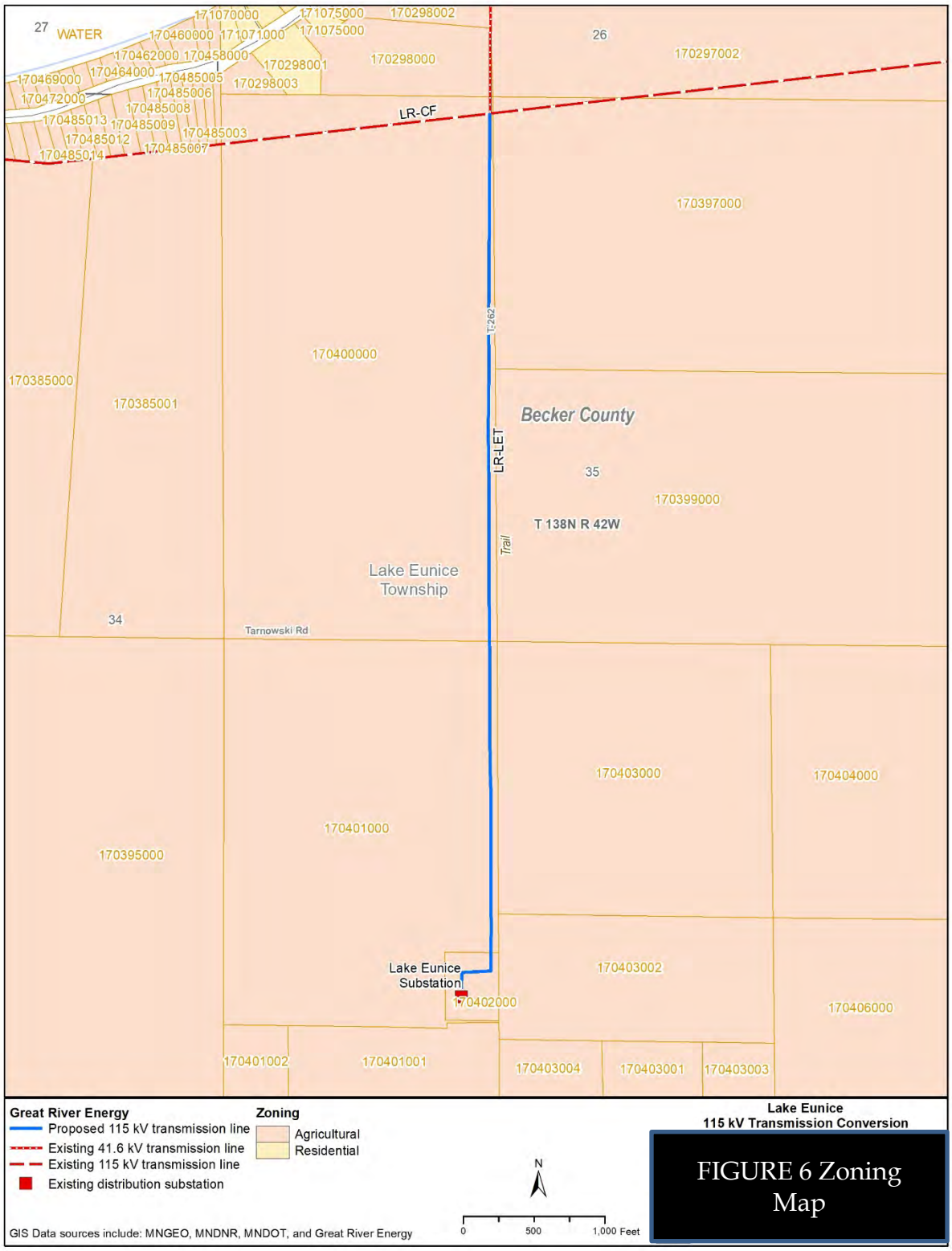
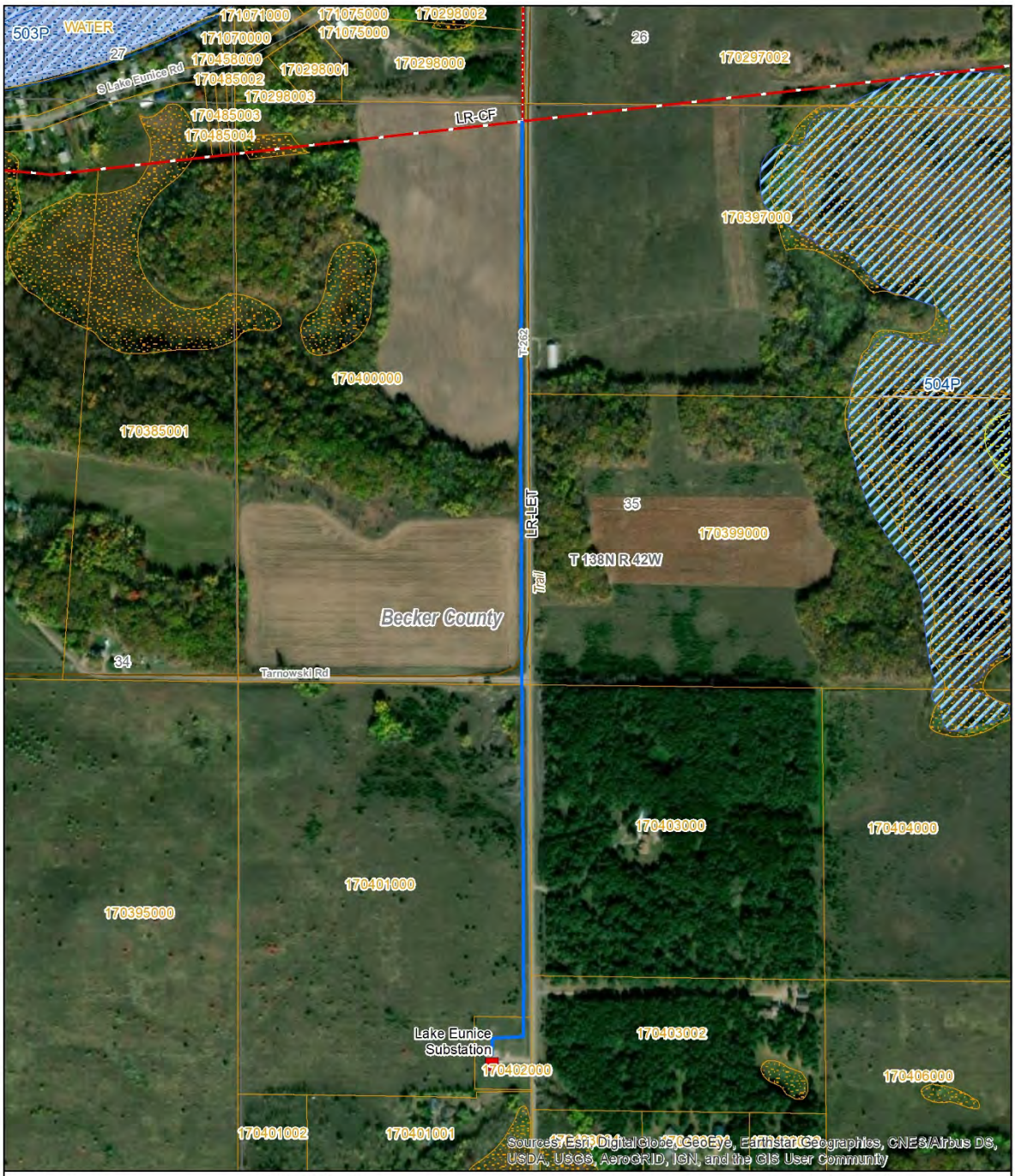


FIGURE 6 Zoning Map


503P
WATER
27
S Lake Eunice Rd
171071000
171075000
170298002
171070000
171075000
170298000
170298001
170485000
170485002
170298003
170485003
170485004
LR-CF
26
170297002
170397000
504P
T262
170400000
170385001
LR-LET
35
170399000
T 138N R 42W
Trail
Becker County
34
Tarnowski Rd
170403000
170404000
170401000
170395000
Lake Eunice Substation
170402000
170403002
170406000
170401002
170401001
Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Great River Energy
Proposed 115 kV transmission line
Existing 41.6 kV transmission line
Existing 115 kV transmission line
Existing distribution substation
NWI Wetlands
Freshwater Emergent Wetland
Freshwater Pond
Lake
PWI Lakes
PWI Lake
GIS Data sources include: MNGEO, MNDNR, MNDOT, and Great River Energy.
Aerial Imagery from ESRI Imagery basemap webservice.
0 250 500 Feet
N
Lake Eunice
115 kV Transmission Conversion
Substation Project
FIGURE 7 Hydrologic Features Map

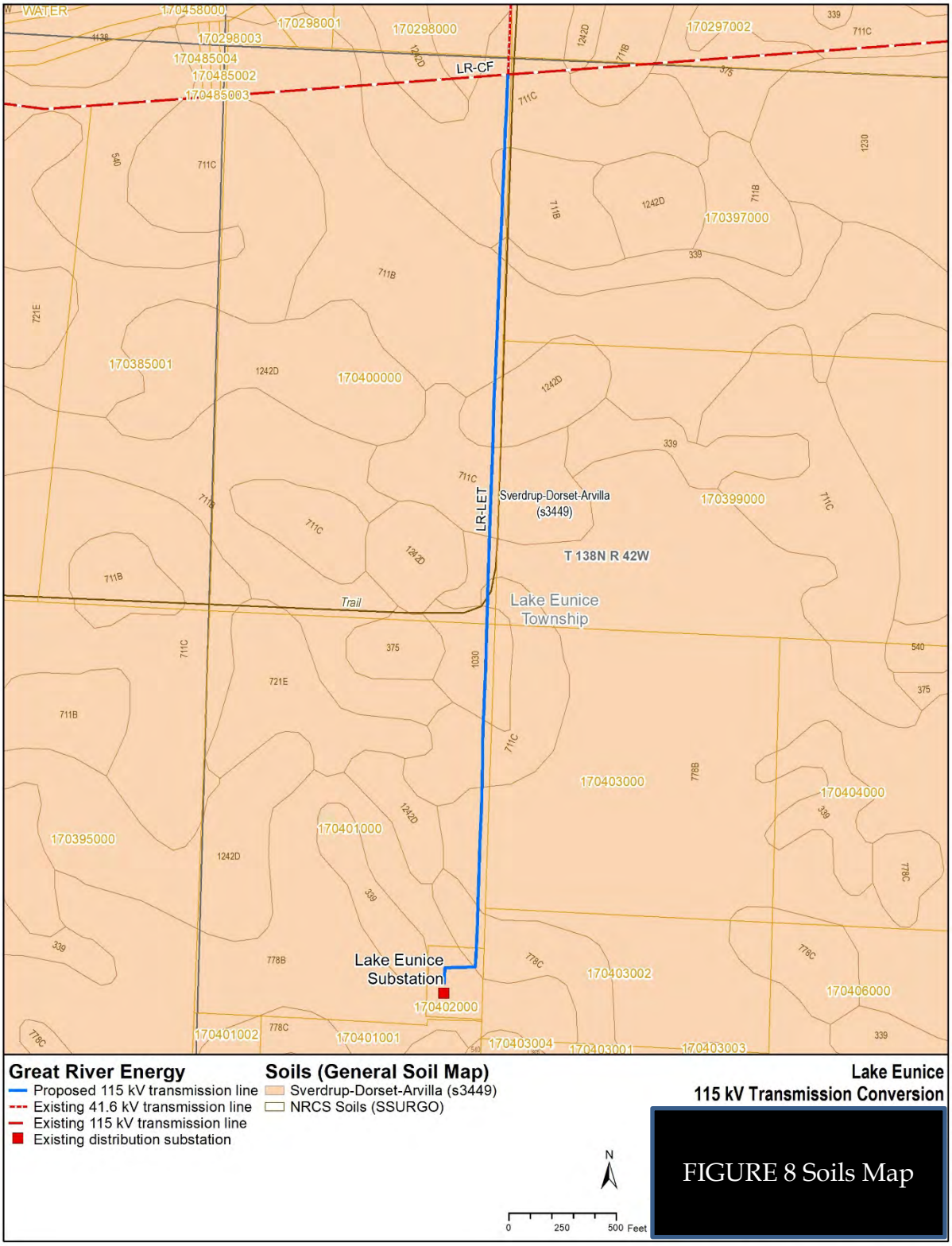


FIGURE 8 Soils Map

APPENDIC A
EA SCOPING DECISION

COMMERCE DEPARTMENT

In the Matter of the Application of Great River Energy for a HVTL Route Permit for the Lake Eunice 115 kilovolt (kV) Conversion Project in Becker County
PUC Docket No. ET2/TL-19-311

ENVIRONMENTAL ASSESSMENT SCOPING DECISION

The above matter has come before the Assistant Commissioner of the Department of Commerce (Department) for a decision on the scope of the Environmental Assessment (EA) to be prepared for the Great River Energy (GRE) Lake Eunice 115 kilovolt (kV) Conversion Project in Becker County.

Project Description and Purpose

The project is being proposed to improve electrical service to members in the rural area southwest of Detroit Lakes, Minnesota including Lake Eunice, Dunn and Lake View townships (**Figure 1**). These proposed upgrades will allow over ten miles of 41.6 KV radial transmission to be replaced by a 0.8 mile 115 KV loop fed transmission line. This new line will improve the reliability of the transmission feeding the existing Lake Eunice Substation and thus improve the reliability for the approximate 2,000 members served off of this substation.

After the conversion to 115 kV, the south 0.8 mile and north 2.85 miles of the 41.6 kV conductor will be removed. Lake Region Electric Cooperative will own the remaining 6.59 miles of the 41.6 kV line for distribution purposes and retain all existing distribution lines in the area.

Regulatory Background

In Minnesota, no person may construct a high voltage transmission line (HVTL) without a route permit from the Commission (Minnesota Statute 216E.03). A HVTL is defined as a conductor of electric energy designed for and capable of operation at a voltage of 100 kV or more and greater than 1,500 feet in length (Minnesota Statute 216E.01, Subd. 4).

The proposed project will consist of a new 115 kV transmission line in excess of 1,500 feet and therefore requires a route permit from the Commission.

Route Permit Application and Acceptance

Minnesota Rule 7850.2800 states applicants intending to submit a project under the Commission's alternative permitting process for transmission lines are required to provide a 10-day advance notice of this intent to the Commission before submitting their route permit application. GRE provided that notice[1] on May 8, 2019.

The voltage of the new transmission line will be between 100 and 200 kV, so the project qualifies for the Commission's alternative permitting process (Minnesota Rule 7850.2800, subp. 1C).

Route permit applications for HVTLs must provide specific information about the proposed project including, but not limited to, applicant information, route description, and potential environmental impacts and mitigation measures (Minnesota Rule 7850.3100). Review under the alternative permitting process does not require the applicant to propose

[1] Notice of Intent to Submit a Route Permit Application under the Alternative Permitting Process for the GRE 115 kilovolt conversion, May 8, 2019, eDocket no. 20196-153418-01.

alternative routes in the permit application. However, if the applicant has evaluated and rejected alternative routes they must include these and the reasons for rejecting them in the route permit application.

The Commission may accept an application as complete, reject it and require additional information to be submitted, or accept it as complete upon filing of supplemental information (Minnesota Rule 7850.2000). The environmental review and permitting process begins on the date the Commission determines that a route permit application is complete. The Commission has six months from the date of this determination to reach a route permit decision; though the decision can be extended for three months for cause, or with the applicant's agreement (Minnesota Rule 7850.3900).

In an Order dated August 5, 2019, the Commission accepted the HVTL Route Permit Application as complete and authorized review under the alternative permitting process defined in Minn. Stat. § 216.04 and Minn. R.7850.2800 to 7850.3900 and referred the matter to the Office of Administrative Hearings for appointment of an Administrative Law Judge to prepare a Summary Report.[2]

Environmental Review

Applications for HVTL route permits are subject to environmental review conducted by EERA staff (Minnesota Rule 7850.3700). Projects proceeding under the alternative permitting process require the preparation of an Environmental Assessment (EA).

An EA is a document which describes the potential human and environmental impacts of the proposed project and potential mitigative measures. This is the only state environmental review document required for the project (Minnesota Statute 216E.04, subd. 5). Staff provides notice and conducts a public scoping meeting to solicit comments on the scope of the EA.

The Department of Commerce Commissioner (delegated to Assistant Commissioner Katherine Blauvelt) determines the scope of the EA. The Department may include alternative routes suggested by the public in the scope of the EA if such alternatives will aid in the Commission's decision on the route permit application.

Under Minn. R. 7850.3700, subp. 3, the scope of the EA must be determined by the Department within 10 days after the closing of the public comment period.

Minn. Stat. § 216E.04, subd. 5 anticipates, however, that the Commission will have the opportunity to identify other routes for consideration prior to environmental review of a project. The statute states that the EA must contain information on the proposed project, as well as on other routes identified by the Commission. The rule's ten-day timeline for determining the scope of the environmental assessment after the close of the public comment period constrains the Commission's ability to evaluate public input and identify other possible routes prior to environmental review.

Under Minn. Rules, part 7829.3200, the Commission has the authority to vary its rules, and in this docket has chosen to vary Minn. R. 7850.3700, subp. 3, to extend the 10-day timeline.

The EA will be completed and made available prior to the public hearing for the project.

Under Minnesota Rule, 7850.3700, subp. 4, the EA must include the following:

A. A general description of the proposed project;
B. A list of any alternative sites or routes that are addressed;

[2] Commission Order finding the application complete and referring the matter to the OAH, August 5, 2019. eDocket No. 20198-154930-01.

C. A discussion of the potential impacts of the proposed project and each alternative site or route on the human and natural environment;
D. A discussion of mitigative measures that could reasonably be implemented to eliminate or minimize any adverse impacts identified for the proposed project and each alternative;
E. An analysis of the feasibility of each alternative site or route considered;
F. A list of permits required for the project; and
G. A discussion of other matters identified in the scoping process.

Scoping Summary

On September 9, 2019, Commission and EERA staff sent notice of the place, date and time of the Public Information and Scoping meeting to local government units and those persons on the Project contact/general list.[3]

Commission staff and EERA staff jointly held a Public Information and EA Scoping meeting at the Holiday Inn in Detroit Lakes on September 25, 2019. The purpose of the meeting was to provide information to the public about the proposed Project, to answer questions, and to allow the public an opportunity to suggest alternatives and impacts (i.e., scope) that should be considered during preparation of the environmental review document. A court reporter was present at the meeting to document oral statements.

Scoping Comments
Three people attended the public information and scoping meeting; during the comment period, which closed on October 9, 2019. No public comments were received, but two letters were received from state agencies.[4]

The Minnesota Department of Natural Resources (MNDNR) requested that EERA include, within the EA document, a discussion on the regulatory requirements, and the potential impacts/mitigative measures associated with Lake Region Cooperative's removal of the 41.6 kV line between Structure 161 and the Audubon Switch.

The Minnesota Department of Transportation (MnDOT) noted that the removal of the 2.85 miles of 41.6 kV line that crosses US 10 will likely require a Miscellaneous Permit (Form 1723) from MnDOT, accompanied by Traffic Control measures. Early coordination with MnDOT District 4 staff is recommended prior to commencement of this work.

Proposed Alternatives
The process for individuals to request that specific alternative routes, alternative route segments, and/or alignment modifications be included in the scope of the environmental review document was discussed at the public meeting.

No alternative routes, alternative route segments, and/or alignment modifications were put forth for consideration during the scoping comment period.

Applicant Comments
Pursuant to Minn. Rule 7850.3700, subpart 2(B), applicants have the right to review proposed alternatives. No requests for alternative routes, alternative route segments, and/or alignment modifications were received during the scoping comment period.

Commission's Consideration of Alternatives

[3] Notice of Public Information/Scoping Meeting, September 9, 2019, eDocket no. 20199-155731-01 and -02.
[4] Public Scoping Comments through October 9, 2019, Close of Comment Period (Oral and Written Comments), eDocket No. 201910-156467-01, 201910-156468-01, and 201910-156470-01.

Under Minn. Rules, part 7850.3700, subp. 3, the scope of the EA must be determined by the Department within 10 days after close of the public comment period. However, Minn. Stat. § 216E.04, subd. 5, anticipates Commission input into the identification of routes, in addition to the applicant's proposed route, for inclusion in the environmental review of a project. Since the rule's 10-day timeline for determining the scope of the EA after the close of the public comment period constrains the Commission's ability to provide input, the Commission varied the 10-day timeline. The Commission waived the 10-day timeline.

On October 30, 2019, the issue of what action the Commission should take regarding route alternatives to be evaluated in the environmental document was submitted to the Commission's Consent Agenda. In an Order served on November 7, 2019, the Commission elected to take no action with regards to route alternatives.[5]

Having received no alternative route suggestions during the EA scoping process, EERA staff is not recommending any alternatives routes, alternative route segments, and/or alignment modifications. Related to this finding, the EA Scoping Decision does not contain a relative merits discussion.

HAVING REVIEWED THE MATTER, consulted with Department EERA staff, and in accordance with Minnesota Rule 7850.3700, I hereby make the following Scoping Decision:

MATTERS TO BE ADDRESSED

The issues outlined below will be identified and described in the EA for the proposed GRE Lake Eunice 115 kV Conversion Project. The EA will describe the Project and the human and environmental resources at the facility location. The EA will also provide information on the potential impacts of the proposed project as they relate to the topics outlined in this scoping decision, including possible mitigation for identified impacts, identification of irretrievable commitment of resources, and permits from other government entities that may be required for construction of the project.

The EA on the GRE Lake Eunice 115 kV Conversion Project will address and provide information on the following matters:

I. Project Description

II. Project Purpose

III. Regulatory Framework

a. Certificate of Need (none required)
b. Route Permits
c. Scoping Process
d. Public Hearing
e. Other Permits
f. Issues outside the EA

IV. Proposed Project

a. Proposed Location (Route and ROW/alignment)
b. ROW Requirements
c. Project Design
d. Project Construction
e. Project Operation and Maintenance

[5] Commission Order, Route Alternatives, November 7, 2019. eDocket No. 201911-157326-01.

V. Potential Impacts of Proposed Project

The EA will include a discussion of the following human and environmental resources potentially impacted by the proposed project. Potential impacts, both positive and negative, of the project will be described. Based on the impacts identified, the EA will describe mitigation measures that could reasonably be implemented to reduce or eliminate the identified impacts. The EA will describe any unavoidable impacts resulting from implementation of the proposed Project.

Data and analyses in the EA will be commensurate with the importance of potential impacts and the relevance of the information to a reasoned decision and to the consideration of the need for mitigation measures (Minnesota Rule 4410.2300). EERA staff will consider the relationship between the cost of data and analyses and the relevance and importance of the information in determining the level of detail of information to be prepared for the EA. Less important material may be summarized, consolidated or simply referenced.

If relevant information cannot be obtained within timelines prescribed by statute and rule, or if the costs of obtaining such information is excessive, or the means to obtain it is not known, EERA staff will include in the EA a statement that such information is incomplete or unavailable and describe the relevance of the information in evaluating potential impacts or mitigation (Minnesota Rule 4410.2500).

a. Human Settlement
   i. Public Health and Safety (including EMF, stray voltage/induced current)
   ii. Displacement
   iii. Noise
   iv. Aesthetics
   v. Socioeconomics (including property values, agriculture business)
   vi. Cultural Values
   vii. Recreation
   viii. Public Services and Infrastructure (including TV/internet interference, transportation, and ROW access and trespass control)
   ix. Land Use and Zoning

b. Land Based Economies
   i. Agriculture
   ii. Forestry
   iii. Tourism
   iv. Mining

c. Archaeological and Cultural Resources

d. Natural Environment
   i. Air
   ii. Geology, Soils and Groundwater
   iii. Surface Water
   iv. Wetlands
   v. Vegetation
   vi. Wildlife
   vii. Rare and Unique Natural Resources

VI. Cumulative Impacts

a. Other projects, if any, under construction or reasonably foreseeable projects in the area

b. Associated Actions (Lake Region Cooperative's removal of the 41.6 kV line between Structure 161 and the Audubon Switch and upgrade to the Lake Eunice Substation)

VII. Unavoidable Impacts

VIII. Irreversible and Irretrievable Commitments of Resources

The above outline is not intended to serve as a table of contents for the EA document itself. Therefore, the organization and structure of the document may not be the same as that appearing here.

ROUTES TO BE EVALUATED IN THE ENVIRONMENTAL ASSESSMENT

No alternative routes, alternative route segments, and/or alignment modifications were put forth for consideration during the scoping comment period.

IDENTIFICATION OF PERMITS

The EA will include a list and description of permits or approvals from other government entities that may be required for the proposed project.

ISSUES OUTSIDE THE SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The EA for the GRE Lake Eunice 115 kV Conversion Project will not consider the following:

A. No-build alternative or other system alternatives related to Project need, per Minnesota Statutes 216E.02, Subd. 2.
B. Any route alternative(s) not specifically identified in this scoping decision.
C. The manner in which land owners are compensated for route easements, as that is outside the jurisdiction of the Commission.

SCHEDULE

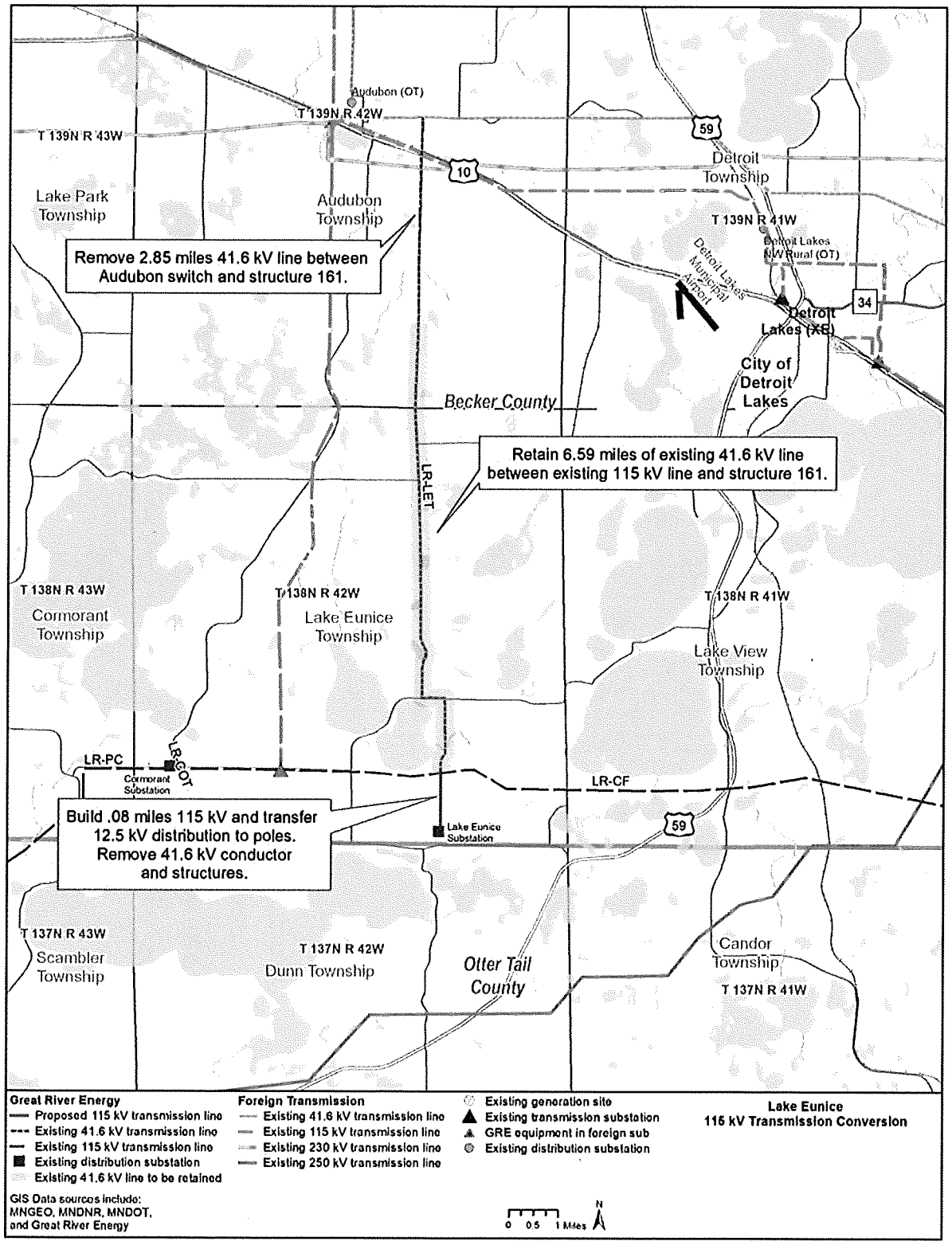
The EA is anticipated to be completed and available by the end of January 2020. A public hearing will be held in the project area after the Environmental Assessment has been issued and notice served.

Signed this 14 day of November, 2019

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE

Katherine Blauvelt, Assistant Commissioner

FIGURE 1 PROJECT LOCATION



APPENDIC B
DRAFT TEMPLATE HVTL ROUTE PERMIT

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

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

IN
[COUNTY]

ISSUED TO
[PERMITTEE]

PUC DOCKET NO. [Docket Number]

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

[Permittee]

[Permittee] is authorized by this route permit to construct and operate [Provide a description of the project authorized by the Minnesota Public Utilities Commission].

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

Approved and adopted this ____ day of _____

BY ORDER OF THE COMMISSION

_____

Daniel P. Wolf,
Executive Secretary

CONTENTS

ATTACHMENTS

1 ROUTE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this route permit to [Permittee Name] (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This permit authorizes the [Permittee Name] to construct and operate an [Provide a description of the project as authorized by the Minnesota Public Utilities Commission], and as identified in the attached route maps, hereby incorporated into this document.

1.1 Preemption

Pursuant to Minn. Stat. § 216E.10, this permit shall be the sole route 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 governments.

2 PROJECT DESCRIPTION

[Provide a description of the project as authorized by the Minnesota Public Utilities Commission]

2.1 Project Location

[Describe the location of the project including details such as the county, state, city, and townships, as appropriate]

County	Township Name	Township	Range	Section

2.2 Substations and Associated Facilities

[Provide a detailed description of the associated facilities and substations as authorized by the Commission]

2.3 Structures

[Provide a detailed description of the structures authorized by the Commission]

2.4 Conductors

[Provide a detailed description of the conductors authorized by the Commission]

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

Line Type	Conductor	Structure		Foundation	Height	Span
		Type	Material			

3 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. The route is generally described as follows:

[Provide detailed description of the authorized route including the route widths and any other specifics relevant to each segment. Also include a reference to the relevant route map to be attached to the permit.]

The identified route widths on the attached route maps provide the Permittee with flexibility for minor adjustments of the alignment or right-of-way to accommodate landowner requests and unforeseen conditions. The final alignment (*i.e.*, permanent and maintained rights-of-way) must be located within this designated route unless otherwise authorized by this permit or the Commission.

4 RIGHT-OF-WAY

This Permit authorizes the Permittee to obtain a new permanent right-of-way for the transmission line up to [number] in width. The permanent right-of-way is typically [number] feet on both sides of the transmission line measured from its centerline.

The Project's anticipated alignment is intended to minimize potential impacts relative to criteria identified in Minn. R. 7850.4100. The actual right-of-way will generally conform to the anticipated alignment identified on the Route Maps, unless changes are requested by individual landowners and agreed to by the Permittee or for unforeseen conditions that are encountered or as otherwise provided for by this permit.

Any right-of-way 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 right-of-way 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 9.1 of this permit.

Where the transmission line 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 and the other requirements of this permit; and for highways under the jurisdiction of the Minnesota Department of Transportation, the procedures for accommodating utilities in trunk highway rights-of-way.

4.1 Route Width Variations

Route width variations may be allowed to accommodate the potential site-specific constraints listed below. These constraints may arise from any of the following:

1. Unforeseen circumstances encountered during the detailed engineering and design process.
2. Federal or state agency requirements.
3. Existing infrastructure within the pipeline route, including but not limited to railroads, natural gas and liquid pipelines, high voltage electric transmission lines, or sewer and water lines.

Any alignment modifications arising from these site-specific constraints that would result in right-of-way placement outside of the designated route shall be specifically reviewed by the Commission under Minn. R. 7850.4900.

5 GENERAL CONDITIONS

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

5.1 Permit Distribution

Within 30 days of permit issuance, the Permittee shall send a copy of the permit and the complaint procedures to any regional development commission, county auditor and environmental office, and city and township clerk in which any part of the site is located.

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. An affected landowner is any landowner or designee that is within or adjacent to the permitted route.

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]

5.2 Access to Property

The Permittee shall contact landowners prior to entering the property or conducting maintenance within the route, unless otherwise negotiated with the affected landowner.

5.3 Construction and Operation Practices

The Permittee shall follow those specific construction practices and material specifications described in described in the [Route Permit Application date and title], and the record of the proceedings unless this permit establishes a different requirement in which case this permit shall prevail.

5.3.1 Field Representative

The Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this permit during construction of the project. This person shall be accessible by telephone or other means during normal business hours throughout site preparation, construction, cleanup, and restoration.

The Permittee shall file with the Commission the name, address, email, phone number, and emergency phone number of the field representative 14 days prior to commencing construction. The Permittee shall provide the field representative's contact information to affected landowners, residents, local government units and other interested persons 14 days prior to commencing construction. The Permittee may change the field representative at any time upon notice to the Commission, affected landowners, residents, local government units and other interested persons.

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

5.3.2 Employee Training and Education of Permit Terms and Conditions

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

5.3.3 Public Services and Public Utilities

During construction, the Permittee shall minimize any disruption to public services and public utilities. To the extent disruptions to public services or public utilities occur these will be temporary, and the Permittee will restore service promptly. Where any impacts to 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 consult with landowners, townships, cities, and counties along the route and consider concerns regarding tree clearing, distance from existing structures, drain tiles, pole depth and placement in relationship to existing roads and road expansion plans.

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

5.3.4 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 be used to minimize impacts on access paths and construction areas.

5.3.5 Noise

The Permittee shall comply with noise standards established under Minn. R. 7030.0100 to 7030.0080, at all times at all appropriate locations during operation of the facility. Construction

and maintenance activities shall be limited to daytime working hours to the extent practicable to ensure nighttime noise level standards will not be exceeded.

5.3.6 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. 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. Structures shall be placed at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highways, or trail crossings.

5.3.7 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. If construction of the facility disturbs more than one acre of land, or is sited in an area designated by the MPCA as having potential for impacts to water resources, the Permittee shall obtain a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit from the MPCA that provides for the development of a Stormwater Pollution Prevention Plan (SWPPP) that describes methods to control erosion and runoff.

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.

5.3.8 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 where practicable and shall be according to permit requirements by the applicable permitting authority. 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.

Wetland and water resource areas disturbed by construction activities shall be restored to pre-construction conditions in accordance with the requirements of applicable state and federal permits or laws and landowner agreements. All requirements of the U.S. Army Corps of Engineers (USACE), Minnesota Department of Natural Resources (DNR), and local units of government shall be met.

5.3.9 Vegetation Management

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.

5.3.10 Application of Pesticides

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

5.3.11 Invasive Species

The Permittee shall employ best management practices to avoid the potential spread of invasive species on lands disturbed by project construction activities.

5.3.12 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.

5.3.13 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 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 accessing construction workspace, unless otherwise negotiated with the affected landowner.

5.3.14 Archaeological and Historic Resources

The Permittee shall make every effort to avoid impacts to identified archaeological and historic resources when constructing the transmission facility. In the event that a resource is encountered, the Permittee shall contact and consult with the State Historic Preservation Office and the State Archaeologist. 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 State Historic Preservation Office and State Archaeologist requirements.

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. If human remains are encountered during construction, the Permittee shall immediately halt construction and promptly notify local law enforcement and the State Archaeologist. Construction at such location shall not proceed until authorized by local law enforcement or the State Archaeologist.

5.3.15 Avian Protection

The Permittee in cooperation with the DNR shall identify areas of the project where bird flight diverters will be incorporated into the transmission line design to prevent large avian collisions attributed to visibility issues. 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.

5.3.16 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.

5.3.17 Cleanup

All waste and scrap that is the product of construction shall be removed from the right-of-way and all premises on which construction activities were conducted 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.

5.3.18 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.

5.3.19 Damages

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

5.4 Electrical Performance Standards

5.4.1 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 milliampere rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the National Electric Safety Code (NESC). The Permittee shall address and rectify any induced current problems that arise during transmission line operation.

5.4.2 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.

5.4.3 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 necessary to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the line.

5.5 Other Requirements

5.5.1 Safety Codes and Design Requirements

The transmission line and associated facilities shall be designed to meet or exceed all relevant local and state codes, the 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.

5.5.2 Other Permits and Regulations

The Permittee shall comply with all applicable state rules and statutes. The Permittee shall obtain all required permits for the project and comply with the conditions of those permits unless those permits conflict with or are preempted by federal or state permits and regulations. A list of the permits known to be required is included in the permit application. The Permittee shall submit a copy of such permits to the Commission upon request.

6 SPECIAL CONDITIONS

Special conditions shall take precedence over other conditions of this permit should there be a conflict.

[Describe any special conditions]

Examples of special conditions included in permits:

- Avian Mitigation Plan
- Environmental Control Plan
- Agriculture Mitigation Plan
- Vegetation Management Plan
- Property Restrictions
- Minnesota Department of Natural Resources Requirements
- Minnesota Pollution Control Requirements
- Minnesota State Historical Preservation Office Requirements
- Minnesota Department of Transportation Requirements

7 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.

8 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 of Minn. R. 7829.1500 or Minn. R. 7829.1700, and as set forth in the complaint procedures attached to this permit.

Upon request, the Permittee shall assist the Commission with the disposition of unresolved or longstanding complaints. This assistance shall include, but is not limited to, the submittal of complaint correspondence and complaint resolution efforts.

9 COMPLIANCE REQUIREMENTS

Failure to timely and properly make compliance filings required by this permit is a failure to comply with the conditions of this permit. Compliance filings must be electronically filed with the Commission.

9.1 Plan and Profile

At least 30 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.

9.2 Status Reports

The Permittee shall report to the Commission on progress during finalization of the route, design of structures, and construction of the transmission line. The Permittee need not report more frequently than monthly. Reports shall begin with the submittal of the plan and profile for the project and continue until completion of restoration.

9.3 In-Service Date

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

9.4 As-Builts

Within 90 days after completion of construction, the Permittee shall submit copies of all final as-built plans and specifications developed during the project.

9.5 GPS Data

Within 90 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.

9.6 Right of Entry

The Permittee shall allow Commission designated representatives to perform the following, upon reasonable notice, upon presentation of credentials and at all times in compliance with the Permittee's site safety standards:

(a) To enter upon the facilities easement of the property for the purpose of obtaining information, examining records, and conducting surveys or investigations.

(b) To bring such equipment upon the facilities easement of the property as is necessary to conduct such surveys and investigations.

(c) To sample and monitor upon the facilities easement of the property.

(d) To examine and copy any documents pertaining to compliance with the conditions of this permit.

10 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.

11 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.

12 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.

ATTACHMENT 1

Complaint Handling Procedures for Permitted Energy Facilities

MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT HANDLING PROCEDURES FOR
PERMITTED ENERGY FACILITIES

A. Purpose

To establish a uniform and timely method of reporting and resolving complaints received by the permittee concerning permit conditions for site preparation, construction, cleanup, restoration, operation, and maintenance.

B. Scope

This document describes complaint reporting procedures and frequency.

C. Applicability

The procedures shall be used for all complaints received by the permittee and all complaints received by the Minnesota Public Utilities Commission (Commission) under Minn. R. 7829.1500 or Minn. R. 7829.1700 relevant to this permit.

D. Definitions

Complaint: A verbal or written statement presented to the permittee by a person expressing dissatisfaction or concern regarding site preparation, cleanup or restoration or other route and associated facilities permit conditions. Complaints do not include requests, inquiries, questions or general comments.

Substantial Complaint: A written complaint alleging a violation of a specific permit condition that, if substantiated, could result in permit modification or suspension pursuant to the applicable regulations.

Unresolved Complaint: A complaint which, despite the good faith efforts of the permittee and a person, remains unresolved or unsatisfactorily resolved to one or both of the parties.

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

E. Complaint Documentation and Processing

1. The permittee shall designate an individual to summarize complaints for the Commission. This person's name, phone number and email address shall accompany all complaint submittals.

2. A person presenting the complaint should to the extent possible, include the following information in their communications:

    a. name, address, phone number, and email address;
    b. date of complaint;
    c. tract or parcel number; and
    d. whether the complaint relates to a permit matter or a compliance issue.

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

    a. docket number and project name;
    b. name of complainant, address, phone number and email address;
    c. precise description of property or parcel number;
    d. name of permittee representative receiving complaint and date of receipt;
    e. nature of complaint and the applicable permit condition(s);
    f. activities undertaken to resolve the complaint; and
    g. final disposition of the complaint.

F. Reporting Requirements

The permittee shall commence complaint reporting at the beginning of project construction and continue through the term of the permit. The permittee shall report all complaints to the Commission according to the following schedule:

Immediate Reports: All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to the Commission's Consumer Affairs Office at 1-800-657-3782 (voice messages are acceptable) or consumer.puc@state.mn.us. For e-mail reporting, the email subject line should read "PUC EFP Complaint" and include the appropriate project docket number.

Monthly Reports: During project construction and restoration, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be filed by the 15th of each month to Daniel P. Wolf, Executive Secretary, Public Utilities Commission, using the eDockets system. The eDockets system is located at: https://www.edockets.state.mn.us/EFiling/home.jsp

If no complaints were received during the preceding month, the permittee shall file a summary indicating that no complaints were received.

G. Complaints Received by the Commission

Complaints received directly by the Commission from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation and maintenance shall be promptly sent to the permittee.

H. Commission Process for Unresolved Complaints

Commission staff shall perform an initial evaluation of unresolved complaints submitted to the Commission. Complaints raising substantial permit issues shall be processed and resolved by the Commission. Staff shall notify the permittee and appropriate persons if it determines that the complaint is a substantial complaint. With respect to such complaints, each party shall submit a written summary of its position to the Commission no later than ten days after receipt of the staff notification. The complaint will be presented to the Commission for a decision as soon as practicable.

I. Permittee Contacts for Complaints and Complaint Reporting

Complaints may filed by mail or email to:

[Name]
[Mailing Address]
[Phone]
[Email]

This information shall be maintained current by informing the Commission of any changes as they become effective.

ATTACHMENT 2
Compliance Filing Procedures for Permitted Energy Facilities

MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLIANCE FILING PROCEDURE FOR
PERMITTED ENERGY FACILITIES

A. Purpose

To establish a uniform and timely method of submitting information required by Commission energy facility permits.

B. Scope and Applicability

This procedure encompasses all known compliance filings required by permit.

C. Definitions

Compliance Filing: A filing of information to the Commission, where the information is required by a Commission site or route permit.

D. Responsibilities

1. The permittee shall file all compliance filings with Daniel P. Wolf, Executive Secretary, Public Utilities Commission, through the eDockets system. The eDockets system is located at: https://www.edockets.state.mn.us/EFiling/home.jsp

General instructions are provided on the eDockets website. Permittees must register on the website to file documents.

2. All filings must have a cover sheet that includes:

    a. Date
    b. Name of submitter/permittee
    c. Type of permit (site or route)
    d. Project location
    e. Project docket number
    f. Permit section under which the filing is made
    g. Short description of the filing

3. Filings that are graphic intensive (e.g., maps, engineered drawings) must, in addition to being electronically filed, be submitted as paper copies and on CD. Paper copies and CDs should be sent to: 1) Daniel P. Wolf, Executive Secretary, Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN 55101-2147, and 2) Department of Commerce, Energy Environmental Review and Analysis, 85 7th Place East, Suite 500, St. Paul, MN 55101-2198.

The Commission may request a paper copy of any electronically filed document.

PERMIT COMPLIANCE FILINGS[1]

PERMITTEE:
PERMIT TYPE:
PROJECT LOCATION:
PUC DOCKET NUMBER:

Filing Number	Permit Section	Description of Compliance Filing	Due Date

[1] This compilation of permit compliance filings is provided for the convenience of the permittee and the Commission. It is not a substitute for the permit; the language of the permit controls.

ATTACHMENT 3
Route Maps

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Environmental Assessment

Docket No. ET2/TL-19-311

Dated this **24th** day of **January 2020**

/s/Sharon Ferguson

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ryan	Barlow	ryan.barlow@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 55101214	Electronic Service	Yes	OFF_SL_19-311_TL-19-311
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_19-311_TL-19-311
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_19-311_TL-19-311
Dan	Lesher	dlesher@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_19-311_TL-19-311
Patrick	Mahlberg	pmahlberg@fredlaw.com	Fredrikson & Byron, P.A.	200 S 6th St Ste 4000 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-311_TL-19-311
Marsha	Parlow	mparlow@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_19-311_TL-19-311
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_19-311_TL-19-311
Haley	Waller Pitts	hwallerpitts@fredlaw.com	Fredrikson & Byron, P.A.	200 S 6th St Ste 4000 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_19-311_TL-19-311