ITC Midwest LLC • 444 Cedar Street, Suite 1020 • St. Paul, MN 55101

March 28, 2013

Via eFiling and Hand Delivery
Dr. Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

RE: *In the Matter of the Application of ITC Midwest for a Route Permit for the Minnesota-Iowa 345 kV Transmission Project and Associated Facilities in Jackson, Martin, and Faribault Counties*, Docket No. ET6675/TL-12-1337

Dear Dr. Haar:

ITC Midwest LLC ("ITC Midwest") hereby submits to the Minnesota Public Utilities Commission its Application for a Route Permit for the Minnesota portion of its Minnesota - Iowa 345 kV Transmission Project ("Project"). A Certificate of Need application was filed for the Minnesota – Iowa 345 kV Transmission Project with the Minnesota Public Utilities Commission on March 22, 2013 (Docket No. ET6675/CN-12-1053). Pursuant to Minnesota Statutes Section 216B.243, subdivision 4, ITC Midwest requests that the Certificate of Need and Route Permit proceedings be combined because it would be feasible, more efficient, and in the public interest.

As part of the Project, ITC Midwest proposes constructing a 345 kV line from its existing Lakefield Junction Substation in Jackson County, Minnesota to a new Huntley Substation, south of the existing Winnebago Junction Substation, in Faribault County. From Huntley, the 345 kV transmission line will run south to cross the Iowa border to interconnect with new 345 kV facilities proposed to be built in Iowa. As part of the Project, ITC Midwest also proposes to expand its Lakefield Junction Substation located east of the City of Lakefield in Jackson County, Minnesota; remove the Winnebago Junction Substation located near the cities of Huntley, Winnebago, and Blue Earth in Faribault County, Minnesota; construct a new Huntley Substation approximately one mile south of the Winnebago Junction Substation site; and reconfigure certain transmission lines that currently terminate at the Winnebago Junction Substation to the Huntley

Substation. The proposed 345 kV transmission line is approximately 75 miles long.

The Minnesota – Iowa 345 kV Transmission Project also includes approximately 25 miles of 345 kV transmission line facilities in Iowa connecting to a new Ledyard Substation near Ledyard, Iowa, and a new Kossuth County Substation near Burt, Iowa. ITC Midwest will apply for a franchise from the Iowa Utilities Board for the Iowa portion of the Minnesota – Iowa 345 kV Transmission Project.

The Minnesota – Iowa 345 kV Transmission Project is a portion of Multi-Value Project 3, proposed by the Midwest Independent Transmission System Operator, Inc. as part of a portfolio of Multi-Value Projects ("MVPs"). Other portions of MVP Project 3, including the Kossuth County Substation, will be constructed in Iowa by MidAmerican Energy Company.

Enclosed are three paper copies and one CD copy of the Route Permit application. The initial filing fee of $150,000, representing 25 percent of the total fee estimated by the Department of Commerce, Energy Facility Permitting, is also enclosed. The requested 15 paper copies and 15 CD copies of the Route Permit Application are being sent separately to the Department of Commerce.

If you have any questions about this filing, please contact me at 651.222.1000, extension 2308, or by email at dgrover@itctransco.com.

ITC Midwest looks forward to working with all interested parties in this proceeding. Our goal is to cooperatively develop the transmission facilities needed to reliably serve Minnesota and surrounding states.

Sincerely,

David B. Grover

David B. Grover
Manager, Regulatory Strategy
ITC Midwest LLC

Enclosures

cc: Raymond Kirsch, Department of Commerce

ITC Midwest LLC

Application to the
Minnesota Public Utilities Commission
for a Route Permit

Minnesota – Iowa 345 kV Transmission Project and Associated Facilities in Jackson, Martin, and Faribault Counties

Docket No. ET6675/TL-12-1337

March 28, 2013

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Table of Contents

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

Table of Contents
(continued)

Page

TABLE OF FIGURES

TABLE OF TABLES

LIST OF APPENDICES

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EXECUTIVE SUMMARY

APPLICANT

ITC Midwest LLC ("ITC Midwest") is applying for a Route Permit to construct the Minnesota portion of the Minnesota – Iowa 345 kilovolt ("kV") Transmission Project. "Project" as used in this Route Permit application refers only to the Minnesota portion of the Minnesota – Iowa 345 kV Transmission Project. Construction on the Project is expected to begin by early 2016 and be completed mid-year 2017. The first portion of the Project from the Lakefield Junction Substation to the Huntley Substation is expected to be energized by early 2017. The segment from Huntley Substation to the Iowa border is expected to be energized by mid-year 2017.

NEED

The Project is needed to enhance regional reliability, increase transmission capacity to support additional generation, including generation to meet renewable energy standards throughout the region, and to remove constraints on the transmission system in southern Minnesota which will enable more efficient and cost-effective delivery of energy.

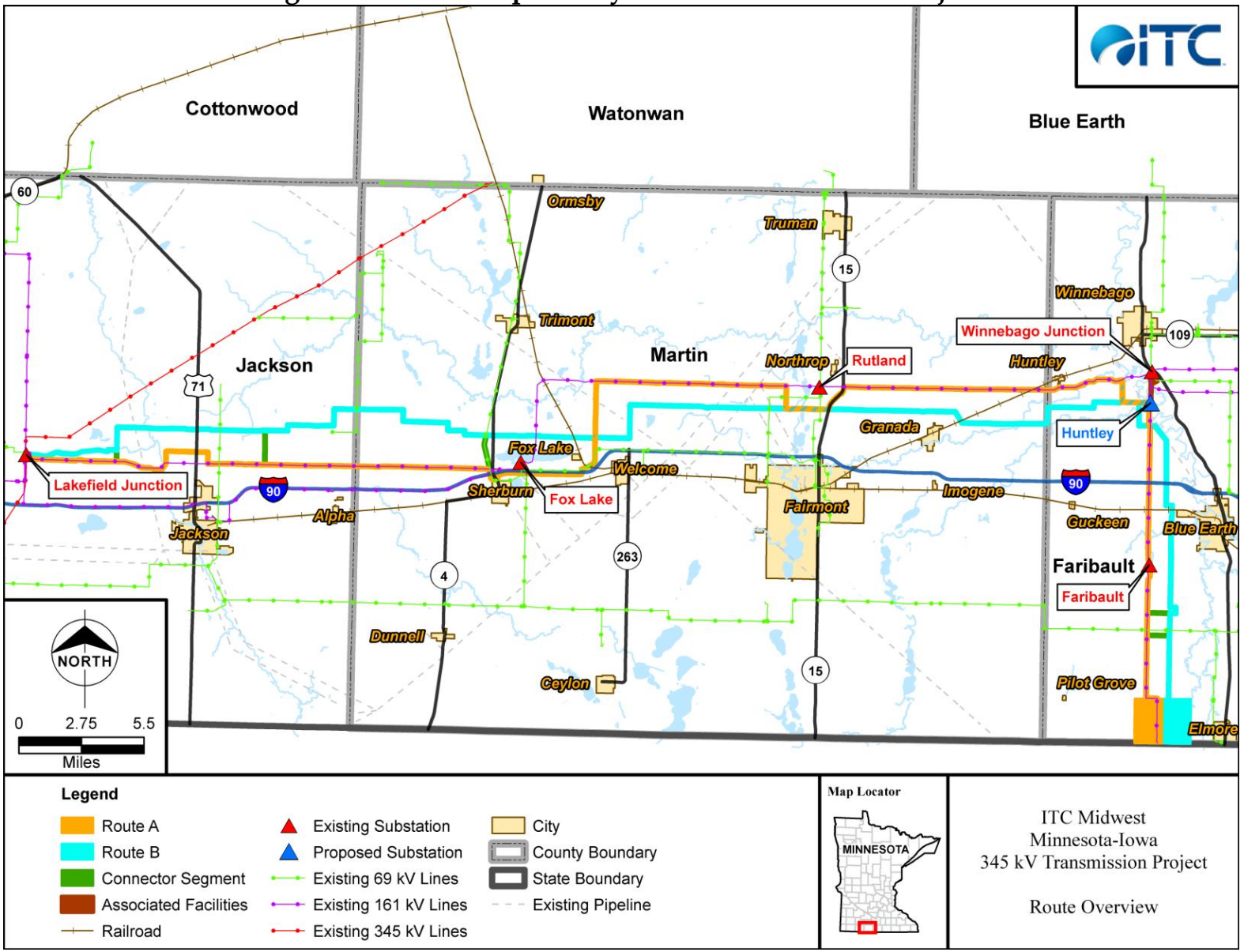
The proposed facilities in Minnesota and Iowa were also studied and approved in December 2011 as part of the Midwest Independent Transmission System Operator ("MISO") Multi-Value Projects ("MVP") portfolio in the 2011 MISO Transmission Expansion Plan ("MTEP 11"). MISO oversees and coordinates regional transmission planning and regional transmission services. MISO also manages access to the transmission grid to facilitate fair and competitive wholesale electric markets. The Minnesota – Iowa 345 kV Transmission Project is a portion of what MISO designated as Project 3 in the MVP portfolio and only includes the portions of Project 3 that are to be constructed and owned by ITC Midwest in Minnesota and Iowa. The Iowa portions of Project 3 are subject to review and approval by the Iowa Utilities Board ("IUB"). ITC Midwest submitted an application for a Certificate of Need for the Project to the Minnesota Public Utilities Commission ("Commission") on March 22, 2013. It is available in Docket No. ET6675/CN-12-1053. A decision on the Certificate of Need request will be made before, or concurrent with, a decision on this application for a Route Permit ("Application" or "Route Permit Application").

THE PROJECT

For the Project, ITC Midwest is proposing to construct a 345 kV transmission line from its Lakefield Junction Substation in Jackson County, east through Martin County to the newly-proposed Huntley Substation in Faribault County, before turning south to the Iowa border. In Iowa, the Minnesota – Iowa 345 kV Transmission Project will include a transmission line continuing south, a new ITC Midwest Ledyard Substation, near the City of Ledyard, Iowa, and then on to the Kossuth County Substation to be constructed by MidAmerican Energy Company ("MidAmerican Energy") near the City of Burt in Kossuth County, Iowa. The rest of Project 3 will be constructed by MidAmerican Energy and includes, from the Kossuth County Substation, a 345 kV transmission line to the west to a new O'Brien Substation near Sanborn, Iowa, and a 345 kV transmission line to the south to a MidAmerican Energy Substation north of Fort Dodge, Iowa.

The Project includes the 345 kV transmission line, expanding the Lakefield Junction Substation, a new Huntley Substation, and reconfiguring several miles of 69 kV and 161 kV transmission line near the Huntley Substation. The reconfigurations are necessary to relocate all 69 kV and 161 kV transmission substation facilities to the Huntley Substation from the existing Winnebago Junction Substation, which will be decommissioned as part of the Project. The 345 kV transmission line will be approximately 75 miles long in Minnesota. The Iowa portion of the Minnesota – Iowa 345 kV Transmission Project will be approximately 25 miles long. The routes proposed by ITC Midwest for the Project are shown in **Figure 1**. Although these are the routes ITC Midwest proposes for the Project, other routes may be proposed by stakeholders through the public involvement process, discussed further below, and the Commission may ultimately choose a route for the Project that is not proposed in this Application.

Figure 1. Routes Proposed by ITC Midwest for the Project



ROUTE PERMITTING PROCESS

This Route Permit Application is submitted under the Full Permitting Process set forth by Minnesota law, specifically, Minnesota Statutes Section 216E.03 and Minnesota Rules 7850.1700 to 7850.2700 and 7850.4000 to 7850.4400. The applicable statutes and rules require, in addition to other information, that an applicant provide at least two proposed routes in its application for a Route Permit and state a preference for one of the proposed routes. Minn. Stat. § 216E.03, subd. 3; Minn. R. 7850.1900, Subp. 2(C). A "route" is defined in Minnesota Statutes as "the location of a high voltage transmission line between two end points . . . [with] a variable width of up to 1.25 miles." Minn. Stat. § 216E.01, subd. 8; *see also* Minn. R. 7850.1000, Subp. 16.

ITC Midwest invested substantial time analyzing and evaluating segments between the proposed endpoints and gathering input from stakeholders prior to submitting this Application. The Project team met with local governments, State and federal agencies, and landowners while hosting open houses in September 2012 throughout the three counties proposed to be crossed by the Project. Geographic Information System ("GIS") data from local, State, and federal agencies, and other Minnesota utilities has been reviewed, along with aerial photographs.

Through this process, ITC Midwest developed the two routes proposed in this Application and also identified connecting segments between the two routes. Both routes follow existing transmission and/or transportation rights-of-way and agricultural field lines, where feasible. Specifically, ITC Midwest attempted to use existing transmission line rights-of-way in areas where there are suitable and available adjacent lands for the additional right-of-way the Project will require. When crossing new cropland, primarily along Route B, ITC Midwest looked to locate the route along field borders, fence rows, non-tilled borders, or waterways. In each case, ITC Midwest identified a route width of 1,000 feet for the majority of the length of the Project. Near the Iowa border, ITC Midwest identified a route width of 1.25 miles for the two routes. ITC Midwest believes that a wider route is appropriate in this area to ensure that the 345 kV transmission line can be efficiently routed through each state's regulatory process. Information about the routing process in Iowa is available in **Section 1.4.2** of this Application.

In this Route Permit proceeding, the Commission staff, the Department of Commerce, Energy Facility Permitting staff ("EFP"), and an administrative law

judge will oversee evaluation and review of the proposed routes and the gathering of input from agencies, local units of government ("LGUs"), and the public.

After the Commission finds the Application complete, notices of environmental impact statement ("EIS") scoping meetings will be provided to stakeholders in the Project area and those on the Project Contact List EFP will maintain throughout the regulatory process. To sign up for the Project Contact List for the Route Permit process and ensure you receive notices of meetings related to the Project in your area, you may contact EFP staff (Ray Kirsch, 651.296.7588, 800.657.3794, or Raymond.kirsch@state.mn.us) or sign up by visiting mn.gov/commerce/energyfacilities, click on the "Transmission Lines" tab, the "Minnesota–Iowa 345 kV Transmission Project" link under the "Project Name" heading, and then the "Mailing list" links.

At these scoping meetings, and throughout a comment period after the scoping meetings, EFP will gather information from stakeholders on other routes and environmental information that should be evaluated in the EIS. EFP will the issue a "Scoping Decision" that identifies routes and information it will evaluate in the EIS, and will begin drafting this environmental review document. EFP will issue a notice of a Draft EIS and a notice for informational meetings to be held in the Project area on the content of the Draft EIS. After these meetings, EFP will issue a Final EIS.

Shortly after these informational meetings, public hearings on the Draft EIS and the Project will be held before an administrative law judge. The public is invited to make comments on the Draft EIS and routes for the Project at these hearings before the administrative law judge. After the hearings, the administrative law judge will provide a period during which stakeholders can provide written comments on the Project. Additionally, the administrative law judge will receive briefs from ITC Midwest and other parties to the proceeding.[1] The administrative law judge will review this Application, the EIS, briefs, and any comments received during the public hearings or the following comment period and then prepare findings of fact and recommend a route for the Project to the Commission. The Commission staff will then provide the Commission with its

[1] Individual landowners need not become a party to the proceeding to submit comments and have those comments reviewed and considered by the administrative law judge. Only those who formally intervene under the administrative rules (Minn. R. 1405) submit briefs to the administrative law judge.

recommendation on a Route Permit, which will include a route for the Project and proposed conditions for the Project. During an open meeting, the Commission will deliberate and make a decision as to the route it believes is the most prudent and feasible for the Project and any conditions it deems necessary, using the criteria set forth in Minnesota Statutes Section 216E.03, subdivision 7, and Minnesota Rule 7850.4100 to guide its decision.

PROPOSED ROUTES IN THIS APPLICATION

ITC Midwest proposes two routes in this Application through Jackson, Martin, and Faribault counties in Minnesota. Information on the overall route selection process is provided in **Chapter 4.** A detailed explanation of the two routes is provided in **Chapter 5**. Detailed data on the environmental analysis for the two routes are provided in **Chapter 6** (Route A) and **Chapter 8** (Route B). Detailed data on the environmental analysis for the associated facilities, that are the same for Route A and Route B, and connector segments between Route A and Route B are provided in **Chapter 7**.

Route A

Route A is located in the townships of Belmont, Des Moines, Hunter, and Wisconsin in Jackson County; Center Creek, Fox Lake, Fraser, Jay, Manyaska, and Rutland in Martin County; and Jo Daviess, Pilot Grove, and Verona in Faribault County. Route A primarily follows an existing ITC Midwest 161 kV transmission line from the Lakefield Junction Substation east of the City of Lakefield, east to a new substation south of the existing Winnebago Junction Substation and then south to the Iowa border. Route A deviates from the existing 161 kV transmission line in areas where the existing alignment cannot be followed because of development near the existing right-of-way and in four other areas: Jackson Municipal Airport, Fox Lake, Lake Charlotte, and Winnebago Junction Station.

The deviation at Jackson Municipal Airport is to avoid hazards to air navigation if the Project were constructed along the existing 161 kV transmission line centerline. Route A does not follow the existing 161 kV transmission line across either Fox Lake or Lake Charlotte to avoid environmental impacts associated with adding new structures and a second circuit at these lake crossings. Deviating from the existing 161 kV transmission line is necessary west of the Winnebago Junction Substation to configure the Project to terminate at the new Huntley Substation. Each of these four deviations and the reasons for the deviations are discussed in more detail in **Section 4.4.3**.

Route B

Route B is located in the townships of Belmont, Des Moines, Enterprise, and Hunter, in Jackson County; Center Creek, Elm Creek, Fox Lake, Fraser and Rutland in Martin County; and Elmore, Jo Daviess, Pilot Grove, and Verona in Faribault County. Route B is generally located within two miles of an existing ITC Midwest 161 kV transmission line and connects the Lakefield Junction Substation east of the City of Lakefield to a new substation south of the existing Winnebago Junction Substation, before entering Iowa near Elmore, Minnesota.

"Preferred Route"

For purposes of this Route Permit Application, and based on factors identified in Minnesota Statutes Section 216E.03, subdivision 7, and Minnesota Rules 7850.1900, Subpart 3, 7850.4000, and 7850.4100, ITC Midwest prefers Route A as identified in **Figure 1**, and described above, for the Project. Route A makes the greatest use of existing transmission line rights-of-way, has fewer new impacts to agricultural production lands and other land uses, and reduces the amount of new tree clearing necessary for the Project. Route A and Route B are close in length. Although ITC Midwest prefers Route A for the Project, the Commission may determine that another route is the most prudent and feasible for the Project based on information gathered during its evaluation of the Route Permit Application, the EIS to be prepared by EFP, the findings and recommendations from the administrative law judge, and input from stakeholders.

ENVIRONMENTAL IMPACTS

The Project, as proposed in this Application, will traverse primarily agricultural land. It is estimated that permanent right-of-way, 200 feet wide for 345 kV transmission lines and 150 feet wide for 161 kV transmission lines, will include approximately 1,770 acres of land. If Route A is selected, at least 540 acres of the necessary right-of-way are currently maintained for the existing transmission line that is proposed to be co-located with the 345 kV line. Another 11.2 acres of land will be permanently impacted by the expansion of the Lakefield Junction Substation and construction of the Huntley Substation in Minnesota. Other land rights will be acquired in Iowa for portions of the Minnesota – Iowa 345 kV Transmission Project located within that state. ITC Midwest, after reviewing the routes proposed in this Application, does not anticipate displacement of homes or businesses.

REQUESTED COMMISSION ACTION

This Route Permit Application and the data contained herein demonstrate that construction of the Project along either Route A or Route B would comply with the applicable standards and criteria set out in Minnesota Statutes Section 216E.03, subdivision 7, and Minnesota Rules 7850.4000 and 7850.4100. Further, construction of the Project will support State goals to conserve resources, minimize environmental and human settlement impacts and land use conflicts, and ensure the State's electric energy security through the construction of efficient, cost-effective infrastructure. Detailed information on the need for the Project is available in the application for a Certificate of Need in Docket No. ET6675/CN-12-1053.

ITC Midwest requests that the Commission issue a Route Permit for Route A because it makes the greatest use of existing transmission line rights-of-way, has fewer new impacts to agricultural production lands, and minimizes impacts to the natural and cultural environment. Based on review of the Project area, ITC Midwest believes that Route A best satisfies the criteria identified in Minnesota Statutes Section 216E.03, subdivision 7, and Minnesota Rules 7850.4000 and 7850.4100.

PUBLIC INVOLVEMENT IN ROUTE PERMIT REGULATORY PROCESS

Members of the public who wish to be involved in the Route Permit regulatory process are encouraged to visit the following websites to find out more about the Project and opportunities for public input and involvement:

http://www.itctransco.com/minnesota-iowa-project

mn.gov/commerce/energyfacilities ("How to Participate" Tab)

http://mn.gov/commerce/energyfacilities/documents/Full%20Process,%20EIS%20-%20Color%20Flowchart%207850%20DOC.pdf

1.0 INTRODUCTION

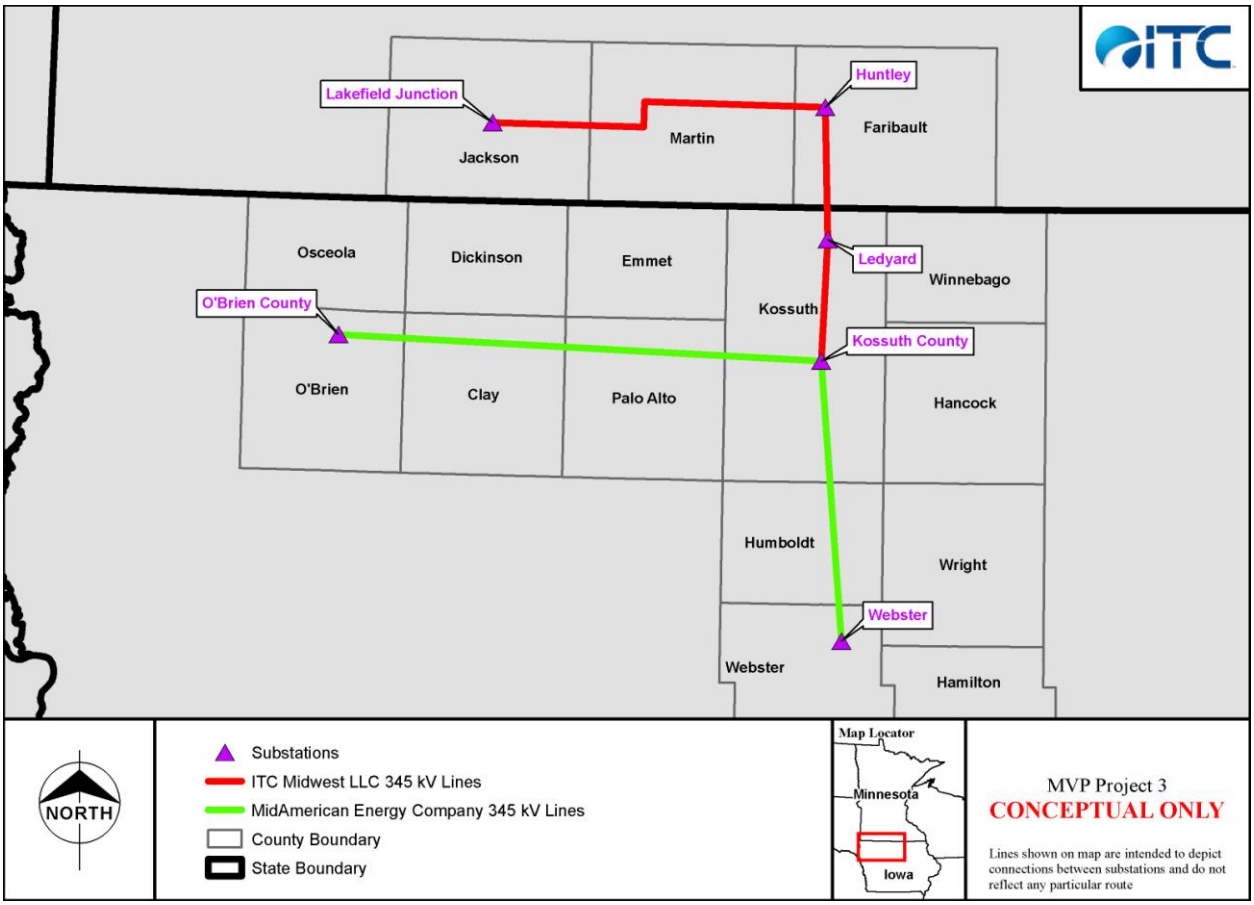
ITC Midwest is applying for a Route Permit to construct the Project (*i.e.*, the Minnesota portion of the Minnesota – Iowa 345 kV Transmission Project). In Minnesota, ITC Midwest proposes to construct a new 345 kV transmission line from the Lakefield Junction Substation to a new Huntley Substation near Winnebago to the Iowa border near Elmore, Minnesota. The Project also includes relocating four existing 161 kV lines and three 69 kV lines that currently terminate at the Winnebago Junction Substation and all associated 161 kV and 69 kV equipment from the Substation to the new Huntley Substation. The Project, as proposed, is approximately 75 miles long. From the Iowa border, the Minnesota – Iowa 345 kV Transmission Project will continue south to connect to a new ITC Midwest Ledyard Substation located near Ledyard, Iowa, and then on to a new Kossuth County Substation to be located near Burt, Iowa. The Kossuth County Substation will be constructed and owned by MidAmerican Energy. Approximately 25 miles of 345 kV transmission line will be constructed by ITC Midwest in Iowa as part of the Minnesota – Iowa 345 kV Transmission Project.

The proposed facilities in Minnesota and Iowa were studied and approved as part of the MISO MVP portfolio. The Project is a portion of what was designated as Project 3 by MISO in the MVP portfolio. Project 3 includes the Project and the Iowa portion of the Minnesota – Iowa 345 kV Transmission Project that will be constructed and owned by ITC Midwest. Project 3 also includes transmission lines and substation facilities that will be constructed in Iowa and owned by MidAmerican Energy. Project 3 and Project 4 will interconnect at the Ledyard Substation, proposed to be located near Ledyard, Iowa. Project 4 will be constructed to the east of the Ledyard Substation and portions will be owned by ITC Midwest.

As part of Project 3, MidAmerican Energy will construct, from its new Kossuth County Substation near Burt, Iowa, a 345 kV transmission line west to a new O'Brien Substation to be located near Sanborn, Iowa, and a 345 kV transmission line south to its Webster Substation, north of Fort Dodge, Iowa. The Iowa portions of Project 3, as defined in the MVP portfolio, are subject to review and approval by the IUB. The need for the Project and its other required approvals are discussed in more detail in Minnesota Docket No. ET6675/CN-12-1053.

A map showing the conceptual configuration of the Minnesota – Iowa 345 kV Project (the ITC Midwest portion of MVP Project 3) and the MidAmerican Energy portion of MVP Project 3 is provided in **Figure 2**.

Figure 2. MVP Project 3 Conceptual Overview



1.1 PROJECT OWNERSHIP

ITC Midwest connects more than 700 communities over almost 54,000 square miles in Iowa, southern Minnesota, northeastern Missouri, and northwestern Illinois. ITC Midwest acquired electric transmission assets previously owned by Alliant Energy's Interstate Power & Light Co. subsidiary in December 2007 (Docket No. E001/PA-07-540). ITC Midwest owns approximately 6,600 circuit miles of transmission lines and more than 200 transmission substations in Iowa, Minnesota, Illinois, and Missouri. ITC Midwest is a transmission-owning member of MISO and maintains operating locations at Dubuque, Iowa City, and Perry, Iowa; and Albert Lea and Lakefield, Minnesota.

ITC Midwest will be the owner of all facilities proposed in this Application to be constructed in Minnesota with the exception of insulators and conductors for one of the 161 kV transmission lines near the Huntley Substation. Northern States Power Company, doing business as Xcel Energy, owns one 161 kV transmission line proposed to be reconfigured to terminate at the Huntley Substation due to

the decommissioning of the Winnebago Junction Substation as part of this Project. ITC Midwest proposes to enter into a pole sharing agreement and Xcel Energy will own the insulators and conductors for the reconfigured N.B.E.I. – Huntley 161 kV transmission line that will be installed on poles and right-of-way to be owned by ITC Midwest as part of this Project.

1.2 PERMITTEE

ITC Midwest is the requested permittee for the Project. Contact information is available below.

David Grover
Manager, Regulatory Strategy
ITC Midwest LLC
444 Cedar Street, Suite 1020
St. Paul, MN 55101
dgrover@itctransco.com
651.222.1000

1.3 CERTIFICATE OF NEED PROCESS

Minnesota Statutes Section 216B.243 dictates that a Certificate of Need is required for a "large energy facility" as defined in Minnesota Statutes Section 216B.2421. A large energy facility includes "any high-voltage transmission line with a capacity of 200 kilovolts or more and greater than 1,500 feet in length" and "any high-voltage transmission line with a capacity of 100 kilovolts or more with more than ten miles of its length in Minnesota or that crosses a state line." Minn. Stat. § 216B.2421, subds. 2(2) and 2(3). ITC Midwest filed an application with the Commission on March 22, 2013, for a Certificate of Need to construct the Project in Minnesota. The application is available at Docket No. ET6675/CN-12-1053 ("Certificate of Need Application").

The Project is needed to enhance regional reliability, increase transmission capacity to support additional generation, including generation to meet renewable energy standards throughout the region, and to remove constraints on the transmission system in southern Minnesota which will enable more efficient and cost-effective delivery of energy. The Project is part of MISO MVP Project 3. MISO is a non-profit Regional Transmission Organization ("RTO") responsible for the independent planning and operation of the transmission system and wholesale energy market across 11 states and the Canadian province of Manitoba. More detailed information on MISO, the MVP development and

approval process, MVP Project 3, and the need for the Project is available in the Certificate of Need Application (Docket No. ET6675/CN-12-1053).

1.4 STATE ROUTING PROCESSES

1.4.1 Minnesota

The Power Plant Siting Act ("PPSA") provides that no person may construct a high voltage transmission line without a route permit from the Commission. Minn. Stat. § 216E.03, subd. 2. The definition of a high voltage transmission line under the PPSA is broader than that under Minnesota Statutes Section 216B.2421. Under the PPSA, a high voltage transmission line includes a transmission line of 100 kV or more and greater than 1,500 feet in length and associated facilities. Minn. Stat. § 216E.01, subd. 4. The 345 kV transmission line and associated facilities, including 161 kV line reconfigurations and 69 kV upgrades, qualify as high voltage transmission lines under the PPSA and, therefore, a route permit is required prior to construction.

A list of all the content requirements for a route permit application and where to find that information in this Application can be found in **Appendix A**.

At least 90 days prior to submitting an application for a route permit, an applicant must provide written notice to local units of government and offer to schedule a preapplication consultation meeting. Minn. Stat. § 216E.03, subds. 3a and 3b. The notices sent to LGUs by ITC Midwest on September 27, 2012, in compliance with this requirement are provided in **Appendix B** and a list of those that requested consultation meetings is provided in **Section 9.1.3**.

Before the Iowa portion of the Minnesota – Iowa 345 kV Transmission Project can be constructed, a franchise from the IUB must be obtained.

1.4.2 Iowa

No person may construct, operate, or maintain a proposed electric transmission line in Iowa capable of operating at an electric voltage of 69 kV or more and be greater than a mile in length without first obtaining a separate franchise from the IUB. Iowa Code § 478.1. A franchise from the IUB must be obtained for each county to be traversed by the proposed transmission line route. A person seeking a franchise must first file a detailed petition requesting a franchise for each of the counties to be traversed. Iowa Code § 478.2(1). A petition to the IUB for a franchise must propose one or more routes for the transmission line. Iowa Code

§ 478.3. The Iowa Code requires that transmission lines be routed near and parallel to roads, the rights-of-way of active railroads, or land division lines (section, quarter-section, and quarter-quarter-section lines) wherever practical and reasonable. Iowa Code § 478.18(2). These routes must also not interfere with the use by the public of the highways or streams of the State and must not unnecessarily interfere with the use of any lands by the occupant. Iowa Code § 478.18(2).

Once a franchise petition is filed, the IUB will provide notice of the petition to potentially affected citizens of each county through which the proposed route traverses that provides general information on the contents of the petition, including the lands proposed to be traversed by the route. Iowa Code § 478.5. If the proceeding is heard by an administrative law judge, she/he will issue a proposed decision that can be appealed to the three-member IUB. If the proposed decision is not appealed to the IUB, it becomes the final decision of the IUB.

The IUB may grant a franchise, in whole or in part, and may impose terms, conditions, restrictions, or modifications of location and route, as the IUB deems just and proper. Iowa Code § 478.4. The IUB cannot grant a franchise without expressly finding that the proposed line is necessary to serve a public use and represents a reasonable relationship to an overall plan of transmitting electricity in the public interest. *Id.* The franchise will also provide the petitioner the right of eminent domain if requested in the petition and granted by the IUB to the extent it is found necessary for public use. Iowa Code §§ 478.6 and 478.15.

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2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

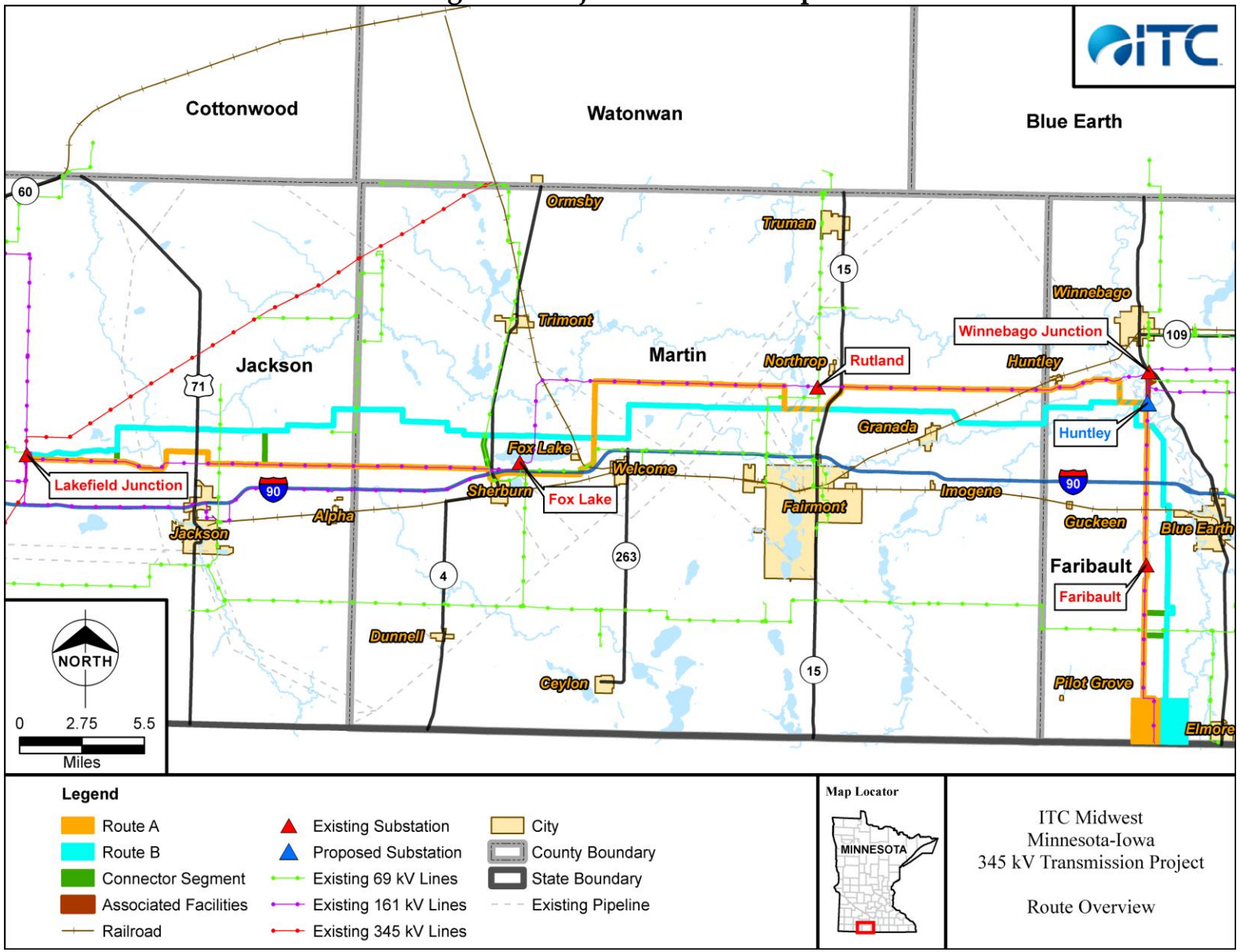
The Project is proposed to be constructed in southwestern Minnesota through Jackson, Martin, and Faribault counties. Route A is located in the townships of Belmont, Des Moines, Hunter, and Wisconsin, in Jackson County; Center Creek, Fox Lake, Fraser, Jay, Manyaska, and Rutland, in Martin County; and Jo Daviess, Pilot Grove, and Verona, in Faribault County. Route B is located in the townships of Belmont, Des Moines, Enterprise, and Hunter, in Jackson County; Center Creek, Elm Creek, Fox Lake, Fraser and Rutland, in Martin County; and Elmore, Jo Daviess, Pilot Grove, and Verona, in Faribault County. **Table 1** provides a summary of the township names and section numbers along each route. Only two short portions of Route A cross a municipal boundary (City of Sherburn-0.3 mile and City of Huntley-0.2 mile). No portion of Route B crosses a municipal boundary. **Figure 3** shows an overview of the Project and **Appendix C** provides additional county-level overview maps. **Appendix D** includes detailed aerial maps of the townships crossed by the proposed routes and connector segments described in this Application.

Table 1. Townships Along Routes

County	Route A*		Route B*	
	Township	Sections	Township	Sections
Jackson	Belmont	34, 35, 36	Belmont	25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36
	Des Moines	1, 2, 3, 4, 5, 6	Des Moines	5, 6
	Hunter	1, 2, 3	Enterprise	23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34
	Wisconsin	1, 2, 3, 4, 5, 6	Hunter	1, 2, 3
Martin	Center Creek	13, 14, 15, 16, 17, 18	Center Creek	19, 20, 21, 22, 23, 24, 25, 26, 27, 28
	Fox Lake	13, 14, 23, 26, 35	Elm Creek	19, 20, 21, 25, 26, 27, 28, 29, 30, 35, 36
	Fraser	13, 14, 15, 16, 17, 18	Fox Lake	24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	Jay	1, 2, 3, 4, 5, 6, 12	Fraser	19, 20, 21, 22, 23, 24, 30
	Manyaska	2, 3, 4, 5, 6, 7	Rutland	19, 20, 21, 22, 23, 24
	Rutland	13, 14, 15, 16, 17, 18, 19, 20, 21		
Faribault	Jo Daviess	2, 11, 14, 23, 26, 35	Elmore	30, 31
	Pilot Grove	2, 11, 14, 23, 24, 25, 26, 35, 36	Jo Daviess	1, 12, 13, 24, 25, 36
	Verona	9, 10, 11, 14, 15, 16, 17, 18, 22, 23, 26, 35	Pilot Grove	1, 12, 13, 24, 25, 36
			Verona	11, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 36

*This table includes the Sections in Verona Township, Faribault County, where the associated facilities, common to both routes, are proposed to be located.

Figure 3. Project Overview Map



2.2 PROJECT PROPOSAL

The Project is designed to meet three needs: 1) increase transmission capacity to support additional generation, including generation to meet renewable energy standards throughout the region, 2) remove constraints which will enable more efficient and cost-effective delivery of energy, and 3) enhance regional reliability. The overall configuration for the Project is Lakefield Junction Substation – Huntley Substation – Minnesota/Iowa border and further south onto the Ledyard and Kossuth County substations in Iowa. The length of the Project, including associated facilities, in Minnesota will be approximately 75 miles. The length of the Iowa portion of the Minnesota – Iowa 345 kV Transmission Project is approximately 25 miles.

If Route A is selected, the majority of the 345 kV line will be co-located with an existing ITC Midwest 161 kV transmission line, with the exception of a few locations discussed further in **Section 3.1.1**. The existing 161 kV transmission line currently has terminations in Minnesota as follows: Lakefield Junction Substation – Fox Lake Substation – Rutland Substation – Winnebago Junction Substation – Faribault Substation. From the Faribault Substation, the line continues to the Iowa border and terminates at the Winnco Substation in Kossuth County, Iowa. This ITC Midwest 161 kV transmission line will be referred to in this Route Permit Application as the "Lakefield to Border 161 kV Transmission Line". ITC Midwest proposes to construct the entire length of Route A to 345 kV/161 kV double-circuit standards, even where Route A is proposed to be co-located with a 69 kV transmission line or where no co-location is proposed.

If Route B is selected, the Project will be constructed on 345 kV/161 kV double-circuit capable poles with only the 345 kV circuit arms installed and conductors strung at the time of construction. The 161 kV arms would not be installed on these poles until conditions warrant and necessary regulatory approvals are obtained. Before the 161 kV circuit could be constructed, regulatory approvals would need to be obtained from the Commission. If Route B is selected, ITC Midwest's existing Lakefield to Border 161 kV Transmission Line would remain in service in its current location. The existing Lakefield to Border 161 kV Transmission Line would remain in its current location and likely need to be rebuilt within the next 10 years (from Lakefield Junction — Fox Lake—Rutland—Huntley) to 20 years (from Huntley—Faribault—Winnco) if Route B is selected. Any rebuilding of the existing Lakefield to Border 161 kV Transmission Line would not be part of the Project if Route B is selected.

ITC Midwest proposes constructing Route B to 345 kV/161 kV double-circuit standards because, in ITC Midwest's review of the electrical system, if another transmission resource is needed in the area in the future, it will likely be a 161 kV resource need. Further, if a second 345 kV need were identified in this area of southern Minnesota, ITC Midwest would prefer to not install two 345 kV circuits on the same poles for operation and contingency reasons. Additional information on the ITC Midwest's reasons for proposing to construct the Project using a 345 kV/161 kV design is provided in the Certificate of Need application for the Minnesota – Iowa 345 kV Transmission Project (Docket No. ET6675/CN-12-1053).

The Project is made up of two segments, and associated facilities, that include:

1. **Lakefield Junction – Huntley:** The Lakefield Junction – Huntley segment of the Project runs, primarily, west to east. This segment will be constructed with 345 kV/161 kV double-circuit capable structures. If Route A is selected, the Project will primarily be co-located with the existing Lakefield to Border 161 kV Transmission Line. If Route B is selected, ITC Midwest proposes to follow primarily road rights-of-way and agricultural field lines and construct the segment with 345 kV/161 kV double-circuit capable structures with only the 345 kV arms installed and the 345 kV circuit strung at the time of construction. This segment is approximately 55 miles in length.

2. **Huntley – Iowa:** The Huntley – Iowa segment of the Project runs, primarily, north to south. This segment will be constructed using 345 kV/161 kV double-circuit capable structures. If Route A is selected, ITC Midwest proposes to primarily co-locate the Project along the Lakefield to Border 161 kV Transmission Line centerline. If Route B is selected, ITC Midwest proposes to follow primarily road rights-of-way and agricultural field lines and construct the segment with 345 kV/161 kV double-circuit capable structures with only the 345 kV arms installed and the 345 kV circuit strung at the time of construction. This segment is approximately 20 miles in length.

3. **Associated Facilities:** ITC Midwest proposes to expand its existing Lakefield Junction Substation east of Lakefield, Minnesota; remove its existing Winnebago Junction Substation south of Winnebago, Minnesota; construct a new Huntley Substation approximately one mile south of the existing Winnebago Junction Substation; and reconfigure the 69 kV and

161 kV transmission lines that currently terminate at the Winnebago Junction Substation so that they terminate at the new Huntley Substation. The four 161 kV transmission lines that ITC Midwest proposes to reconfigure are identified as follows:

a. Rutland—Winnebago Junction;

b. N.B.E.I.—Winnebago Junction (owned by Xcel Energy);

c. Faribault—Winnebago Junction; and

d. Freeborn—Winnebago Junction.

The three 69 kV transmission lines that ITC Midwest proposes to reconfigure and construct to 161 kV standards as part of the Project are identified as follows:

a. Winnebago Junction—Winnebago Local;

b. Blue Earth—Winnebago Junction; and

c. Walters—Winnebago Junction.

More information on these associated facilities is available in **Section 2.4**.

2.3 ROUTE WIDTH

The PPSA, Minnesota Statutes Chapter 216E, directs the Commission to locate transmission lines in a way that "minimize[s] adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring that electric energy needs are met and fulfilled in an orderly and timely fashion." Minn. Stat. § 216E.02, subd. 1. The PPSA further authorizes the Commission to meet its routing responsibility by designating a "route" for a new transmission line when it issues a Route Permit. Minn. Stat. § 216E.02, subd. 2. A "route" may have "a variable width of up to 1.25 miles," within which the right-of-way for the transmission facilities can be located. Minn. Stat. § 216E.01, subd. 8.

A route should be wide enough to provide flexibility for the permittee to work with landowners to address concerns and to address engineering issues that may arise after a Route Permit is issued. Once a route is established by the Commission, the permittee then does more detailed engineering and survey

work in addition to contacting landowners to gather additional detailed information about their property. Only after considering all these inputs does the permittee establish an exact centerline and pole placement.

Once the utility establishes a final alignment and structure placement, proposed construction drawings are provided to the Commission, in the format of a "Plan and Profile" compliance filing, so the Commission can confirm that the permittee's plans are consistent with the Route Permit.

In recent dockets, the Commission has identified an "anticipated alignment" in final Route Permit decisions (an "anticipated alignment" was first included in the Bemidji – Grand Rapids 230 kV Transmission Line Project, ORDER GRANTING ROUTE PERMIT, Docket No. E017, E015, ET6/TL-07-1327 (Nov. 5, 2010)). The Commission, in identifying an "anticipated alignment" in recent Route Permit decisions, includes a condition similar to the following:

> [T]his permit anticipates that the actual right-of-way will generally conform to the alignment shown in the attached maps, unless changes are requested by individual landowners, unforeseen conditions are encountered, or are otherwise provided for by this permit.

Given the Commission's recent practice to identify an "anticipated alignment" in its Route Permit decisions, ITC Midwest developed what it currently believes to be an alignment for the Project for both Route A and Route B that minimizes the overall potential impacts to the factors identified in Minnesota Rule 7850.4100 based on review of electronically-available data and physical route review (the "application alignment"). The "application alignment" may require modifications after a Route Permit is issued due to limitations inherent in identifying an alignment absent detailed survey, site review, engineering work, and design. The "application alignment" developed for purposes of evaluating potential impacts of each route is available on the detailed maps in **Appendix D**. ITC Midwest has undertaken no detailed survey or engineering work related to the "application alignment" shown on the detailed maps at the time of this Application.

A final alignment will be developed after the Commission issues its Route Permit decision identifying an "anticipated alignment" and ITC Midwest has an opportunity to discuss that "anticipated alignment" with individual landowners and agencies with permitting responsibilities and perform detailed survey and

engineering work, site review, and design. The final alignment will be provided to the Commission through the Plan and Profile submission and review process discussed above. As part of that submission, ITC Midwest will inform the Commission as to where deviations in the final alignment from the anticipated alignment occur.

2.3.1 345 kV Route Width

For the Project, ITC Midwest proposes two routes, each approximately 1,000 feet wide, for the majority of their length. Existing transmission lines, roads, property boundaries, field lines, fence lines, and other routing opportunities are typically found in quarter-mile intervals in the land use settings in the Study Area. Human settlement in rural areas also tends to have a similar quarter-mile development pattern. ITC Midwest requests a route width wider than 1,000 feet in the following areas:

Route A

- In the area south of Interstate 90 near the City of Sherburne, ITC Midwest requests a route width of 1,800 feet near the interchange of Interstate 90 and State Highway 4 to provide flexibility in coordinating routing near the interchange consistent with Minnesota Department of Transportation ("MnDOT") requirements.

- In the area from 30th Street in Pilot Grove Township south to the Iowa border, ITC Midwest requests a route width of 1.25 miles to provide flexibility in coordinating routing with the portion of the Minnesota – Iowa 345 kV Transmission Project to be constructed in Iowa.

Route B

- In the area from 30th Street in Pilot Grove Township south to the Iowa border, ITC Midwest requests a route width of 1.25 miles to provide flexibility in coordinating routing with the portion of the Minnesota – Iowa 345 kV Transmission Project to be constructed in Iowa.

2.3.2 Iowa Border

The Project is proposed to cross into Iowa near Elmore, Minnesota. A franchise from the IUB will be required before ITC Midwest can construct the Iowa portion of the Minnesota – Iowa 345 kV Transmission Project in Kossuth County, Iowa.

The Iowa portion of the Minnesota – Iowa 345 kV Transmission Project will include a 345 kV transmission line to a new Ledyard Substation near Ledyard, Iowa, to be constructed and owned by ITC Midwest, and on to a new Kossuth County substation near Burt, Iowa, to be constructed and owned by MidAmerican Energy. The Minnesota – Iowa 345 kV Transmission Project will extend into Iowa approximately 25 miles.

Because the Project crosses into another state, it is important to ITC Midwest that any route approved by the Commission be of sufficient width to allow the final alignment on the Minnesota side to line up with the final alignment on the Iowa side of the border. To this end, ITC Midwest is requesting a route width of 1.25 miles at the Iowa border for both Route A and Route B, and the company believes this is sufficient to meet this objective. ITC Midwest will continue to keep the Commission and the IUB on the status and development of routing before the other agency to ensure that the routes approved by the respective agencies in Minnesota and Iowa meet in the same location at the border between the states. *See* Minn. Stat. § 216E.02. ITC Midwest identified a notice corridor and proposed route in Iowa for the first segment of the Iowa portion of the Minnesota – Iowa 345 kV Transmission Project to the Ledyard Substation and mailed notices to landowners in Iowa in February 2013.

2.4 ASSOCIATED FACILITIES

The associated facilities for the Project include expansion of the existing Lakefield Junction Substation, removal of the existing Winnebago Junction Substation, construction of the new Huntley Substation, reconfiguration of four 161 kV transmission lines, and reconfiguration of three 69 kV transmission lines proposed to be constructed to 161 kV standards. These 161 kV and 69 kV transmission lines currently terminate at the to-be-removed Winnebago Junction Substation and are proposed to be reconfigured to terminate at the new Huntley Substation.

2.4.1 Lakefield Junction Substation (existing)

ITC Midwest owns the Lakefield Junction Substation. A general location plan for the existing footprint and proposed expansion of the Lakefield Junction Substation is available in **Appendix E**.

(a) *Equipment and Operation*

The Lakefield Junction Substation was constructed in the late 1960s. Currently, four 345 kV transmission lines terminate at the Lakefield Junction Substation: one 345 kV transmission line owned by ITC Midwest (Lakefield Junction—Raun), two 345 kV transmission lines owned by Xcel Energy (Lakefield Junction—Nobles and Lakefield Junction—Lakefield Generation), and one 345 kV transmission line owned by a neighboring wind farm that connects the collector substation for the Lakefield Wind Project OP Trust to the Lakefield Junction Substation (Hunter—Lakefield Junction). Additionally, there are four 161 kV transmission lines owned by ITC Midwest that terminate at the Lakefield Junction Substation. In 2011, ITC Midwest rebuilt the 345 kV portion of the substation to accommodate the nearby wind farm interconnection, including a three-bay breaker-and-a-half configuration, providing six breaker positions. The 161 kV and 69 kV equipment is positioned on the west side of the substation with the 345 kV equipment on the east side and the 345 kV/161 kV transformers are located between the two voltage bays.

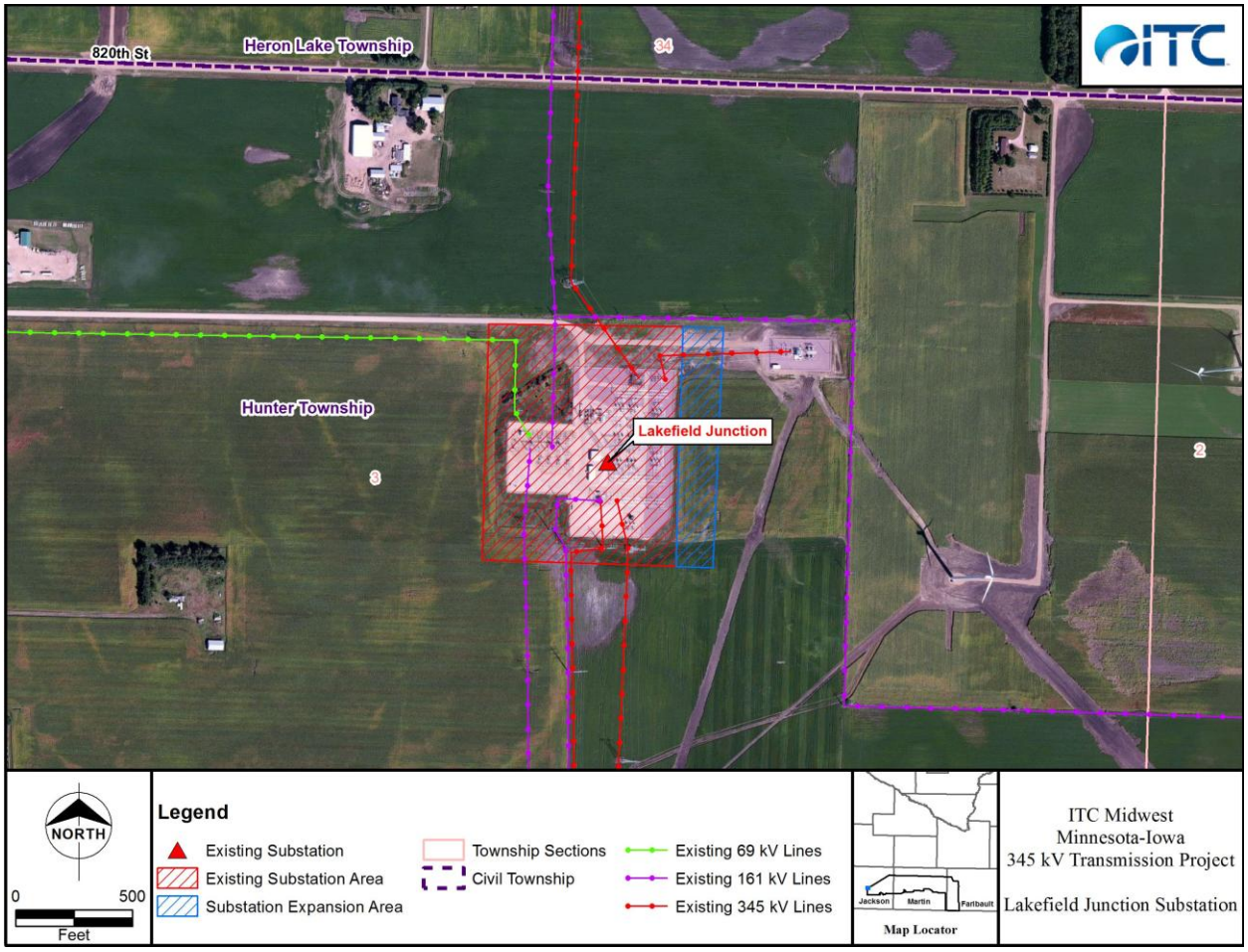
(b) *Substation Land Requirements*

ITC Midwest proposes to expand the Lakefield Junction Substation to the east as part of the Project. After in-depth investigations into the site, existing substation equipment, and transmission line infrastructure ITC Midwest determined that expansion in any other direction is not feasible. The Project is intended to enter the Lakefield Junction Substation from the east. The new 345 kV transmission equipment necessary for the Project is anticipated to include one additional 345 kV bay, using one position, and a future bay position to allow for three future connections. If the new 345 kV equipment is not located on the east side of the substation, the two 345/161 kV transformers and the entire existing 161 kV bay, along with two control buildings, would need to be reconfigured and relocated within the substation. This substantial work would require many extended transmission system outages and coordinating those outages with the overall system would be challenging and costly.

The proposed expansion to the east of the Lakefield Junction Substation will require, at a minimum, ITC Midwest to acquire an additional 160 feet of property for the length of the eastern side of the existing substation. Additionally, easement rights will need to be obtained over the property east of the proposed expansion to allow for interconnection and routing of the Project to the Lakefield Junction Substation. In total, ITC Midwest proposes to acquire approximately three acres of property east of the existing substation property to accommodate

the Project. ITC Midwest anticipates that grading will be necessary over the full substation area acquired but that the fenced area will be expanded by approximately 2.2 acres to accommodate the new 345 kV equipment. The current Lakefield Junction Substation property boundaries and area ITC Midwest proposes to acquire for expansion are identified in **Figure 4** and **Appendix F**.

Figure 4. Proposed Lakefield Junction Substation Expansion



2.4.2 Winnebago Junction Substation (existing)

ITC Midwest proposes to remove all existing equipment from the Winnebago Junction Substation and remove all foundations and fenced area as part of the Project. The substation is currently covered by an easement between ITC Midwest and Interstate Power and Light Company. ITC Midwest and Interstate Power and Light Company are in the process of transferring ownership of the Winnebago Junction Substation site to ITC Midwest. At the time of this Application, ITC Midwest intends to allow the Winnebago Junction Substation site return to a natural state in areas not crossed by transmission line rights-of-

way after the existing substation equipment is removed. One 161 kV transmission line (N.B.E.I.—Huntley) and two 69 kV transmission lines (Walters—Huntley and Huntley—Winnebago Local) will remain on the property after the Winnebago Junction Substation is removed.

(a) *Equipment and Operation*

ITC Midwest initially investigated the possibility of expanding the Winnebago Junction Substation site as part of the Project. ITC Midwest determined, however, that the property at this site is not sufficient in size to allow for the expansions necessary for the Project. Additionally, because of the site's proximity to the Blue Earth River, a heavily treed area, US Highway 169, and a conservation easement on an adjacent parcel, the ability to acquire additional usable land rights was limited. Therefore, ITC Midwest determined it was appropriate to investigate a new location for the 345 kV substation. ITC Midwest concluded that construction of a new substation just over one mile south of the Winnebago Junction Substation was the best option for the Project.

Further, the age of the equipment at the Winnebago Junction Substation was of concern. The Winnebago Junction Substation was constructed in the 1950s. The original substation equipment includes 69 kV and 161 kV breakers. Additionally, the control building onsite is over 60 years old and must be updated or replaced if the Winnebago Junction Substation were to continue operation. Before the Minnesota – Iowa 345 kV Transmission Project was approved by MISO, ITC Midwest planned to replace this equipment as it was approaching the end of its operational life. ITC Midwest put the replacement project on hold in light of this Project. ITC Midwest determined that it was more cost effective to construct a new substation with equipment to support the transmission infrastructure currently at the Winnebago Junction Substation and to support the proposed Project than upgrade the aged equipment at the Winnebago Junction Substation and constructing a new 345 kV/161 kV/69 kV substation to meet the Project needs.

(b) *Plans for Substation Property*

ITC Midwest will continue to own and operate transmission lines across this parcel. ITC Midwest proposes to remove all substation infrastructure at the Winnebago Junction Substation site. This includes the electrical equipment at the substation, foundations, gravel, fencing, and other materials that would no longer be necessary after the substation is removed from operation. At the time of this Application, ITC Midwest intends to allow the Winnebago Junction

Substation site to return to a natural state by reestablishing vegetation that is compliant with the remaining transmission line facilities after the current substation infrastructure is removed.

2.4.3 Huntley Substation (new)

ITC Midwest proposes to construct a new substation one mile south of the Winnebago Junction Substation. ITC Midwest owns the property where it proposes to construct the new Huntley Substation. A detailed location plan for the Huntley Substation has not yet been prepared and substation design engineers have not determined where the nine-acre substation would be located on the 40-acre parcel.

(a) *Equipment and Operation*

ITC Midwest proposes to install two 345 kV breaker-and-a-half bays with three 345 kV breakers, associated switches, steel, foundations, and deadend structures. A 345 kV/161 kV transformer will also be installed at the Huntley Substation, along with four 161 kV breaker-and-a-half bays with eleven 161 kV breakers, associated switches, steel, foundations, and dead end structures. Certain 69 kV equipment will also be installed, including two 161 kV/69 kV transformers, three 69 kV breakers, and associated switches, steel, foundations, and deadend structures. A control building and road access will also be constructed at the site.

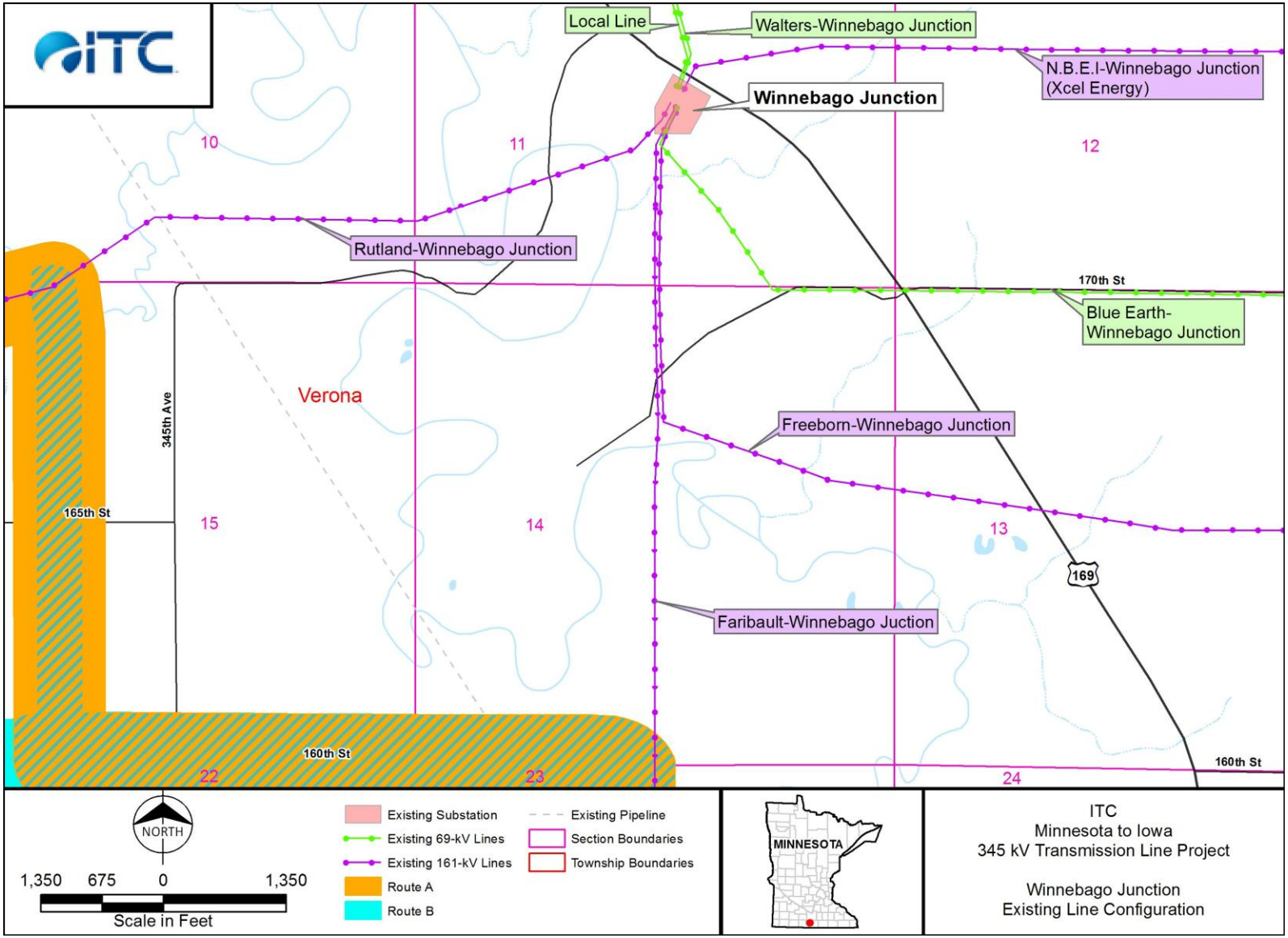
(b) *Substation Land Requirements*

ITC Midwest purchased 40 acres of land for the Huntley Substation in December 2012. ITC Midwest proposes to construct an approximately nine-acre fenced area for the Huntley Substation on this parcel. ITC Midwest intends to design and grade the Huntley Substation to provide sufficient space for two future 345 kV breaker-and-a-half bays and one additional 161 kV breaker-and-a-half bay. Additionally, this large site will allow ITC Midwest to maintain a substantial buffer between the substation fence and adjacent landowners.

2.4.4 161 kV Interconnections at Huntley Substation

There are four 161 kV and three 69 kV associated facilities that currently terminate at the Winnebago Junction Substation that will need to be reconfigured as part of the Project. The current configuration of these 161 kV and 69 kV associated facilities is shown in **Figure 5**.

Figure 5. Current Configuration of Associated Facilities Terminating at the Winnebago Junction Substation



For the 69 kV and 161 kV associated facilities, ITC Midwest proposes to primarily use single pole structures. ITC Midwest will use existing, but expanded, rights-of-way to the greatest extent feasible. The reconfigured transmission lines will either be single-circuit or double-circuit, whichever provides the most efficient use of rights-of-way. Specialty structures may be used where environmentally sensitive areas are encountered. These associated facilities will be constructed to maintain a minimum vertical clearance for the conductor of 25 feet.

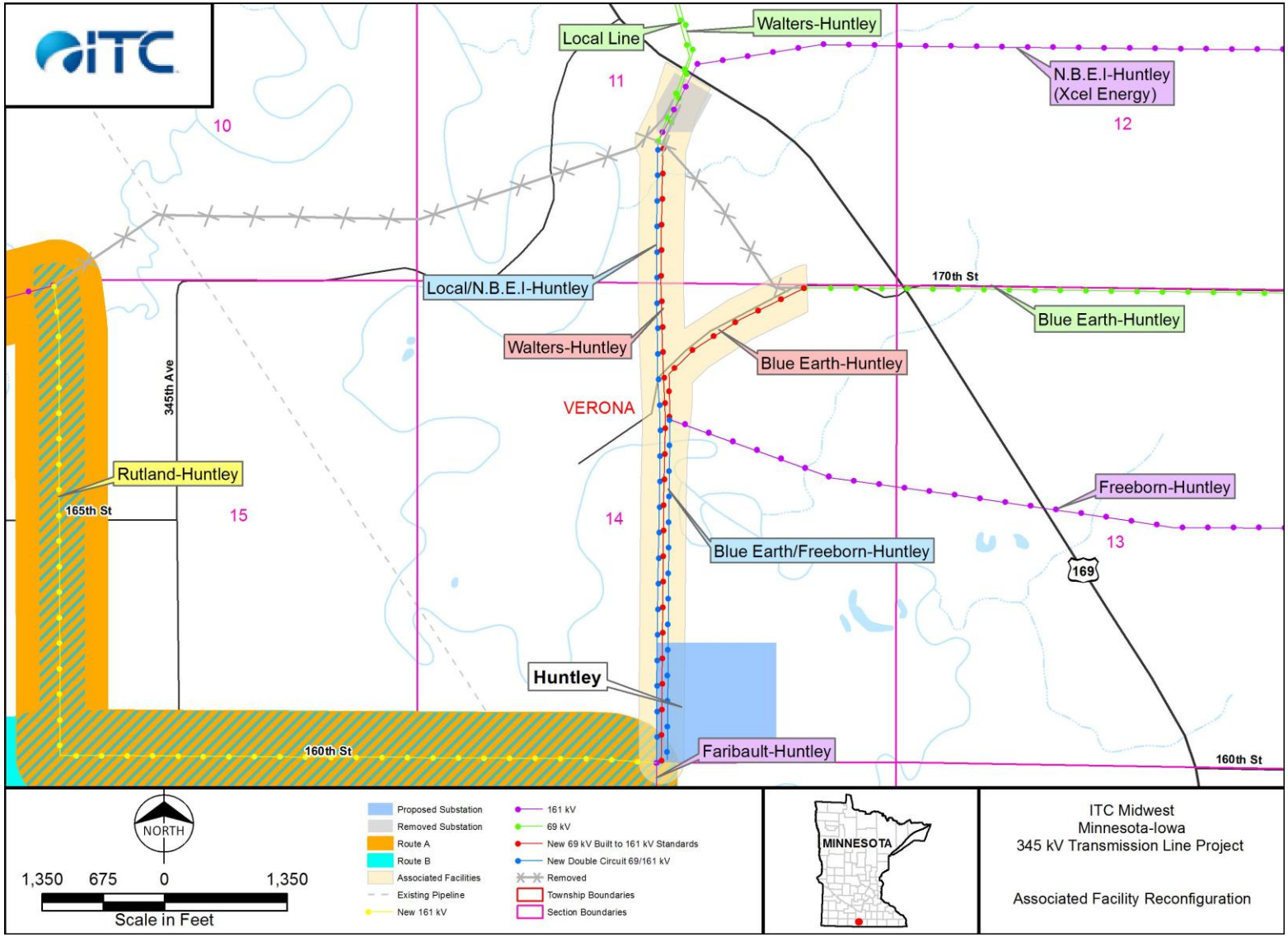
ITC Midwest proposes to co-locate two 69 kV transmission lines with two 161 kV transmission lines in the area between the Winnebago Junction and Huntley substation sites. At this time, ITC Midwest proposes to co-locate the 69 kV Winnebago Junction—Winnebago Local transmission line with the 161 kV N.B.E.I.—Winnebago Junction ("Local/N.B.E.I.") transmission line and the 69 kV Blue Earth—Winnebago Junction transmission line with the 161 kV Freeborn—Winnebago Junction ("Blue Earth/Freeborn") transmission line. These co-located lines would be constructed on primarily single-pole structures built to 161 kV/161 kV standards but operated at 161 kV/69 kV until conditions warrant.

There is one 69 kV transmission line (the Walters—Winnebago Junction line) and a portion of the Blue Earth—Winnebago Junction 69 kV transmission line that are not proposed to be co-located with a 161 kV transmission line. ITC Midwest, does however, propose to construct both of these lines, as part of the Project, to 161 kV standards to avoid future reconstruction and minimize impacts to the environment and to landowners. These lines would be operated at 69 kV until conditions warrant.

Portions of the rights-of-way currently occupied by the Rutland—Winnebago Junction and Blue Earth—Winnebago Junction lines that will no longer be needed after the Project is constructed will be abandoned. For the 161 kV associated facilities, ITC Midwest requests a 500-foot route width. For the associated facilities, a right-of-way of 150 feet is the minimum necessary for the safe operation of these facilities. A right-of-way 250 feet in width will be needed from the Huntley Substation north to 170th Street to allow parallel construction of 161 kV associated facilities. A right-of-way 200 feet in width will be needed north of this location to the Winnebago Junction Substation site to allow for three circuits (one 161 kV/161 kV transmission line and one 69 kV transmission line constructed to 161 standards) to be constructed in parallel. A right-of-way 150 feet in width will be needed along 170th Street for the 69 kV Blue Earth—Winnebago Junction line to be constructed to 161 kV standards. The proposed

routes for the 161 kV associated facilities are shown in **Figure 6** and in more detail in **Appendix F**.

Figure 6. Proposed 161 kV Associated Facility Relocations



2.5 PROJECT SCHEDULE

An expected permitting and construction schedule for the Project is provided in **Table 2**:

Table 2. Estimated Project Schedule

Activity	Estimated Activity Dates
Minnesota Certificate of Need Order	2nd Quarter 2014
Minnesota Route Permit Order	2nd Quarter 2014
Franchise from Iowa Utilities Board	3rd Quarter 2015
Environmental Permits Received	3rd Quarter 2015
Other Permits/Approvals Received	3rd Quarter 2015
Land Acquisition	3rd Quarter 2014 to 2nd Quarter 2015
Survey and Transmission Line Design	4th Quarter 2014 to 4th Quarter 2015
Right-of-Way Clearing to Begin	4th Quarter 2015
Construction to Begin	1st Quarter 2016
In-Service (Lakefield – Huntley)	1st Quarter 2017
In-Service (Huntley – Iowa)	2nd Quarter 2017

2.6 PROJECT COST ANALYSIS

The estimated costs prepared for the Project include costs to obtain environmental permits, obtain road sharing and crossing permits and licenses, complete survey work, complete line and substation design work, obtain materials, acquire property for substations and transmission line rights-of-way, complete construction of the Project, complete restoration of the rights-of-way, and obtain a Certificate of Need and Route Permit from the Commission. Project costs were developed with a +/- 30 percent variation as the final costs are highly dependent on costs of materials and labor associated with Project construction.

2.6.1 Project Costs

Cost estimates were developed on the two routes identified in this Application. Planning-level cost estimates are provided in **Table 3**.

Table 3. Estimated Project Costs

Project Facility	Route A (millions)	Route B (millions)
Lakefield – Iowa Border Transmission Line	$164[a]	$152
Lakefield Junction Substation	$6	$6
Huntley Substation [b]	$33	$33
161 kV Associated Facilities	$3	$3
Total	**$206**	**$194**

[a] The estimated cost for the Lakefield – Iowa Transmission Line includes the estimated cost to remove the existing Lakefield to Border 161 kV Transmission Line, where necessary.

[b] The estimated cost for the Huntley Substation includes the estimated cost to remove the Winnebago Junction Substation infrastructure and the cost of construction of equipment to support the 345 kV, 161 kV, and 69 kV systems at the Huntley Substation.

The total cost of the Project[2] is estimated to be between $194 million and $206 million, +/- 30 percent. While both routes approximately the same length, the materials and labor costs for Route B are estimated to be lower than for Route A because only the 345 kV circuit installed as part of the Project. ITC Midwest estimates the cost to install the 161 kV circuit along Route B, considering only materials and labor, would be approximately $28 million. Therefore, if Route B were also constructed initially as a 345 kV/161 kV line configuration, it would cost an estimated $222 million.

2.6.2 Operations and Maintenance

The primary cost associated with the operation and maintenance of a transmission line is the cost of inspections, usually done semi-annually by helicopter with a forester, vegetation planner, and line inspector; annually by ground with a forester; and once every four years by ground with a line inspector. Annual operating and maintenance costs for transmission lines in Minnesota and the surrounding states vary depending upon the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used, and the transmission line's age. For operation and maintenance of 345 kV transmission lines, including vegetation removal and maintenance, tower and line maintenance, and the previously-mentioned

[2] The Project costs in this Application only include the Minnesota portion of the Minnesota – Iowa 345 kV Transmission Project

helicopter and ground patrols, ITC Midwest's recent experience with lines of varying ages has shown that annual costs are likely to be approximately $2,000 per mile.

Substations also require a certain amount of maintenance to keep them functioning in accordance with accepted operating parameters, ITC Midwest procedures, North American Reliability Corporation ("NERC") reliability standard requirements, and the National Electric Safety Code ("NESC"). Transformers, circuit breakers, control buildings, batteries, relay equipment, and other substation equipment need to be serviced periodically to maintain operability. The fenced area must also be kept free of vegetation and proper drainage must be maintained.

3.0 ENGINEERING DESIGN, CONSTRUCTION, AND RIGHT-OF-WAY ACQUISITION

3.1 TRANSMISSION LINE ENGINEERING AND OPERATIONAL DESIGN

A high voltage transmission line consists of three electrical paths known as phases. Each phase of a high voltage transmission line consists of one or more conductors. When more than one conductor is used to make up a phase, it is referred to as a "bundled" conductor. Conductors are metal cables with an inner core consisting of multiple steel strands with multiple aluminum strands wound around the steel strands. A single-circuit transmission line carries three phases (conductors) and shield wire(s). A double-circuit transmission line carries six phases (conductors) and two shield wires. Each phase is installed at the end of an insulator. Insulators are attached to support structures that are available in different configurations.

Shield wires are typically less than one inch in diameter and are strung above the electrical phases to prevent damage from lightning strikes. The shield wire may also include fiber optic cable to provide a communication path between substations.

Design constraints, voltage of the transmission line, and other considerations determine what structure configuration is used for the construction of any portion of a high voltage transmission line. Structure variations can include single pole structures, H-Frame structures, and multiple pole structures. Transmission lines are constructed within a right-of-way, the width of which is dependent on the voltage of the high voltage transmission line and the structure type selected for its construction.

3.1.1 Transmission Structure and Conductor Design

(a) *345 kV Transmission Line*

ITC Midwest proposes to primarily use single pole, weathering or galvanized steel structures. Double-circuit structures (345 kV/161 kV) will be used for the Project. Structures are proposed to be placed using spans of approximately 700 to 1,000 feet, with an average span of approximately 900 feet. A single pole structure is typically installed on a concrete foundation.

Other specialty structures may be necessary due to environmental conditions developed in cooperation with other State or federal agencies or to accommodate particular design considerations that cannot be identified until detailed survey work and soil sampling has been performed for the Project. Such detailed work will not likely be undertaken until after the Commission issues a Route Permit for the Project to ensure that the areas where these activities occur are those covered by the final route selected in this proceeding.

Because Route A anticipates co-locating the 345 kV line with existing transmission facilities where feasible and to allow for future expansion in the remaining locations where co-location of existing transmission facilities is not proposed at this time, ITC Midwest proposes to use double-circuit structures built to 345 kV/161 kV double-circuit standards. The Project will not be co-located along the existing Lakefield to Border 161 kV Transmission Line centerline in the following areas:

- Fox Lake and Lake Charlotte. Where the Project, along Route A is proposed to be co-located with an existing 69 kV transmission line near Fox Lake, structures will be built to 345 kV/161 kV double-circuit standards but operated at 345 kV/69 kV.

- Jackson Municipal Airport. ITC Midwest proposes to move the 161 kV line to 345 kV/161 kV double-circuit structures on new right-of-way. Although ITC Midwest proposes to primarily use single pole structures for the Project, specialty structures may be used where conditions require their use. Along Route A and Route B north of the Jackson Municipal Airport, ITC Midwest may use low profile structures for the 345 kV/161 kV transmission line with shorter span lengths to ensure there are no hazards to air navigation. ITC Midwest is working with the Federal Aviation Administration ("FAA") to determine the appropriate height of structures that may be used in this area.

- West of the Winnebago Junction Subsation. ITC Midwest proposes to move a short portion of the existing Lakefield to Border 161 kV to 345 kV/161 kV structures along new right-of-way into the new Huntley Substation.

If Route B or any of its segments is selected by the Commission for the Project, ITC Midwest proposes to use 345 kV/161 kV double-circuit capable structures

that will allow for future expansion of the transmission system. Only one set of arms, the 345 kV arms, would be installed as part of the Project which would allow only one circuit (three phases) to be installed for Route B. The 161 kV arms, insulators and conductors would be added in the future when conditions warrant. For Route B, ITC Midwest's existing Lakefield Junction to Border 161 kV Transmission Line would remain in its current location except for approximately 1.5 miles in Verona Township that would require relocation to connect to the new Huntley Substation.

Each 345 kV phase will consist of two twisted pair Drake (2-795) Aluminum Conductor Steel Reinforced ("ACSR"), or equivalent 3000 amp, conductor. Each conductor is approximately 1.8 inches in overall diameter. Each individual ACSR cable consists of a core of seven steel conductors surrounded by 26 aluminum strands. ITC Midwest proposes to use the same conductor and bundled configuration for all the 345 kV transmission line sections. Each 161 kV phase constructed on the 345 kV/161 kV structures will be constructed using twisted pair Drake (2-795) ACSR, or equivalent 1600 amp, conductor.

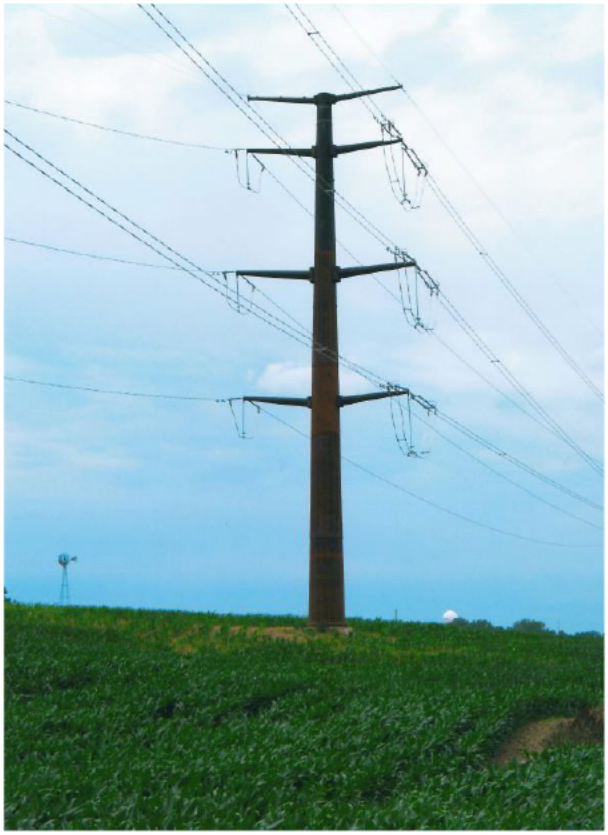
Table 4 provides a summary of the technical specifications of the targeted (*i.e.*, straight line), angle (*i.e.*, minor changes in line direction, and deadened (*i.e.*, used where a transmission line turns or ends) structures that ITC Midwest is seeking permission from the Commission to use for the 345 kV transmission line. **Figure 7** provides sample photos of the structures that ITC Midwest will primarily use for the 345 kV segments of the Project on either route. Technical drawings of all the structures identified in **Table 4** are available in **Appendix G**. If Route B is selected, only the 345 kV arms would be installed at this time. ITC Midwest will design the 345 kV portions of the Project to ensure a minimum conductor clearance of 35 feet between the ground and the lowest point of the conductor.

ITC Midwest will design the Project to meet or surpass all applicable local and State building codes and NESC requirements, and additional standards developed by ITC Midwest. Appropriate safety protocols, procedures, and standards will be followed during design and construction, and after installation.

Table 4. 345 kV Structure Design Summary

Design Configuration	Initial Operation	Structure Type	Structure Material	Right-of-Way Width (feet)	Structure Height (feet)	Structure Base Diameter (feet)	Foundation Diameter (feet)	Span Between Structures (feet)
345 kV/161 kV	345 kV/161 kV	Single Pole Davit Arm	Steel	200	130-190	Tangent: 5 Angle: 9	Tangent: 8 Angle: 12	700-1000
		2 Pole	Steel	200	130-190	Deadend: 9	Deadend: 12	700-1000
		Single Pole Davit Arm Low Profile	Steel	200	100-160	Tangent: 5 Angle: 9	Tangent: 8 Angle: 12	500-1000
		3 Pole Low Profile	Steel	200	100-160	Deadend: 9	Deadend: 12	500-1000
345 kV/161 kV	345 kV/69 kV	Single Pole Davit Arm	Steel	200	130-190	Tangent: 5 Angle: 9	Tangent: 8 Angle: 12	700-1000
		2 Pole	Steel	200	130-190	Deadend: 9	Deadend: 12	700-1000
345 kV/161 kV	345 kV/none	Single Pole Davit Arm	Steel	200	130-190	Tangent: 5 Angle: 9	Tangent: 8 Angle: 12	700-1000
		2 Pole	Steel	200	130-190	Deadend: 9	Deadend: 12	700-1000
		Single Pole Davit Arm Low Profile	Steel	200	100-160	Tangent: 5 Angle: 9	Tangent: 8 Angle: 12	500-1000
		3 Pole Low Profile	Steel	200	100-160	Deadend: 9	Deadend: 12	500-1000

Figure 7. 345 kV/161 kV Double-Circuit Structure Sample Photographs



345 kV/161 kV Double-Circuit

345 kV/161 kV Low Profile Double-Circuit

(b) *161 kV Associated Facilities*

The 161 kV transmission lines that currently terminate at the existing Winnebago Junction Substation are proposed to be reconfigured to terminate at the new Huntley Substation as part of the Project. ITC Midwest evaluated the proposed reconfigurations and necessary system interconnections at the Huntley Substation and identified structures with technical specifications provided in **Table 5** as those most likely to be used for these associated facilities.

Figure 8 provides sample photos of the 161 kV structure types ITC Midwest proposes using for construction of the associated facilities. Technical drawings of all the associated facility structure types identified in **Table 5** are available in **Appendix G**. The 161 kV associated facilities to be owned by ITC Midwest will be constructed using twisted pair Drake (2-795) ACSR, or equivalent 1600 amp, conductor. The N.B.E.I. – Huntley 161 kV transmission line is proposed to be constructed using Aluminum Conductor Steel Supported ("ACSS") 565 kcmil

Calumet, or equivalent 1400 amp, conductor. These facilities will be constructed to ensure that the minimum clearance between the ground and the lowest point of the conductor will measure 25 feet.

ITC Midwest will design the 161 kV associated facilities to meet or surpass all applicable local and State building codes and NESC requirements, and additional standards developed by ITC Midwest. Appropriate safety protocols, procedures, and standards will be followed during design and construction, and after installation.

For the Project's 161 kV transmission line associated facilities, 161 kV single pole single-circuit and 161 kV/161 kV double-circuit poles will be used. Structures are proposed to be placed using spans of approximately 600 to 800 feet, with an average span of approximately 700 feet. A right-of-way of at least 150 feet in width will be necessary for the 161 kV transmission line structures. A right-of-way up to 250 feet may be required between the Winnebago Junction and Huntley substation sites to allow construction of up to five circuits on three parallel, overlapping, rights-of-way. Other specialty structures developed in cooperation with other State or federal agencies may be necessary due to environmental conditions or to accommodate particular design considerations that cannot be identified until detailed survey work and soil sampling has been performed for the Project. Such detailed work will not likely be performed until after the Commission has issued a Route Permit for the Project to ensure that the areas where these activities occur are those covered by the final route selected by the Commission in this proceeding.

Table 5. 161 kV Structure Design Summary

Design Configuration	Initial Operation	Structure Type	Structure Material	Right-of-Way Width (feet)	Structure Height (feet)	Structure Base Diameter (feet)	Foundation diameter (feet)	Span Between Structures (feet)
161 kV/161 kV	161 kV/161 kV	Single Pole Braced Post	Steel	150	80-120	Tangent: 3.5 Angle: 7	Tangent: NA Angle: 10	600-800
		Single Pole Davit Arm	Steel	150	80-120	Deadend: 7	Deadend: 10	600-800
161 kV/161 kV	161 kV/69 kV	Single Pole Braced Post	Steel	150	80-120	Tangent: 3.5 Angle: 7	Tangent: NA Angle: 10	600-800
		Single Pole Davit Arm	Steel	150	80-120	Deadend: 7	Deadend: 10	600-800
161 kV	69 kV	Single Pole Braced Post	Steel	150	70-110	Tangent: 3 Angle: 5	Tangent: NA Angle: 8	600-800[1]
		Single Pole	Steel	150	70-110	Deadend: 5	Deadend: 8	600-800[1]

[1] Spans will be 250-300 feet where proposed to be co-located with distribution lines along 170th Street.

Figure 8. 161 kV Associated Facilities Sample Photographs

161 kV/161 kV Double-Circuit

161 kV Single-Circuit

3.1.2 Transmission Line Right-of-Way

ITC Midwest anticipates constructing the new 345 kV transmission line facilities, either double-circuit or single-circuit, using structures that require a 200-foot right-of-way.

Within the 200-foot right-of-way, ITC Midwest will restrict placement of its structures to a 150-foot easement area (the "Easement Area"). ITC Midwest will acquire an additional 25 foot easement on either side of the Easement Area (the "Ancillary Easement Area") to ensure that ITC Midwest has adequate vegetation management rights and that no structures or other improvements are constructed in the Ancillary Easement Area that pose a safety concern to the Project.

When paralleling existing road rights-of-way, ITC Midwest proposes to place poles on adjacent private property, approximately ten feet off the existing right-of-way, except where Route A parallels Interstate 90. This pole placement allows the transmission line right-of-way to share existing road rights-of-way to the greatest extent feasible and reduces the overall size of the easement likely required from the private landowner.

For Route A, ITC Midwest proposes to follow the centerline of the existing Lakefield to Border 161 kV Transmission Line to the greatest extent practicable. In areas where ITC Midwest determined that following the existing 161 kV transmission line centerline is not feasible, ITC Midwest proposes the following:

- Where the transmission line is placed cross-country, ITC Midwest proposes to locate the poles as close to property division lines as reasonably feasible.

- If locating the poles as close to property division lines is not reasonably feasible, ITC Midwest proposes to locate the poles in a way that minimizes overall impacts to the property owner.

- Where the transmission line is placed parallel to existing road right-of-way, with the exception of Interstate 90, ITC Midwest proposes to locate poles approximately ten feet off road right-of-way.

- Where Route A parallels the interchange right-of-way at Interstate 90 and State Highway 4 and also along Interstate 90, ITC Midwest proposes to locate the structures at least 65 feet, and in most places 100 feet, from the edge of the MnDOT right-of-way.

In Martin County, just north of the City of Sherburn, Route A parallels Interstate 90. At this time, ITC Midwest proposes to have the centerline of the 345 kV facilities (single pole, double-circuit capable for this area) located approximately 65 to 100 feet from the edge of the MnDOT right-of-way in this area. At the interchange of Interstate 90 and State Highway 4, ITC Midwest proposes to locate structures at least 65 feet from the edge of the MnDOT right-of-way. ITC Midwest does not anticipate any permanent overhang of the MnDOT right-of-way for longitudinal alignments along Interstate 90 or the interchange at State Highway 4. In Martin County, Route A parallels State Highway 15 for approximately 1.25 miles and is proposed to be located at least 80 feet from the

highway centerline.More information on State and County roads crossed and paralleled by the proposed routes are available in **Sections 6.2.10** and **8.2.10**.

For Route B, ITC Midwest proposes similar placement of the transmission line. Where the transmission line is placed cross-country, ITC Midwest proposes to locate the poles as close to property division lines and field lines as reasonably practicable. Where the transmission line is placed parallel to existing road right-of-way, ITC Midwest proposes to locate poles approximately ten feet off the existing right-of-way.

For either Route A or Route B, where the transmission line right-of-way will extend into other existing rights-of-way, ITC Midwest will acquire necessary approvals from the owner of the right-of-way (*e.g.*, county highway, railroad, MnDOT, etc.). ITC Midwest believes this approach to routing the transmission line is consistent with the State's policy of non-proliferation. *People for Envtl. Enlightenment and Responsibility (PEER), Inc. v. Minn. Envtl. Quality Council*, 266 N.W.2d 858 (Minn. 1978). Specifically, the two routes proposed in this Application make use of existing road and/or transmission rights-of-way when practicable, consistent with Minnesota Statutes Section 216E.03, subdivision 7(e) and the Commission's implementing rules that call upon the Commission to consider the utilization of existing road, railroad, and transmission rights-of-way when selecting new transmission line routes.

3.1.3 Design Options to Accommodate Future Expansion

ITC Midwest developed Route A to make the greatest use of existing ITC Midwest transmission rights-of-way in areas where there are suitable and adjacent lands for the additional right-of-way that will be required for the Project. ITC Midwest proposes to co-locate the proposed 345 kV transmission line and existing Lakefield to Border 161 kV Transmission Line on double-circuit structures along the existing 161 kV centerline for the majority of the Project, if constructed along Route A, with the exception of three primary locations (Jackson Municipal Airport, Fox Lake, and Lake Charlotte) where ITC Midwest determined that following the existing 161 kV line is not a feasible alternative. Where co-location with the existing Lakefield to Border 161 kV Transmission Line is not proposed along Route A, ITC Midwest proposes to use 345 kV/161 kV double-circuit capable structure to allow the possibility of co-location of transmission infrastructure in the future. Where Route A crosses Interstate 90 to the south of Fox Lake and after Route A crosses back to the north of Interstate 90 east of Fox Lake, a portion of the Project would be constructed

along an existing 69 kV transmission line right-of-way and the 69 kV conductors would be co-located on 345 kV/161 kV capable structures. The remainder of this area would be constructed using 345 kV/161 kV double-circuit capable structures with only the 345 kV circuit installed at this time. For the deviation north of the Jackson Municipal Airport, the existing 161 kV line would be moved to Route A on 345 kV/161 kV double-circuit structures. Slight deviations may occur in other locations (e.g., near the Faribault Substation) where development has occurred around the existing Lakefield to Border 161 kV Transmission Line and an expanded 200-foot right-of-way cannot be obtained if the current centerline is followed. Route A maximizes use of existing infrastructure to accommodate this proposed expansion of the transmission system in southwest Minnesota.

ITC Midwest also considered future expansion possibilities when investigating siting opportunities for the Huntley Substation. Sufficient land has been acquired at the proposed site for the Huntley Substation to enable additional future transmission line connections and to maintain a buffer between the substation footprint and adjoining landowners. Specifics on how ITC Midwest will design the Huntley Substation for possible future expansion needs are provided in **Section 2.4.3**.

Route B was developed to meet the Project needs but also provide an opportunity to address future system needs. As previously discussed, if the Commission selects Route B for the Project, ITC Midwest proposes to construct the Project using 345 kV/161 kV double-circuit capable structures so that a second 161 kV circuit can be strung when conditions justify expansion.

3.2 IDENTIFICATION OF EXISTING CORRIDORS

As discussed in **Section 4.2.3**, ITC Midwest began its analysis and evaluation of potential 345 kV transmission line routes by inventorying existing ITC Midwest transmission lines between the critical locations of the Lakefield Substation, the Winnebago Junction Substation (now to be replaced with the Huntley Substation) and the Iowa border near Elmore, Minnesota. Route A utilizes the existing centerline of the Lakefield to Border 161 kV Transmission Line or 69 kV transmission lines owned by ITC Midwest for approximately 75 percent of its length.

For Route B, ITC Midwest identified existing transportation rights-of-way for the route where appropriate. Where transportation rights-of-way were either highly

developed or residences were in close proximity to the roadways, other division lines were identified for routing where feasible.

Table 6 lists existing utility and transportation rights-of-way identified in the route selection process and summarizes the linear feature sharing along Route A and Route B. More detailed data for routes are provided in **Appendix H**.

Table 6. Summary of Length of Existing Linear Features Paralleled by Proposed Routes[3]

Route	Length (miles)	Transmission (miles)	Road (miles)	Railroad (miles)	Pipeline (miles)	Field/ Division/ Survey Lines (miles)	None (miles)	Total Paralleled Length (miles)	% Of Length Paralleling Linear Features
A	73	55	12	0	0	52	6	67	92
B	73	0	35	0	0	53	20	53	72

3.3 RIGHT-OF-WAY ACQUISITION, CONSTRUCTION, RESTORATION AND MAINTENANCE PROCEDURES

ITC Midwest developed right-of-way acquisition, construction, restoration, and maintenance procedures for the Project. Although certain procedures will be site-specific based upon the final route and substation design, general procedures are discussed in some detail in this Application.

3.3.1 Right-of-Way Acquisition

The right-of-way acquisition process for the transmission lines and substations is discussed below.

(a) *Transmission Line*

ITC Midwest plans to begin the transmission line right-of-way acquisition process early in the detailed design phase of the Project, which primarily occurs after a Route Permit has been issued by the Commission, although some right-of-

[3] A route may follow both a transmission line and road or transmission line and field line in the same location, for example, so the sum of individual sharing columns does not represent the total length paralleled.

way acquisition may begin earlier if circumstances allow. ITC Midwest typically acquires easements for transmission line right-of-way. The right-of-way evaluation and acquisition process includes title examination, initial owner contacts, survey work, document preparation, easement negotiation, and purchase. Each of these activities is described in more detail below. The existing right-of-way for the Lakefield to Border 161 kV Transmission Line generally measures 100 feet to 150 feet in width, with some variation. In the areas where existing right-of-way can be used for the Project, ITC Midwest will seek permission to increase the width of the right-of-way through an easement.

Prior to contacting landowners from whom easements will be required, ITC Midwest will conduct a title search to identify all persons and entities that have a recorded interest in the affected real estate. A title company will be engaged to complete the public records search. A title report for each parcel will be prepared to document the legal description and the owners of record, and to report information regarding easements, liens, restrictions, encumbrances, and other conditions of record.

After owners are identified, a right-of-way agent will contact each landowner or the landowner's representative. The right-of-way agent will describe how the Project may affect the landowner's property. At this time, the right-of-way agent will ask the landowner for information about any specific concerns related to construction of the Project on the landowner's property.

The right-of-way agent will also request the landowner's permission for survey crews to enter the property to conduct any necessary preliminary surveys. Surveys are conducted to locate rights-of-way, natural and manmade features, and associated elevations, which are used during detailed engineering of the transmission line. Soil borings may be taken to assess soil conditions and determine appropriate foundation design. During or before initial contact with a landowner after the Commission issues a Route Permit, ITC Midwest will provide the landowner with a copy of the Route Permit and any other materials the Commission determines are necessary.

The right-of-way agent will discuss with the landowner where the structure(s) will be located on the property, as well as the boundaries of the easement area. If requested by the landowner, ITC Midwest will stake the proposed transmission line's location (*i.e.*, the survey crew will identify the proposed boundary of the easement and the approximate location of the structure or pole on the ground with a surveyor's stake).

The right-of-way agent will collect area land value data to determine the amount of just compensation to be paid for the rights to build, operate, and maintain the transmission facilities within, and reasonable access to, the easement area. The agent will provide the landowner with a map of the transmission line route across the landowner's parcel and will negotiate with the landowner regarding compensation for the transmission line easement. An appraisal may be obtained to resolve any complicated valuation issues. The landowner will be allowed a reasonable amount of time to consider the offer and to present any information that the owner believes is relevant to determining the property's value.

ITC Midwest is committed to working with the landowners to address their concerns. In most cases, an agreement can be reached to purchase the land rights. The right-of-way agent will prepare the documents required to complete each transaction, which may include an easement, a purchase agreement, and subordination agreements.

If a negotiated settlement cannot be reached, ITC Midwest will acquire real property rights through exercise of the power of eminent domain pursuant to Minnesota Statutes Chapter 117, including the "quick-take" process set forth in Minnesota Statutes, Section 117.042. The process of exercising the power of eminent domain is called "condemnation."

In the event of condemnation, ITC Midwest will provide the landowner with a copy of each appraisal it has obtained for the property interests to be acquired. To initiate the condemnation process, ITC Midwest files a petition in the district court in the county where the property is located. If the court approves the petition, the court appoints a three-person condemnation "commission." The three people appointed must be knowledgeable of applicable real estate values. Once appointed, the commissioners schedule a viewing of each parcel identified in the petition. Next, the commissioners schedule a valuation hearing, where the utility and landowners present testimony and evidence regarding the just compensation for acquisition of the easement. The commission then makes an award of just compensation and files it with the court. Each party has 40 days from the filing of the award to appeal to district court for a de novo jury trial. In the event of an appeal, the jury would hear land value evidence and render a verdict. At any point in this process, the case can be dismissed if the parties reach a settlement.

There may be instances where landowners elect to exercise their rights under Minnesota Statutes Section 216E.12, subdivision 4, which would require ITC

Midwest to purchase their property in fee, rather than acquiring only an easement for the transmission facilities. Minnesota Statutes Section 216E.12, subdivision 4, is sometimes referred to as the "Buy-the-Farm Statute." The Buy-the-Farm Statute applies only to transmission facilities that are 200 kV or more; thus, the Buy-the-Farm Statute may apply to parcels crossed by the 345 kV transmission line, but would not apply to parcels crossed by the 161 kV transmission line.

Once right-of-way is acquired and prior to construction, the right-of-way agent will contact each owner to discuss the construction schedule and requirements. To ensure safe construction, special consideration may be needed for fences, crops, or livestock. For instance, fences or livestock may need to be moved, or temporary or permanent gates may need to be installed. In each case, the right-of-way agent will coordinate with the landowner, who will be compensated for Project-related construction damages, including crop losses.

(b) *Substations*

When acquiring property for new substations or substation expansions, ITC Midwest typically follows the same general steps outlined above. The exception is that ITC Midwest acquires a fee interest, rather than an easement, in the land required for substations. ITC Midwest will seek to acquire a parcel of sufficient size to construct the fenced area of the substation and to provide a buffer between the substation and neighboring properties.

ITC Midwest purchased a 40-acre parcel for its proposed Huntley Substation in December 2012. Although ITC Midwest purchased this site and believes that it is the most reasonable site for the Project to address all system needs, ITC Midwest understands that the Commission may identify a different site that it believes is more appropriate for the Huntley Substation. If the Commission grants a Route Permit approving this 40-acre parcel for the Huntley Substation, the only fee interest ITC Midwest will need to obtain for the Project for a substation site in Minnesota will be for the proposed approximately three acre expansion at the Lakefield Junction Substation.

As the regulatory review process proceeds, ITC Midwest's representatives will consult with the owners in the area of the proposed Lakefield Substation expansion, and if another site is identified for the Huntley Substation, to discuss the Project in detail and to obtain permission to access the site to conduct any surveys and soil borings required to finalize the substation's design. During the

acquisition phase, landowners will be advised of construction schedules, needed access to the site, and required vegetation clearing. Where possible, the ITC Midwest will negotiate and obtain necessary property rights through voluntary sale. If a voluntary sale agreement cannot be reached, ITC Midwest would acquire the substation parcel through condemnation.

3.3.2 Construction Procedures

Construction for the Project will not begin until all necessary federal, State, and local approvals are obtained, property and rights-of-way are acquired, soil conditions are established, and final design is completed. Construction in areas where State, federal, or local approvals are not needed or have already been obtained may proceed while approvals for other areas of the Project, right-of-way acquisition, surveys, or design are still pending or in process. Precise timing and phasing of right-of-way clearing and construction will depend on permit conditions, system loading issues, when existing transmission lines can be taken out of service for construction to proceed, and available workforce.

Construction, after acquisition of property or rights-of-way, is anticipated to progress generally as follows: survey marking of the right-of-way, right-of-way clearing and preparation, grading or filling where necessary, installation of concrete foundations, installation of poles with insulators and hardware attached, conductor stringing, and installation of any markers required by State or federal permits on conductors or shield wires.

At substations, after property acquisition is complete, survey marking and clearing preparation will occur first. Once substation grading has been completed, concrete foundations will be placed throughout the substation for pad-mounted substation equipment. Substation perimeter fencing (*i.e.*, chain link fence) will then be installed. All substation equipment will be contained within the fenced area. Construction of the substation control house, which encloses protective relaying and control equipment, will also occur at this time. Erection of steel structures will occur after foundations have properly cured. These steel structures consist of rolled or tubular steel columns. Beams are used for mounting the electrical conductors and disconnect switches. Large high voltage equipment, such as circuit breakers and transformers, are installed following completion of the steel structure.

Construction will follow ITC Midwest's standard construction and mitigation best practices developed from past project construction experience. ITC Midwest

developed best practices to address right-of-way clearing, staging, erecting transmission line structures, and stringing transmission lines. Construction and mitigation practices will also be developed specific to the Project based on the proposed schedule for activities, permit requirements, prohibitions, maintenance guidelines, inspection procedures, terrain, and other practices. For construction across agricultural lands, ITC Midwest is developing an Agriculture Impact Mitigation Plan ("AIMP") that will be reviewed with the Minnesota Department of Agriculture to minimize impacts to these lands. ITC Midwest will also take advantage of weather conditions (*e.g.* frozen ground in wet areas for construction, etc.) when feasible to minimize impacts to lands.

ITC Midwest will design the transmission line structures for installations at the existing grades. As a standard design parameter, ITC Midwest will not generally grade or level structure sites with a slope of 10 percent or less. Where a site slope exceeds 10 percent, working areas will be graded or leveled with fill. If acceptable to the landowner, ITC Midwest proposes to leave the graded/leveled areas after construction for future maintenance activities. If not acceptable to the landowner, ITC Midwest will, to the best of its ability, return the grade of the site back to its original condition. Based on initial review, grades exceeding 10 percent are not anticipated along Route A or Route B.

ITC Midwest anticipates that construction of the Project will require the use of many different types of construction equipment including tree removal equipment, mowers, cranes, backhoes, digger-derrick line trucks, track-mounted drill rigs, dump trucks, front-end loaders, bucket trucks, bulldozers, flatbed tractor-trailers, flatbed trucks, pickup trucks, concrete trucks, and various trailers or other hauling equipment. Excavation equipment is often set on wheel or track-driven vehicles. Construction crews will attempt to use equipment, when opportunities are available, that minimizes impacts to lands. Poles will be transported on tractor-trailers to staging areas or construction sites.

Staging areas will be required for the Project. Staging areas are identified after a route is selected and are typically set up at intervals of approximately 25 miles along the route. These staging areas will be used as receiving locations for the delivery and storage of construction materials and equipment for the Project. For staging areas outside the transmission line right-of-way or not located on property owned by ITC Midwest, rights to use these areas will be obtained from affected landowners through individual agreements.

After a Route Permit is issued by the Commission, ITC Midwest will evaluate construction access opportunities by identifying existing transmission line rights-of-way, roads, or trails that run parallel or perpendicular to the transmission line. Where feasible, ITC Midwest intends to traverse the right-of-way acquired for the Project to access construction areas. This method of access will minimize impacts to landowners and adjacent properties. In some situations, private field roads, trails, or fields must be used to gain access to areas for construction. Where no current access is available or existing access is inadequate to cross roadway ditches or other features, new access roads may be constructed. Permission from landowners will be obtained prior to using any of these areas to access the right-of-way for construction. Where necessary to accommodate heavy construction equipment, including cranes, cement trucks, and hole-drilling equipment, existing roads may be upgraded or new roads may be constructed. If new roads must be constructed, in addition to permission from landowners, ITC Midwest will also obtain permissions necessary from the local road authority. During construction activities, ITC Midwest will work with appropriate road authorities to ensure proper maintenance of roadways traversed by construction equipment.

After right-of-way clearing and grading or filling, where necessary, has been completed, pole installation will begin. Most structures for the Project will have concrete foundations. To install a foundation, a hole is drilled that measures approximately eight feet in diameter for a 345 kV transmission structure foundation and 25 feet, or more, deep. An angle or deadend structure may require a foundation up to 12 feet in diameter. A foundation for a 161 kV transmission structure typically measures eight to ten feet in diameter. The actual diameter and depth of the hole (and foundation) depend on soil conditions that are established during the initial survey and soil testing phases. Concrete is brought to the site by concrete trucks from a local concrete batch plant and filled around a steel rebar support cage. Once the foundation is set, installation of the actual pole on top of the foundation can begin.

Poles will be moved from staging areas and delivered to the foundation. Insulators and other hardware are attached while the pole is still on the ground at the installation location. Using a crane, the pole is lifted, placed, and secured to the cured concrete foundation. Some 161 kV poles may be directly embedded into the ground instead of set on concrete foundations for the Project. Direct embedding requires drilling a hole that measures approximately six to eight feet

in diameter and 15 to 20 feet in depth, with some soil conditions requiring a deeper drilled hole.

Some soil conditions will require that construction mats be placed along the right-of-way or at a pole location to minimize soil disturbances. These mats can also be used to provide access across sensitive areas to minimize impacts including soil compaction, rutting, or damage to plant species.

Once the pole has been set, any remaining holes are back-filled with the excavated material or crushed rock. ITC Midwest prefers to spread any remaining excavated material in the area from which they were removed if landowner permission is obtained. If spreading of the excavated material is not permitted by the landowner, the material will be offered to the landowner or completely removed from the site.

Conductor stringing is the last major component of transmission line construction. Stringing setup areas within the right-of-way or on temporary construction easements outside the right-of-way are established. Conductor stringing setup areas are typically located at two-mile intervals along a route. These operations require brief access to each structure to secure the conductor wire to the insulator hardware and the shield wire to clamps once final conductor sag, compliant with ITC Midwest procedures and NESC minimum clearances, is established. Where the transmission line crosses streets, roads, highways, or other energized conductors or obstructions, temporary guard or clearance poles may be installed before conductor stringing. The temporary guard or clearance poles ensure that conductors will not obstruct traffic or contact existing energized conductors or other cables during stringing operations and also protects the conductors from damage. ITC Midwest intends to use compression splices for conductor installation.

Special construction techniques may be necessary in environmentally sensitive and wetland areas. The most effective way to minimize impacts to these areas during construction is to span them where feasible. ITC Midwest will restrict construction traffic from waterways except under special circumstances and only after discussion with, and approval from, the appropriate resource agency. Where waterways must be crossed during conductor stringing, workers may walk across, use boats to cross, or drive equipment across ice in the winter or use helicopters to facilitate installation of stringing equipment. ITC Midwest will attempt to complete construction and conductor stringing operations in these areas when the ground is frozen. If completing these activities under frozen

conditions is not feasible, the methods discussed above and use of construction matting, where practicable, will be implemented.

Equipment fueling and other maintenance will occur away from environmentally sensitive and wet areas. These construction practices help prevent soil erosion and ensure that fuel and lubricants do not enter waterways or impact environmentally sensitive areas.

After conductor installation is complete, installation of conductor marking devices will occur where required. These marking devices may include bird flight diverters or air navigational markers. ITC Midwest will work with the appropriate agencies to identify locations where marking devices will be installed.

3.3.3 Restoration Procedures

Crews will attempt to minimize ground disturbance whenever feasible during right-of-way and substation site clearing for, and construction of, the Project. Although these attempts will be made, areas will be disturbed during the normal course of work. Once construction is completed in an area, disturbed areas will be restored to their original condition to the maximum extent feasible. Temporary restoration before the completion of construction in some areas along the right-of-way or at substation sites may be required per National Pollution Discharge Elimination System ("NPDES") and Minnesota Pollution Control Agency ("MPCA") construction permit requirements.

After construction activities have been completed, a representative of ITC Midwest will contact the property owner to discuss any damage that has occurred as a result of the Project. This contact may not occur until after ITC Midwest has started restoration activities. If, during the course of construction of the Project, crops, fences, or drain tile have been damaged, ITC Midwest will repair damages or reimburse the landowner to repair the damages.

Ground-level vegetation disturbed or removed from the right-of-way during construction of the Project will naturally reestablish to pre-construction conditions. Vegetation that is consistent with substation site operation outside the fenced area will be allowed to reestablish naturally at substation sites. Areas where significant soil compaction or other disturbance from construction activities occur will require additional assistance in reestablishing the vegetation stratum and controlling soil erosion. In these areas, ITC Midwest will use seed

that is noxious weed free to reestablish vegetation. Various best management practices to be used during the construction of the Project will be identified in the Stormwater Pollution Prevention Plan ("SWPPP") that will be prepared when ITC Midwest applies for an NPDES permit from the MPCA, but some commonly-used methods to control soil erosion are:

- Erosion control blankets with embedded seeds, including those with biodegradable netting, where feasible;
- Silt fences; and
- Straw bales.

Another aspect of restoration relates to the roads used to access staging areas or construction sites. After construction activities have completed, ITC Midwest will ensure that township, city, and county roads used for purposes of access during construction will be returned to either the condition they were in, or better, before right-of-way clearing began. ITC Midwest will meet with township road supervisors, city road personnel, or county highway departments to address any issues that arise during construction with roadways to ensure the roads are adequately restored, if necessary, after construction is complete.

3.3.4 Maintenance Procedures

ITC Midwest and other utilities design transmission lines and substations to operate for decades while requiring minimal maintenance, particularly in the first few years of operation. Substantial work on an existing transmission line is typically only required after it has been exposed to the elements for a long period of time (55, or more, years) or after a storm event has caused damage to the transmission line.

ITC Midwest estimates the service life of its transmission lines at approximately 55-60 years. Practically speaking, however, high voltage transmission lines are seldom retired. This infrastructure has very few mechanical elements and is designed and constructed to withstand weather extremes typical for the region. With the exception of severe weather, transmission lines rarely fail. Protective relaying equipment will automatically take these facilities out of service when a fault is sensed on the system, and these interruptions are usually only momentary. Outages necessary for scheduled maintenance are also infrequent.

Because of these general operational characteristics, the average annual availability of transmission infrastructure is in excess of 99 percent.

Costs associated with the operation and maintenance of transmission facilities are primarily attributed to the cost of inspections, usually done semi-annually by helicopter with a forester, vegetation planner, and line inspector; annually by ground with a forester; and once every four years by ground with a line inspector. Recent experience has shown that annual operation and maintenance costs for 345 kV transmission lines in the ITC Midwest system are approximately $2,000 per mile, including vegetation removal and maintenance, the previously-mentioned helicopter and ground patrols, and line and tower maintenance activities. The actual cost of transmission line maintenance depends on the setting, the amount of vegetation management necessary to ensure and maintain required safety clearances, the frequency of storm damage, structure types and materials, and the overall age of the transmission infrastructure.

Certain maintenance is required at substations to ensure proper operation within NESC and NERC requirements. Various equipment, including transformers, circuit breakers, batteries, and protective relays, must be periodically serviced according to the manufacturers' guidelines. Circuit breakers proposed to be installed as part of the Project will contain sulfur hexafluoride ("SF_6"), a greenhouse gas, as an insulator. Newer circuit breakers contain less SF_6 at lower pressures than older designs and do not sustain the releases associated with older circuit breakers. ITC Midwest intends to install dead-tank Mitsubishi Electric Power Products circuit breakers at the Lakefield Junction and Huntley substations.

3.4 ELECTRIC AND MAGNETIC FIELDS

The term electromagnetic fields ("EMF") refers to electric and magnetic fields that are coupled together, such as in high frequency radiating fields. For lower frequencies associated with power lines (referred to as "extremely low frequencies" or "ELF"), EMF should be separated into electric fields ("EFs"), measured in kilovolts per meter ("kV/m"), and magnetic fields ("MFs"), measured in milliGauss ("mG"). EFs are dependent on the voltage of a transmission line and MFs are dependent on the current carried by a transmission line. The intensity of an EF is proportional to the voltage of the line, and the intensity of an MF is proportional to the current flow through the conductors. Transmission lines in the United States operate at a power frequency of 60 hertz ("Hz") (cycles per second).

3.4.1 Electric Fields

There is no federal standard for transmission line EF. The Commission, however, has imposed a maximum EF limit of 8 kV/m measured at one meter above the ground. *See In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET-2/TL-08-1474, ORDER GRANTING ROUTE PERMIT (*adopting* ALJ Findings of Fact, Conclusions and Recommendation at Finding 194 (Apr. 22, 2010 and amended Apr. 30, 2010)) (Sept. 14, 2010). The standard was designed to prevent serious hazards from shocks when touching large objects parked under alternating current transmission lines of 500 kV or greater. The maximum EF, measured at one meter above ground, associated with the Project is calculated to be 4.71 kV/m. Calculated EFs for the various structure types proposed for the Project are provided in **Table 7**.

Table 7. Estimated Electric Fields (kV/m)

Structure Type	Maximum Conductor Voltage	Distance to Proposed Centerline												
		-300′	-200′	-100′	-75′	-50′	-25′	0′	25′	50′	75′	100′	200′	300′
Single Pole Davit Arm 345 kV/ 161 kV	362.25 kV/ 169.05 kV	0.05	0.10	0.30	0.57	1.67	4.45	3.33	0.74	0.37	0.21	0.12	0.03	0.02
Single Pole Davit Arm 345 kV/ 161 kV at Initial 345 kV/69 kV Operation	362.25 kV/ 72.45 kV	0.05	0.11	0.31	0.57	1.72	4.64	3.86	1.00	0.14	0.09	0.09	0.06	0.03
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit in service	362.25 kV	0.08	0.15	0.31	0.53	1.70	4.71	4.12	1.28	0.25	0.21	0.24	0.13	0.07
Single Pole Davit Arm Low Profile 345 kV/161 kV	362.25 kV/ 169.05 kV	0.03	0.09	0.83	2.00	4.36	3.55	2.46	0.27	0.92	0.51	0.21	0.03	0.02
Single Pole Davit Arm Low Profile 345 kV/161 kV with only 345 kV circuit	362.25 kV	0.05	0.11	0.82	1.97	4.34	3.66	3.32	1.68	0.89	0.57	0.39	0.13	0.06
Single Pole Braced Post 161 kV/ 161 kV	169.05 kV/ 169.05 kV	0.00	0.01	0.03	0.02	0.12	0.96	1.38	0.96	0.12	0.02	0.03	0.01	0.00
Single Pole Braced Post 161 kV/161 kV with 161 kV/69 kV Initial Operation	169.05 kV 72.45 kV	0.01	0.02	0.06	0.05	0.12	1.14	1.61	0.20	0.05	0.03	0.02	0.01	0.01
Single Pole Braced Post 161 kV	169.05 kV	0.01	0.03	0.12	0.22	0.45	0.92	1.96	1.35	0.37	0.19	0.12	0.03	0.01

3.4.2 Magnetic Fields

There are presently no Minnesota regulations or standards pertaining to MF exposure. ITC Midwest provides information to the public and employees so they can make informed decisions about MFs.

MFs were calculated under normal system conditions (system intact) for the expected peak and average (forecast typical current flow) current flows. The peak MF values are calculated at a height of one meter above the ground. The same method is used to calculate the MF at the edge of the right-of-way. The MF profile data show that MF levels decrease rapidly as the distance from the centerline increases (proportional to the inverse square of the distance from the source). The maximum calculated MF profiles around the transmission lines for each structure and initial operation being considered for the Project in the year it is put into service (2017) are shown in **Table 8**. The maximum calculated MF profiles for the Project six years after it is put into service (2023) are shown in **Table 9**.

Table 8. Estimated Magnetic Fields in 2017 (mG)

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Davit Arm 345 kV/161 kV	Peak	215/29	0.8	1.7	5.9	9.2	15.3	23.3	21.3	12.5	7.1	4.4	3.0	1.1	0.6
	Average	144/19	0.5	1.1	4.0	6.2	10.2	15.6	14.3	8.4	4.7	3.0	2.0	0.7	0.4
Single Pole Davit Arm 345 kV/161 kV at Initial 345 kV/69 kV Operation	Peak	215/75	0.6	1.4	5.2	8.3	14.0	22.0	20.6	11.9	6.1	3.4	2.2	0.7	0.4
	Average	144/50	0.4	0.9	3.5	5.6	9.4	14.7	13.8	8.0	4.1	2.3	1.5	0.5	0.3
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit	Peak	215	0.8	1.8	6.3	9.8	16.1	24.2	22.0	13.6	8.3	5.4	3.7	1.3	0.6
	Average	144	0.6	1.2	4.2	6.6	10.8	16.2	14.7	9.1	5.6	3.6	2.5	0.9	0.4
Single Pole Davit Arm Low Profile 345 kV/161 kV	Peak	215/29	0.9	1.8	7.0	12.0	21.8	28.6	21.2	10.6	5.0	3.2	2.3	0.7	0.4
	Average	144/19	0.6	1.2	4.7	8.1	14.6	19.2	14.2	7.1	3.4	2.2	1.5	0.5	0.2
Single Pole Davit Arm Low Profile 345 kV/161 kV with only 345 kV circuit	Peak	215	0.9	1.9	7.3	12.5	22.6	29.8	22.3	12.5	7.1	4.3	2.8	0.9	0.4
	Average	144	0.6	1.3	4.9	8.4	15.1	19.9	14.9	8.4	4.7	2.9	1.9	0.6	0.3
Single Pole Braced Post 161 kV/161 kV	Peak	55/68	0.0	0.1	0.2	0.4	0.9	3.3	8.2	4.9	1.9	0.9	0.5	0.1	0.1
	Average	37/46	0.0	0.0	0.1	0.2	0.6	2.2	5.5	3.3	1.3	0.6	0.3	0.1	0.0
Single Pole Braced Post 161 kV/161 kV with 161 kV/69 kV Initial Operation	Peak	55/191	0.3	0.5	1.6	2.4	4.1	9.3	24.2	18.3	8.2	4.2	2.5	0.6	0.3
	Average	37/128	0.2	0.3	1.0	1.6	2.8	6.2	16.2	12.3	5.5	2.8	1.6	0.4	0.2
Single Pole Braced Post 161 kV	Peak	94	0.2	0.4	1.2	2.0	3.7	7.9	14.6	9.6	4.2	2.2	1.3	0.3	0.1
	Average	63	0.1	0.2	0.8	1.3	2.5	5.3	9.8	6.4	2.8	1.4	0.9	0.2	0.1

Table 9. Estimated Magnetic Fields in 2023 (mG)

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline (feet)												
			-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Single Pole Davit Arm 345 kV/161 kV	Peak	232/31	0.9	1.8	6.4	9.9	16.5	25.2	23.0	13.5	7.7	4.8	3.2	1.2	0.6
	Average	156/21	0.5	1.2	4.3	6.7	11.0	16.8	15.4	9.1	5.1	3.2	2.2	0.8	0.4
Single Pole Davit Arm 345 kV/161 kV at Initial 345 kV/69 kV Operation	Peak	232/81	0.6	1.5	5.6	9.0	15.1	23.8	22.2	12.9	6.6	3.7	2.4	0.8	0.4
	Average	151/54	0.4	1.0	3.8	6.0	10.2	15.9	14.9	8.6	4.4	2.5	1.6	0.5	0.3
Single Pole Davit Arm 345 kV/161 kV with only one 345 kV circuit	Peak	232	0.9	1.9	6.8	10.6	17.4	26.1	23.8	14.7	9.0	5.8	4.0	1.4	0.6
	Average	156	0.6	1.3	4.5	7.1	11.7	17.5	15.9	9.8	6.0	3.9	2.7	1.0	0.4
Single Pole Davit Arm Low Profile 345 kV/161 kV	Peak	232/31	1.0	1.9	7.6	13.0	23.5	30.9	22.9	11.4	5.4	3.5	2.5	0.8	0.4
	Average	156/21	0.6	1.3	5.1	8.7	15.8	20.7	15.3	7.7	3.7	2.4	1.6	0.5	0.2
Single Pole Davit Arm Low Profile 345 kV/161 kV with only 345 kV circuit	Peak	232	1.0	2.1	7.9	13.5	24.4	32.2	24.1	13.5	7.7	4.6	3.0	1.0	0.4
	Average	156	0.6	1.4	5.3	9.1	16.3	21.5	16.1	9.1	5.1	3.1	2.1	0.6	0.3
Single Pole Braced Post 161 kV/161 kV	Peak	59/73	0.0	0.1	0.2	0.4	1.0	3.6	8.9	5.3	2.1	1.0	0.5	0.1	0.1
	Average	40/50	0.0	0.0	0.1	0.2	0.6	2.4	5.9	3.6	1.4	0.6	0.3	0.1	0.0
Single Pole Braced Post 161 kV/161 kV with 161 kV/69 kV Initial Operation	Peak	69/206	0.3	0.5	1.7	2.6	4.4	10.0	26.1	19.8	8.9	4.5	2.7	0.6	0.3
	Average	40/138	0.2	0.3	1.1	1.7	3.0	6.7	17.5	13.3	5.9	3.0	1.7	0.4	0.2
Single Pole Braced Post 161 kV	Peak	102	0.2	0.4	1.3	2.2	4.0	8.5	15.8	10.4	4.5	2.4	1.4	0.3	0.1
	Average	68	0.1	0.2	0.9	1.4	2.7	5.7	10.6	6.9	3.0	1.5	1.0	0.2	0.1

The actual MFs when the Project is placed in service are typically less than that illustrated in the tables provided. For certain segments of the Project, the calculated values are less than what is shown in the table. This is because the table represents the MF with current flow at expected normal peak based on projected regional load growth. Actual current flow on the line will vary, so MFs will be less than peak, and likely even average, levels during most hours of the year.

3.4.3 Stray Voltage

"Stray voltage" is a condition that can occur on electric service entrances to structures from distribution lines—not transmission lines. The term generally describes a voltage difference between two objects where no voltage difference should exist. More precisely, stray voltage exists between the neutral wire of the service entrance and grounded objects in buildings such as barns and milking parlors. Stray voltage is not a feature generally attributed to the operation of a transmission line and is, therefore, not expected from the proposed transmission line.

Appropriate measures, however, will be taken to prevent stray voltage problems when the transmission lines proposed for the Project parallel or cross distribution lines. ITC Midwest does not anticipate that the Project will be responsible for any stray voltage issues.

Certain measures can be taken during the project design phase to avoid stray voltage concerns in the engineering phase. Recommended clearances within the NESC are designed to accommodate a relative vehicle height of 14 feet. ITC Midwest's minimum clearance design is greater than the NESC recommended clearances. The portions of the Project where either a single-circuit 345 kV line is constructed or a 345 kV line is double-circuited with another line, the facility will be designed to maintain a clearance of 35 feet and the 161 kV associated facilities will be designed to maintain a clearance of 25 feet.

Another question that arises when operating vehicles near power lines is whether vehicles can be safely refueled. The possibility of fuel ignition near a high voltage transmission line of the voltage and design proposed for the Project is extremely unlikely and ITC Midwest is unaware of any safety issues related to vehicle refueling near its existing power lines.

Buildings are permitted near transmission lines, but are generally prohibited within the 150 foot Easement Area because a structure under a transmission line may interfere with safe operation. For example, a fire in a building located within the right-of-way could damage a transmission line. As a result, NESC guidelines establish clear zones for transmission facilities. Metal buildings may have unique issues. For example, metal buildings near transmission lines of 200 kV or greater must be properly grounded. People who have questions about a new or existing metal structure can contact ITC Midwest for further information about proper grounding requirements. ITC Midwest may allow certain structures to be constructed within the 50-foot Ancillary Easement Area, but any such construction in this area is subject to ITC Midwest review and approval.

3.5 CO-LOCATION CONSIDERATIONS

When developing routes for the Project, ITC Midwest analyzed the potential to co-locate portions of the transmission line with existing electric facilities as well as routing the 345 kV line parallel to existing facilities. ITC Midwest concluded that co-location with its existing Lakefield to Border 161 kV Transmission Line for the majority of the length of the Project along Route A was preferred. Route A, where not proposed to be co-located with a transmission line will be constructed on 345 kV/161 kV double-circuit capable structures to provide opportunities for future co-location.

Route B does not follow existing transmission facilities, but considerations for future co-location were considered by ITC Midwest. If the Commission selects Route B, either in its entirety or for a portion of its length, for the Project, ITC Midwest proposes to construct Route B using 345 kV/161 kV double-circuit capable structures. At the time of construction, only the 345 kV arms would be installed as part of this Project. Construction to these standards, however, would provide a co-location opportunity in the future when one is identified.

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4.0 ROUTE SELECTION PROCESS

ITC Midwest engaged in a multi-step route selection process for the Project, including consideration of regulatory requirements, information gathering, public outreach and input, and comparison of route segments and alignments. Considerable public and agency participation efforts were conducted in Jackson, Martin, and Faribault counties. ITC Midwest developed a GIS database that consisted of data layers gathered from independent on-site data gathering and federal, State, and local agencies, including county departments, that ITC Midwest representatives met with as part of the outreach program for the Project.

In addition, ITC Midwest conducted public open house meetings to introduce the Project to, and gather feedback from, residents, landowners, LGUs, and other potentially-affected parties on resources present in the area that may not have already been identified through GIS data and on-site route review that could assist in the development of alternative routes for the Project. ITC Midwest developed a route network by analyzing the GIS data, including data gathered during on-site review, considering stakeholder feedback acquired during the route development stages of the Project, and considering the factors listed in Minnesota Rule 7850.4100 and Minnesota Statutes Section 216E.03, subdivision 7.

These activities resulted in the identification of two routes and several connector segments between the two routes for this Route Permit Application. The specific activities performed for each step in the route selection process are provided below in greater detail.

4.1 SUMMARY OF ROUTE SELECTION PROCESS AND GUIDING FACTORS

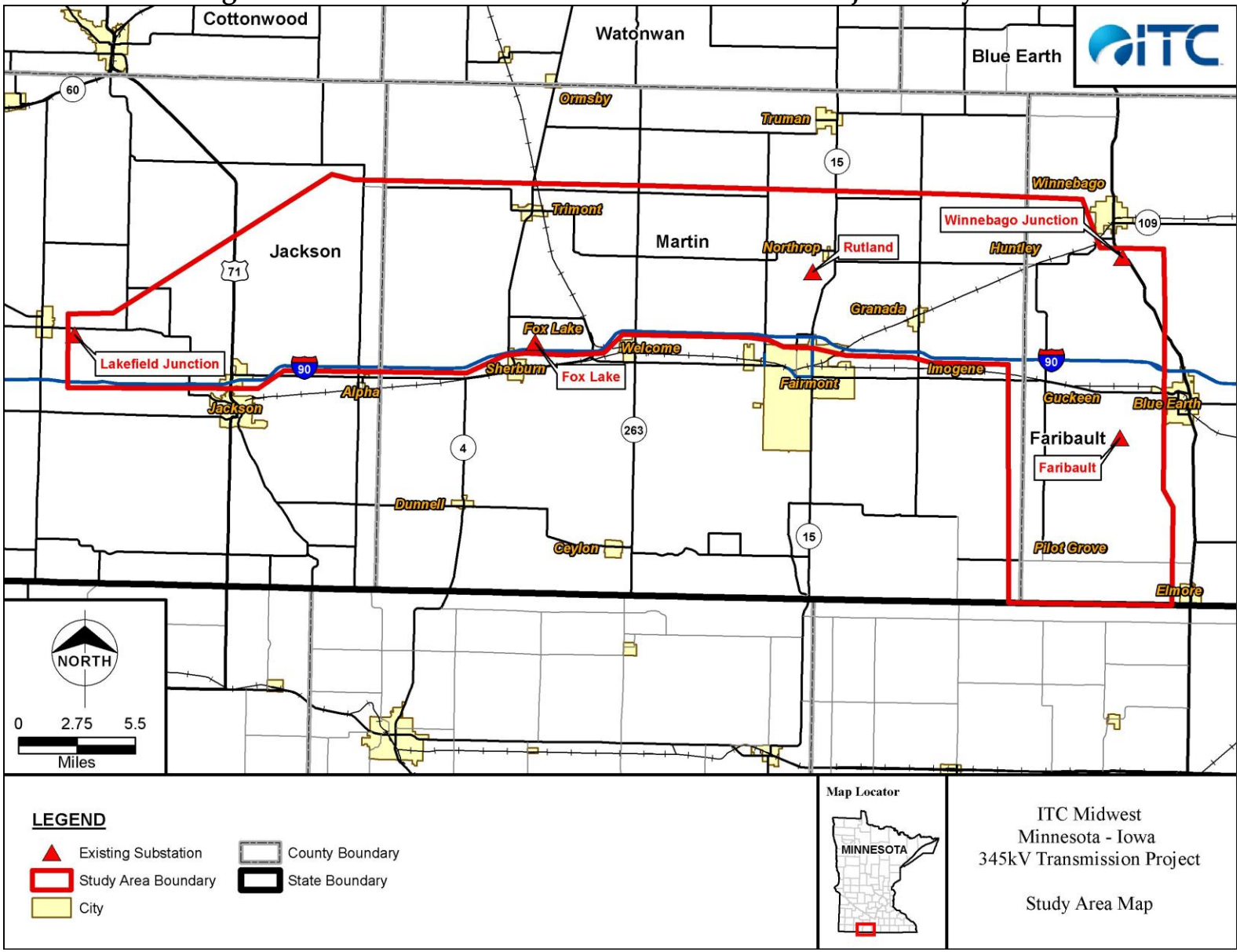
ITC Midwest initiated the route selection process by identifying the system connection points for the 345 kV transmission line ("termination points"). These termination points included the existing Lakefield Junction Substation just east of Lakefield in Jackson County, the proposed new Huntley Substation, to be located south of the existing Winnebago Junction Substation in Faribault County, and a necessary crossing into Iowa south of the Huntley Substation that would provide for the most efficient routing to connect the 345 kV transmission line in Minnesota to a new ITC Midwest Ledyard Substation near Ledyard, Iowa in Kossuth County. Although the Lakefield to Border 161 kV Transmission Line connects to the Fox Lake, Rutland, and Faribault substations, there is no system need for the Project to connect to these facilities, but the existing line must retain connections at these facilities.

Initially, MISO's MVP portfolio analysis of Project 3 in MTEP11 and ITC Midwest envisioned using the existing Winnebago Junction Substation for the Project, but constructability issues, additional space requirements associated with new Project facilities, and the need for major operational upgrades at the existing Winnebago Junction Substation due to the age of current equipment made development of the new 345 kV Huntley Substation desirable. A more detailed analysis of these issues that resulted in the development of the new Huntley Substation site is presented in **Section 2.4.2**. Should the facilities proposed for the Project be approved by the Commission, ITC Midwest plans to retire the existing Winnebago Junction Substation and reroute all existing lines entering and exiting the existing substation to the new Huntley Substation. Reconfiguration of four existing 161 kV transmission lines and three 69 kV transmission lines would primarily include the use of existing, but expanded, transmission line rights-of-way. Additionally, 69 kV transmission lines are proposed to be rebuilt to 161 kV standards but operated at 69 kV.

ITC Midwest acquired a site for the new Huntley Substation in December 2012. The site was selected because its use requires minimal rerouting of the facilities associated with the Project, provides sufficient space for all the necessary 345 kV/161 kV/69 kV equipment, and provides greater distance between the substation and the Blue Earth River. The site also presents few environmental constraints as it is a relatively level crop field outside any floodplains. ITC Midwest will allow agricultural activities to continue at the site until construction of the substation begins and may allow these activities to continue after construction of the Project is complete.

Following the identification of termination points, ITC Midwest developed a study area boundary that covers portions of Jackson, Martin, and Faribault counties. The study area covers an area of approximately 460 square miles and is approximately 52 miles long and seven miles wide, extending to approximately 19 miles wide in the portion of Faribault County that includes area for both the Lakefield Junction to Huntley segment of the Project and the portion from Huntley to the Iowa border ("Study Area"). The Study Area is shown in **Figure 9**.

Figure 9. Minnesota—Iowa 345 kV Transmission Project Study Area



After defining the Study Area, ITC Midwest initiated a series of mailings, meetings, and open houses to identify routes within the Study Area. Further details are provided in **Section 4.2** on the route development process.

The criteria set forth in Minnesota Statutes Section 216E.03, subdivision 7, and Minnesota Rule 7850.4100 guided the route development process. These criteria have been developed to guide the Commission's decision when selecting a route for a high voltage transmission line.

Minnesota Statutes Section 216E.03, subdivision 7(a) provides that the Commission's route permit determinations "must be guided by the state's goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure." Subdivision 7(e) of the same section requires the Commission to "make specific filings that it has considered locating a route for a high-voltage transmission line on an existing high-voltage transmission route and the use of parallel existing highway right-of-way and, to the extent those are not used for the route, the commission must state the reasons."

In addition to the statutory criteria mentioned above, Minnesota Statues Section 216E.03 and Minnesota Rule 7850.4100 provide that when determining whether to issue a Route Permit for a high voltage transmission line, the Commission shall consider the following relevant factors:

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 transportation, pipeline, and electrical transmission systems or rights-of-way;

J. Electrical system reliability;

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

L. Adverse human and natural environmental effects which cannot be avoided; and

M. Irreversible and irretrievable commitments of resources.

4.2 PROCESS CHRONOLOGY AND DETAILS

4.2.1 Project Study Area

As discussed in **Section 4.1**, the initial step in the route selection process was the identification of termination points for the 345 kV transmission line. From these, the Study Area boundary was developed. The purpose of identifying a Study Area for the Project was to establish boundaries and limits for the information-gathering process (*i.e.*, identifying environmental and land use resources, routing constraints, and routing opportunities) and the subsequent development of routes for the Project. The Study Area needed to include the Project termination points: the Lakefield Junction Substation, the proposed Huntley Substation, and the Iowa border near Elmore, Minnesota.

The Study Area was designed to include an area large enough that a reasonable number of alternative routes could be identified without the Study Area being so large as to encumber the analysis with excessive data and routing options that did not present reasonable alternatives, provide opportunities to avoid routing constraint areas, and include areas of opportunity for routing of the Project. The Study Area also allowed ITC Midwest to focus its evaluation on a specific area associated with the proposed Project. ITC Midwest reviewed aerial photography available through the National Agriculture Imagery Program ("NAIP") from the

spring of 2011 and conducted a general site survey in May 2012 to develop the Study Area for the Project.

4.2.2 Initial Outreach for Study Area

Following development of the Study Area, a letter and map was sent to federal, State, county, and local agencies and officials with jurisdiction within the Study Area. The letter requested feedback on potential resources and concerns to route development within the Study Area. A total of 25 agency letters were sent out on June 8, 2012 requesting feedback on routing information within the Study Area (**Appendix I**). A Study Area map (**Figure 9)** was provided with the letters.

ITC Midwest received written replies from four agencies and received an additional two requests for additional GIS data to assist the agencies in their review. The responses received by ITC Midwest are provided in **Appendix I**. More detail about these responses is available in **Section 9.1**. As a follow-up to the inquiry letters and to obtain additional information about potential routing concerns, ITC Midwest requested meetings with officials from Jackson, Martin, and Faribault counties. The meetings provided an opportunity to introduce the Project in greater detail and to obtain feedback from county representatives regarding potential resources and concerns unique to the area and to residents and landowners of each county. Additionally, the meetings provided an opportunity to discuss and obtain additional county-specific data that was available to incorporate into the existing GIS database developed for the Project.

Meetings with the Study Area counties (Jackson, Martin, and Faribault) were held on July 9, 2012. A range of staff members were present at each meeting, including county commissioners, planning and zoning staff, drainage administrators and inspectors, economic development staff, and county highway engineers. ITC Midwest provided an overview of the route selection process and provided details on the Project schedule and plans for open houses in each county. More details of the discussions with agency and county staff may be found in **Chapter 9** of this Application.

4.2.3 Initial Route Identification

After establishing a Study Area and completing initial outreach, the next step was to identify potential routes. The routing criteria used to develop potential routes primarily reflected those criteria in Minnesota Statutes Section 216E.03, subdivision 7, and Minnesota Rule 7850.4100.

As an initial screening criteria, ITC Midwest identified routing constraints (*e.g.,* airports, Wildlife Management Areas ("WMAs"), Waterfowl Production Areas ("WPAs"), residential subdivisions, lakes, etc.) that should be avoided, if practicable. ITC Midwest then identified opportunities (*e.g.*, existing transmission lines and rights-of-way, road rights-of-way, railroads, property division lines, field lines, etc.) for routes, where available. Practical considerations, such as total project length, constructability, impacts to large environmental areas, and costs were also considered. Based on these criteria, an initial series of route segments and connectors ("Route Network") was developed. The Route Network took advantage of existing infrastructure and linear features (electrical transmission lines, roadways, drainage ways, property division lines, etc.) and undeveloped areas to the greatest extent practicable. Specific routing considerations sensitive to the Minnesota criteria (Minn. Stat. § 216E.03, subd. 7; Minn. R. 7850.4100) were identified in the Study Area. Further, these routing criteria were defined in more detail and the following were used to narrow down route options:

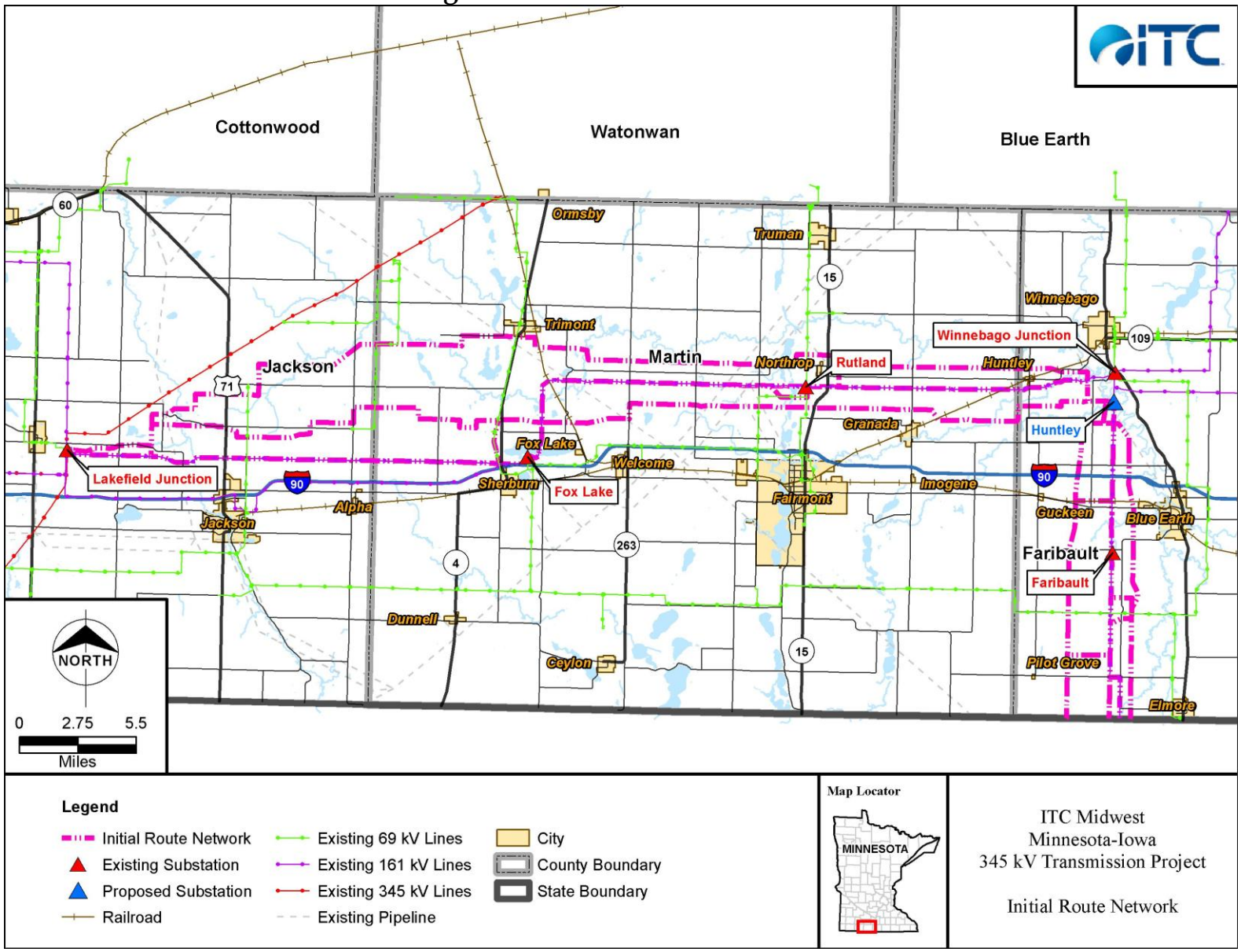
- Maximize distance from residences;
- Minimize multiple crossings of highways in short distances;
- Minimize repeated crossings of waterways;
- Minimize woodland clearing;
- Avoid terrain that makes construction and maintenance of a transmission line more difficult;
- Cross pasture, grassland, or rangeland rather than cropland;
- Attempt to cross cropland at narrow areas where it could be spanned or the number of structures in fields could be minimized;
- Maximize distance from radio towers, other communication-related facilities, and wind turbines; and
- Maximize distance from or identify opportunities to span known archaeological and historic resources sites.

4.2.4 Site Review of Route Network

Following the county meetings, ITC Midwest staff performed additional site review of the Study Area, including a visual inspection of the existing Lakefield to Border 161 kV Transmission Line. Using data and information gathered from the formal agency responses, county meetings, site reconnaissance, and the GIS database developed for the Project, ITC Midwest staff investigated numerous route segments. These segments were reviewed in the context of Minnesota's routing criteria. The route segment network incorporated those that ITC Midwest believed complied with the Minnesota routing criteria and the additionally-developed considerations. Routes that could not avoid major routing constraints, did not take advantage of existing linear features, did not minimize impacts, or created engineering or construction challenges were dropped from further consideration, even if they were otherwise generally compliant with Minnesota's routing guidelines.

ITC Midwest developed an initial Route Network for the Study Area. The initial Route Network included approximately 40 route segments that, when combined, created approximately 80 route combinations (although some routes differed from each other by only one or two segments). In general, route segments are shorter portions of overall routes that, when joined together, create complete routes between the two connection points. Route segments result when a section of a route branches into other segments or results from multiple individual segments joining together. In joining specific segments, different segment combinations and subsequent routes linking the desired connection points, are created. Routes were reviewed for general constructability and engineering feasibility from a design and planning perspective and reviewed for general compliance with Minnesota Statutes and Rules. Minor adjustments to the Route Network were made based on these reviews. The initial Route Network is provided in **Figure 10**.

Figure 10. Initial Route Network



4.2.5 Public Open House Meetings

ITC Midwest staff conducted six public open houses during the week of September 10, 2012, two each in Jackson, Faribault, and Martin counties. ITC Midwest sent approximately 3,700 letters inviting residents, landowners, public officials, and other potential stakeholders to the meetings (**Appendix J**). ITC Midwest staff presented large-scale maps showing the initial Route Network developed for the Project. The open houses included nine separate information booths ranging in focus from routing, design and construction, regulatory, real estate/right-of-way, and environmental EMF.

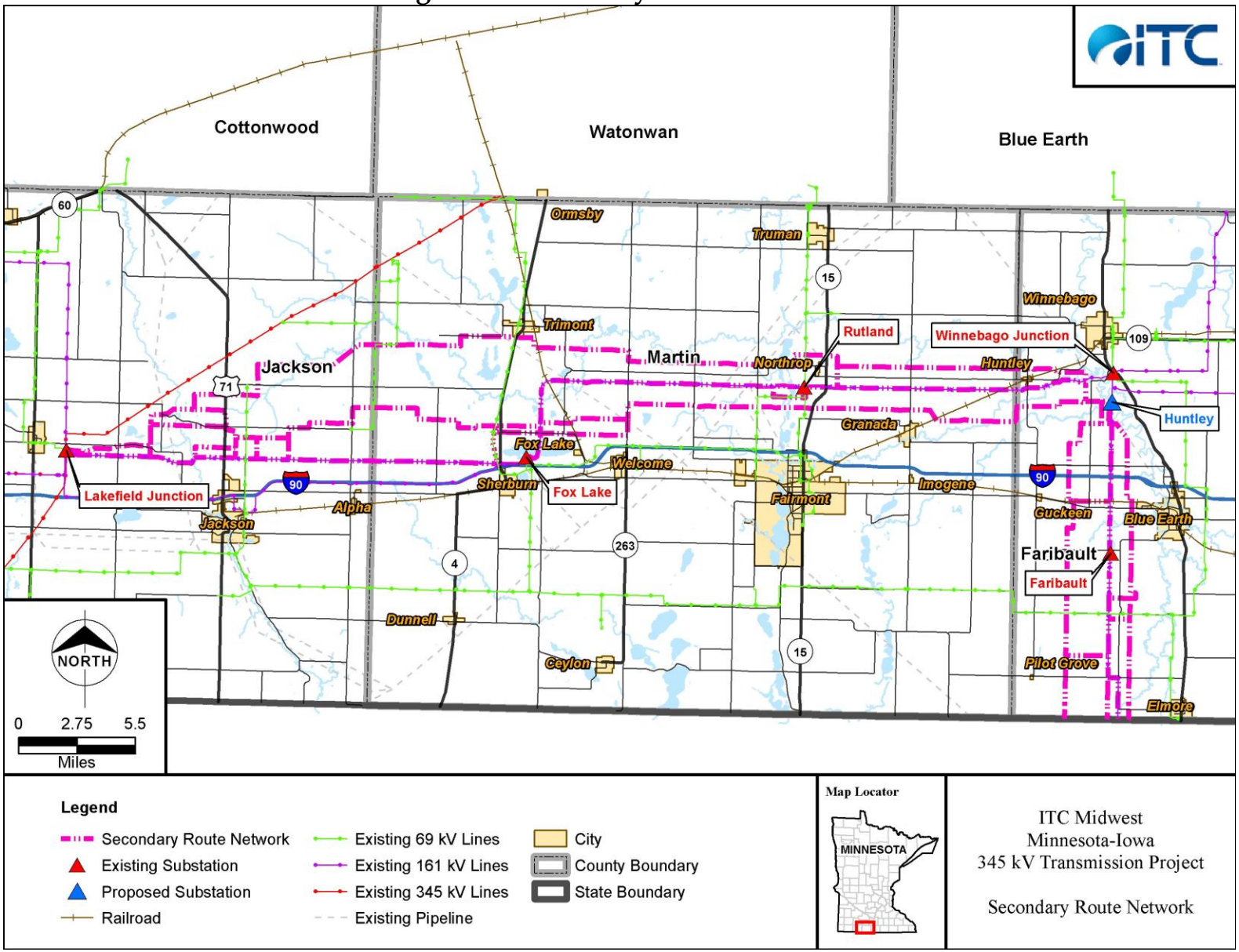
A total of 445 individuals attended the meetings. In addition to extensive verbal comments, ITC Midwest received a total of 114 formal written comments. Landowner feedback from these open houses included comments and concerns of proximity to municipal airports, agricultural infrastructure (*e.g.*, center-pivot irrigation systems), wind farm development, land use and agricultural practices, preference to utilize field lines, and other route development considerations. Approximately 88 of the written comments received indicated a preference for ITC Midwest to choose the existing Lakefield to Border 161 kV Transmission Line for the proposed Project. Between the public open houses, ITC Midwest staff also met with representatives from Jackson Municipal Airport to discuss potential routing conflicts due to future airport expansion plans. More information on the feedback received is available in **Section 9.1.3**.

4.3 SECONDARY ROUTE NETWORK

ITC Midwest conducted a "windshield" survey of the entire Route Network the week of the open houses to expand the existing GIS database developed for the Project. This survey was planned to capture the location of potential routing considerations not previously identified during the GIS analysis of the Study Area and to review areas of concern noted by open house attendees. Locations of residences, out-buildings, radio and weather towers, wind turbines, transmission lines, and other features were recorded using GIS software and added to the GIS database developed for the Project.

Based on the comments received at the open houses and the windshield survey, the Route Network was revised to consider approximately 60 route segments, including additional connector segments developed in response to landowner requests or comments. The secondary Route Network is provided in **Figure 11**.

Figure 11. Secondary Route Network



As a result of the extensive number of alternative routes, a multi-step process was developed to assist in the identification of geographically diverse routes and to focus the analysis on the routes with the fewest impacts to natural resources and human settlement.

The entire Route Network was analyzed using a set of routing criteria selected to characterize the important features of each route and provide an indication of the potential concerns for environmental and human resources associated with each route consistent with Minnesota's routing criteria. The resulting routes were organized by the nature and extent of their potential impacts, allowing the routes that ITC Midwest determined were the least compliant with the overall Minnesota Statutory and Rule routing criteria to be removed from further consideration.

4.4 DETAILED ROUTE NETWORK ANALYSIS

4.4.1 Development of Comparison Metrics

The route screening process employed for this Project focused on identifying the best performing routes that minimized overall impacts to natural environments, land use, and were constructible and cost effective. The screening process was used to manage the large amount of data being reviewed for the route combinations and to distill the number of routes to a manageable number for further assessment. Several steps were undertaken in executing this screening process. These steps, discussed below, included development of evaluation factors, evaluation of screening data and analysis, and the additional consideration and comparison of the specific attributes of each alternative route investigated for the Project.

To compare the characteristics and potential impacts of route combinations, ITC Midwest developed a comprehensive set of route comparison and evaluation criteria. These criteria formed the basis of the screening analysis to identify a subset of routes upon which to form the remainder of the analysis. The criteria were based on routing factors set forth in Minnesota Statutes Section 216E.03, subdivision 7, and Minnesota Rule 7850.4100 and were categorized, generally, as human settlement, environmental, or engineering.

Route segments were assembled to develop complete routes between Lakefield Junction Substation and Huntley Substation and between Huntley Substation and the Iowa border. Route criteria data for each segment were tabulated to

provide an evaluation of the overall extent of the human and natural resources along each of the individual route combinations.

4.4.2 Comparison of Segments and Routes

Data for the route combinations were quantified for the route evaluation criteria for each of these segment combinations. Additionally, the routing criteria included evaluation categories such as length, area of new right-of-way, area of existing right-of-way, and numbers of occurrences of selected resources or features.

Although all criteria need to be considered during the routing process, design, and cost, certain criteria have the capacity to influence the Project in a greater manner than others. Therefore, there may be instances where the number of residences within a certain distance of a route could be reduced, but doing so would require substantially less use of existing transmission line and road rights-of-way. Also, a route may cross more acres of agricultural production lands but that route may cross those lands using an existing transmission line right-of-way.

The route screening analysis focused, primarily, on trends in natural resource and human settlement impacts of routes and the overall compliance of those routes with Minnesota routing criteria. Although a route may have had more anticipated human settlement impacts, it may have taken advantage of the greatest length of existing transmission line rights-of-way and had the fewest anticipated natural resource impacts. The route screening analysis was used to identify a smaller set of routes upon which to focus the selection process.

Generally, three alternative routes were identified for each segment of the Project. These included:

<u>Lakefield Junction Substation to Huntley Substation</u>

- The reconstruction of the existing Lakefield to Border 161 kV Transmission Line to double-circuit 345 kV/161 kV;
- A set of route options along new right-of-way extending across the more northerly portion of the Study Area, generally north of the existing Lakefield to Border 161 kV Transmission Line; and
- A set of route options along new right-of-way in closer proximity to the existing Lakefield to Border 161 kV Transmission Line.

Huntley Substation to the Minnesota/Iowa Border

- The reconstruction of an existing Lakefield to Border 161 kV Transmission Line to double-circuit 345 kV/161 kV standards;
- A set of route options along new right-of-way generally in the westerly area of the Study Area, only slightly west of the existing Lakefield to Border 161 kV Transmission Line; and
- A set of route options along new right-of-way generally in the easterly area of the Study Area, only slightly east of the existing Lakefield to Border 161 kV Transmission Line.

These routes are shown in **Figure 11.** Additionally, opportunities were identified to connect between these routes to create hybrids to provide opportunities for avoidance of specific areas.

In comparing the routes, several land features were given additional routing consideration. These included crossing the Chain of Lakes area (*i.e.*, an assemblage of lakes near the center of Martin County, Minnesota), in particular, the existing 161 kV line crossing of Lake Charlotte; the Fox Lake area, including the game refuge lands and WMAs around the lake, residential development, and numerous existing transmission lines including the existing 161 kV line crossing of Fox Lake; and the existing Jackson Municipal Airport, including the proposed airport expansion. Several route segments were identified to address the issues and concerns associated with each of these areas.

Several trends were identified for each of the routes. These trends are summarized below:

Lakefield Junction Substation to Huntley Substation

- Northern route options were generally longer than other route options considered. As a result, they had greater overall human and natural resources impacts. They crossed more cropland, had greater residential proximity, required more new right-of-way, and affected larger amounts of wetlands. ITC Midwest reviewed the northern routes and determined that these routes were the only routes that encountered areas of center-pivot irrigation systems, to which impacts could be minimized, but not completely avoided. The northern route options generally avoided potential conflicts with the Jackson Municipal Airport.

- Route options in close proximity to the Lakefield to Border 161 kV Transmission Line were generally the shortest of the route options identified. As a result, they crossed less cropland, had lower residential proximity, and would affect lesser amounts of wetlands and woodland. Additionally, because they were shorter, southern routes would require less new right-of-way than the longer, northern options. These options would require more new right-of-way than use of the existing 161 kV line alignment. The closer proximity routes included variations to provide routing options near Fox Lake, the Jackson Municipal Airport, and Lake Charlotte.

- Existing Lakefield to Border 161 kV Transmission Line options were similar in length to the closer proximity routes. They also had greater residential proximity and crossed more cropland but required much less new right-of-way and woodland clearing due to already established right-of-way. Additionally, they would consolidate transmission infrastructure to one right-of-way through the region instead of maintaining two separate high voltage transmission rights-of-way. Not specifically captured in the data is the fact that the existing line, constructed on two-pole H-frame structures, would be replaced, nearly in its entirety, with single pole steel structures, and would reduce existing agricultural impacts whereas the northern or southern alternatives would create new agricultural conflicts where transmission infrastructure did not previously exist. Residences near the existing line would see some changes in the view of the line due to larger, single pole double-circuit structures, but the change would be incremental over the infrastructure already in place. Existing line options included variations to address potential routing concerns near Fox Lake, Lake Charlotte, and the Jackson Municipal Airport.

<u>Huntley Substation to the Minnesota/Iowa Border</u>

- Eastern and western routes were generally longer than using the existing Lakefield to Border 161 kV Transmission Line.

- The existing Lakefield to Border 161 kV Transmission Line had greater residential proximity due to considerable length of the line being located along county roads. Routing options to avoid the Pilot Grove Lake WPA, crossed by the existing 161 kV line were considered.

- Options west of the existing 161 kV Lakefield to Border 161 kV Transmission Line between Huntley and the Iowa border had lower residential proximity. The western route options crossed greater amounts of cropland and passed through actively developing wind farm areas. Western route options avoided the Pilot Grove Lake WPA but did not contemplate removal of the existing 161 kV line through the WPA.

- Eastern route options had greater residential proximity associated with their closer proximity to the City of Blue Earth. Eastern route options were generally shorter than western route options. Eastern options crossed less cropland but more woodland, wetland, and grassland, likely due to closer proximity to the Blue Earth River and its associated riparian areas. Eastern route options avoided the Pilot Grove Lake WPA but did not contemplate removal of the existing 161 kV line through the WPA.

Having identified these trends in the route families for each segment of the Project (Lakefield Junction to Huntley and Huntley to the Iowa border), routes were reviewed in detail. This review considered potential human settlement and natural resource impacts as well as compliance with Minnesota routing criteria, regulatory requirements of other agencies for project permitting (Minnesota Department of Natural Resources ("MnDNR") regulations for lake crossings, for example), and engineering and construction considerations (access, constructability, etc.). Based on this analysis, two routes that extended from the Lakefield Junction Substation to the Huntley Substation and on to the Iowa border, along with some variations and connector segments to address potential site specific concerns, were identified. These routes are discussed in the **Section 4.4.4**, and **Chapter 5**.

4.4.3 Elimination of Certain Routes

Upon thorough and detailed investigation, evaluation, and consideration, routes were dropped from further consideration for this Project. The routes and reasons for elimination are discussed below:

<u>Lakefield Junction Substation to Huntley Substation</u>

- Routes north of the existing Lakefield to Border 161 kV Transmission Line. These routes were generally longer than the other routes considered, had greater overall human and natural resources impacts, and encountered areas of center-pivot irrigation to which impacts could only be minimized but not avoided.

- Lake Charlotte. The existing 161 kV transmission line crossing of Lake Charlotte was constructed in the 1950s to connect the Fox Lake and Rutland substations. The Rutland Substation is owned by southern Minnesota Municipal Power Agency ("SMMPA"). When the line was constructed, the MnDNR issued a license to allow a 161 kV transmission line crossing of the lake. That license required that the transmission line maintain a 25-foot minimum clearance between the lowest point of the conductor and the ordinary high water level. In 2010, ITC Midwest determined that this minimum clearance was not present at the Lake Charlotte crossing. ITC Midwest worked with the MnDNR to address this clearance concern. ITC Midwest and the MnDNR determined that the crossing at Lake Charlotte needed to be rebuilt by the end of 2012. At that time, the MnDNR indicated that it would not likely issue a license for an additional circuit across Lake Charlotte. Additionally, the Rutland Substation configuration limits how the Lakefield to Border 161 kV Transmission Line can interconnect from Fox Lake. The Project has no operational or system need to connect to the Rutland Substation, but the Lakefield to Border 161 kV Transmission Line must connect to this facility. Several years ago, SMMPA rebuilt its Rutland Substation, requiring the 161 kV transmission line between the Fox Lake and Rutland substations to terminate on the west side of the substation. If the 161 kV transmission line were removed from the Lake Charlotte crossing, it would need to be configured to enter the Rutland Substation from the west. Because of this, ITC Midwest determined that the 161 kV transmission line crossing of Lake Charlotte should not be removed as part of the Project. Various segments around Lake Charlotte were initially developed and considered. Ultimately, a route was developed that avoided crossing the lake, lakeside residential development, and conflicts with existing transmission infrastructure.

- Fox Lake. Like the 161 kV crossing of Lake Charlotte, ITC Midwest worked with the MnDNR in 2010 to address a clearance concern identified at the crossing by the end of 2012. The 161 kV transmission line at Fox Lake was analyzed from planning, construction, and operations perspectives. ITC Midwest determined that this crossing must remain to provide connections for the Fox Lake Substation near the Alliant generation station in this area. ITC Midwest determined the MnDNR was unlikely to license another circuit crossing of Fox Lake. Further, the 345 kV transmission line is not proposed to connect at the Fox Lake Substation. Use of the existing 161 kV line right-of-way across Fox Lake was, therefore, eliminated from

consideration and ITC Midwest began looking for another route around Fox Lake. As other variations that would avoid a lake crossing were available, there was no system need to connect the 345 kV line at the Fox Lake Substation, and the lake crossing posed considerable environmental, engineering, and cost concerns, it was dropped from further consideration.

- Jackson Municipal Airport. Numerous segments were developed and investigated to address potential concerns for Project construction conflicting with the Jackson Municipal Airport proposed airport expansion. Reconstruction of the existing 161 kV line to a much taller, single pole 345 kV/161 kV double-circuit structures presents potential navigation hazards for existing airport operation and would be even more likely to be a hazard to operation of the airport according to the proposed expansion plans. Ultimately, routes around the airport were identified that ITC Midwest believes avoid presenting a navigational hazard for current and future airport operations, follow Minnesota routing guidelines, and minimize overall environmental impacts.

Huntley Substation to the Minnesota/Iowa Border

- Routes west of the existing Lakefield to Border 161 kV Transmission Line. Western routes were generally longer than other route options along this segment and were dropped from further consideration.

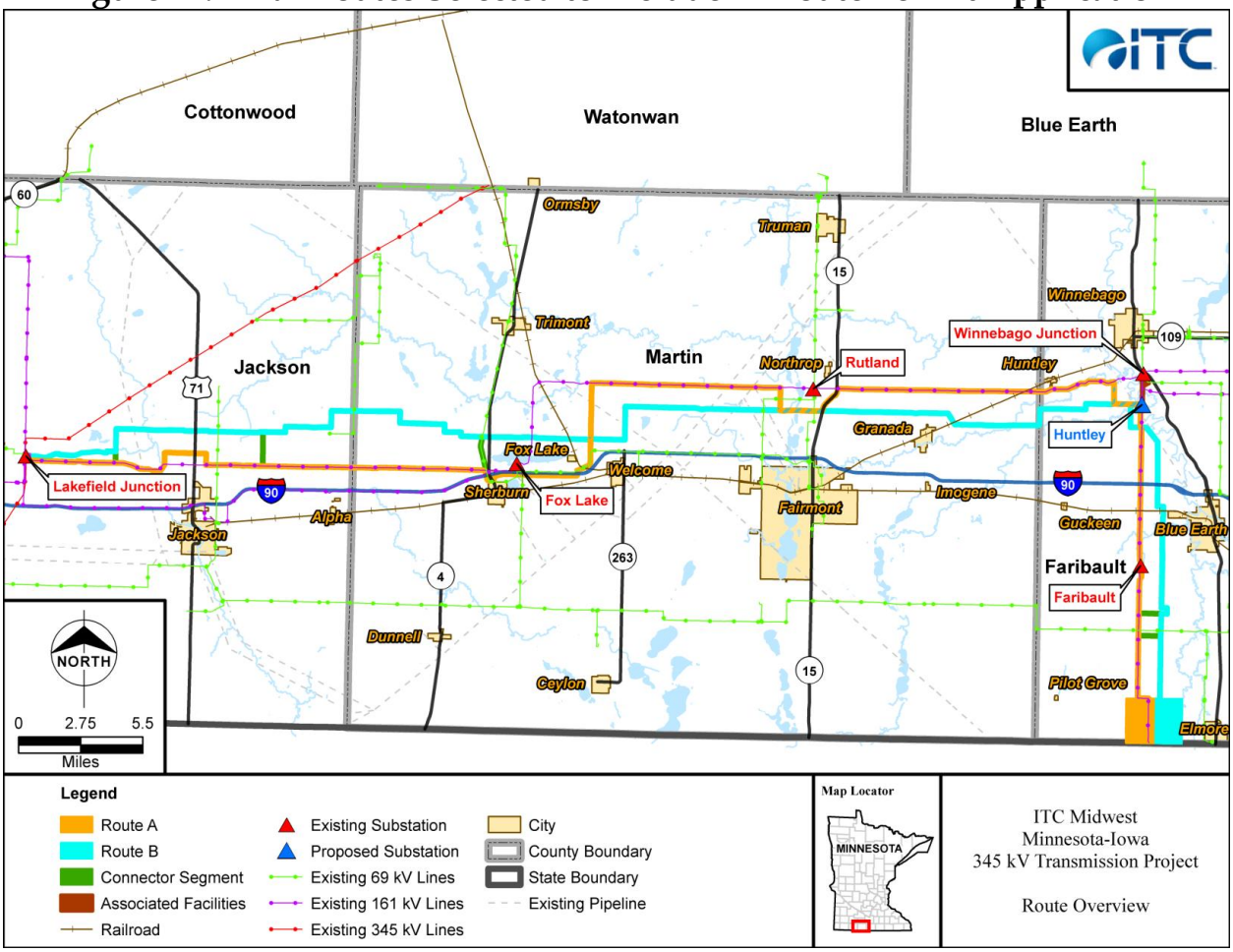
4.4.4 Finalization of Proposed Routes

The remaining routes were analyzed according to Minnesota routing criteria. Additional consultation feedback was received from agencies regarding the routes and that feedback was incorporated into the final two routes proposed for the Project. Information on the consultation feedback is available in **Section 9.1**.

During a meeting in the fall of 2012, the MnDNR informed ITC Midwest of concerns associated with constructing a 345 kV transmission line west of the Fox Lake Game Refuge. ITC Midwest contemplated a route in this area and included it in maps available at public open houses in September 2012. The area was identified by MnDNR as a significant migratory bird staging location. ITC Midwest developed a route that crosses south of Interstate 90 at Fox Lake and continues east for approximately 3.9 miles before crossing to the north of Interstate 90 and rejoining the existing Lakefield to Border 161 kV Transmission Line.

Applying the State routing criteria to the retained routes, ITC Midwest identified Route A and Route B, along with several connector segments included in this Application. These routes are shown in **Figure 12.**

Figure 12. Final Routes Selected to Include in Route Permit Application



4.5 RATIONALE FOR SELECTING ROUTE A AS PREFERRED

Selecting Route A as the "Preferred Route" was primarily due to its co-location, for 75 percent of its entire length, with the existing ITC Midwest Lakefield to Border 161 kV Transmission Line. Certain modifications to Route A were made to account for development and land use changes that occurred around the existing Lakefield to Border 161 kV Transmission Line. A summary of the impacts and factors considered in evaluating the two routes and identifying Route A as ITC Midwest's "Preferred Route" is available in **Table 10**.

Table 10. Summary of Impacts and Factors Considered (Minn. Stat. § 216E.03, subd. 7 and Minn. R. 7850.4100)

Factor	Route A and Associated Facilities	Route B and Associated Facilities	Summary
Effects on Human Settlement			
Displacement	No displacement is anticipated for the Project.		
Noise	Temporary localized increases in noise during construction are anticipated. Transmission line and substation noise levels are not anticipated to exceed noise limits set by the MPCA.		
Aesthetics	Project would primarily replace existing line. New structures would be taller than existing structures but would not be inconsistent with existing viewscape and would eliminate most two-pole structures.	Route B would introduce a new visual feature. New line would not be inconsistent with existing viewscape in the Study Area given the presence of electric infrastructure, including transmission lines and wind generating facilities.	The landscape of the Study Area includes a variety of manmade features, including electricity lines, substations, wind turbines, and radio towers. Route A would have a lesser aesthetic impact as much of the construction would involve rebuilding an existing transmission line.
Cultural Values	No impacts to cultural values are anticipated.		
Recreation	Route A crosses snowmobile trails in five locations and two State Water Trails. Route A crosses no WMAs. Route A crosses the Fox Lake Game Refuge and Pilot Grove Lake WPA. Most of these recreational area crossings are at existing infrastructure crossings.	Route B crosses snowmobile trails in five locations. It also crosses a State Water Trail. Route B crosses the Fox Lake Game Refuge, and three WMAs. All crossings of recreational areas would be new.	Both routes would result in potential temporary noise, disruption, and use restrictions of recreational areas during construction. Route A would have fewer impacts due to the use of a substantial portion of existing utility rights-of-way.
Public Services	No impacts to public services are anticipated		

Factor	Route A and Associated Facilities	Route B and Associated Facilities	Summary
Effects on Public Health and Safety			
Public Health and Safety	Effects on public health and safety for both Route A and B would include only minor temporary increase in demand for services during construction from the presence of construction crews. Applicant will comply with all applicable safety requirements during construction and operation of the proposed project.		
Effects on Land-Based Economies			
Agriculture	Approximately 1,545 acres of cropland within the anticipated right-of-way. Much of this cropland is within areas along the existing 161 kV line.	Approximately 1,465 acres of cropland impacts within the right-of-way.	Route B would result in more new acres of cropland within the right-of-way. Permanent impacts anticipated for associated facilities are the same for both routes.
Forestry	No impacts to economically important forestry will occur.		
Tourism	No impacts to tourism are anticipated.		
Mining	No impacts to active mining operations are anticipated. Active mining operations are located east of the Huntley Substation and outside any route proposed in this Application		
Effects on Archaeological and Historic Resources			
Archaeological Resources	There are 56 archaeological sites within one mile of Route A. There are 10 archaeological sites, including one NRHP Archaeological District, and four NRHP sites within the Route.	There are 53 archaeological sites within one mile of Route B and six archaeological sites within the Route. Two are NRHP eligible.	A greater number of archaeological resources have been identified along Route A. Five of the sites crossed by Route A, however, are crossed by the existing Lakefield to Border 161 kV Transmission Line

Factor	Route A and Associated Facilities	Route B and Associated Facilities	Summary
Historic Resources	There are 31 historic architectural sites within one mile of Route A and three within the Route. None are NRHP eligible. One cemetery is within the Route, but not within the application alignment.	There are 25 historic architectural sites within one mile of Route B. Three historic architectural sites are within the Route. Two are NRHP-listed sites and the third has not been NRHP evaluated. No cemeteries are within the Route.	Known historic resources are more prevalent along Route A. Most of these resources are along the existing 161 kV line.
Effects on the Natural Environment			
Air Quality	During construction, vehicle emissions and fugitive dust along right-of-way and local gravel roads are expected to occur. Construction-related emissions would be similar but much less than those resulting from normal agricultural activities. Any emissions of ozone from the transmission line are expected to be well below federal and State standards.		

Factor	Route A and Associated Facilities	Route B and Associated Facilities	Summary
Water Quality and Wetlands	Approximately 19 acres of wetlands, including four acres of forested wetlands are crossed by the Route A right-of-way. The right-of-way of crosses a total of 44 acres of floodplains. The application alignment crosses 37 streams or rivers, including 17 PWI streams. One structure is likely to be placed in a wetland (replacing the H-Frame structure currently in the wetland), resulting in less than 0.01 acre of permanent impact.	Approximately eight acres of wetlands, including two acres of forested wetlands are crossed by the Route B right-of-way. The right-of-way of Route B crosses a total of 6.5 acres of floodplain. The application alignment crosses 32 streams or rivers, including 17 PWI streams. No structures are anticipated to be placed in wetlands.	Route B has fewer overall wetland impacts and crosses fewer streams but has more new impacts. Approximately 14 acres of the 19 acres wetlands crossed by the Route A right-of-way are crossed by the existing Lakefield to Border 161 kV Transmission Line.
Flora	The right-of-way would cross the Pilot Grove Lake WPA at the Lakefield to Border 161 kV Transmission Line. The crossing of the Fox Lake Game Refuge would primarily be near the MnDOT right-of-way or along an existing 69 kV transmission line. No WMAs, SNAs, or WRP easements are crossed.	Route B crosses three WMAs, and the Fox Lake Game Refuge. If Route B were selected, the existing Lakefield to Border 161 kV Transmission Line would remain across the Pilot Grove Lake WPA. No SNAs or WRP easements are crossed.	Route A crosses fewer habitats with native or restored flora currently unaffected by existing transmission line rights-of-way.

Factor	Route A and Associated Facilities	Route B and Associated Facilities	Summary
Fauna	Clearing of the Route A right-of-way would result in the permanent loss of 13.1 acres of woodland habitat. Temporary disturbance to 1,545 acres of cropland and 191 acres of grassland during construction. No Important Bird Use Areas are crossed by Route A but one Grassland Bird Conservation Area (Fox Lake Game Refuge) is crossed.	Clearing of the Route B right-of-way would result in the permanent loss of 12.1 acres of woodland habitat. Temporary disturbance to 1,465 acres of cropland and 286 acres of grassland during construction. No Important Bird Use Areas are crossed by Route B but three Grassland Bird Conservation Areas (Toe and Bootleg Lake WMAs and the Fox Lake Game Refuge) are crossed.	Woodland habitat would be cleared and converted to non-woody habitat. Construction activity and noise would temporarily displace wildlife from the construction zone. Following completion of construction and restoration, wildlife would generally move back into the area.
Effects on Rare and Unique Natural Resources			
Rare and Unique Natural Resources	No reported federally- or State-listed threatened or endangered species within the Route. Six MCBS sites are crossed	Seven State-listed threatened or endangered species have been reported within the Route. Fifteen MCBS sites are crossed.	Route A has fewer recorded threatened and endangered species than Route B. Neither route has any recorded occurrences of federally-listed species.
Design Options that Maximize Energy Efficiencies, Mitigate Adverse Environmental Effects, and Could Accommodate Expansion of Transmission or Generating Capacity			
General	The design of the facilities along Route A and Route B will maximize energy efficiencies and mitigate adverse environmental effects.		

Factor	Route A and Associated Facilities	Route B and Associated Facilities	Summary
Route Specific	Route A would be double-circuited with an existing 161 kV line or 69 kV line for 75 percent of its length and where not co-located, structures will be constructed to be 345 kV/161 kV capable.	Route B would be designed to accommodate a future 161 kV circuit.	Both lines would be designed to accommodate a second circuit, but both circuits would be installed along Route A in most places as part of the Project.
Use or Paralleling of Existing Division Lines			
Survey Lines, Natural Division Lines, Agricultural Field Boundaries	Approximately 71 percent of Route A follows agricultural field, survey, and natural division lines and boundaries.	Approximately 73 percent of Route B follows agricultural field, survey, and natural division lines and boundaries.	The use of survey lines, natural division lines, and agricultural field boundaries is greater for Route B.
Use of Existing Transportation, Pipeline, and Electrical Transmission Systems or Rights-of-Way			
Existing Transportation Rights-of-Way	Approximately 12 miles of existing road right-of-way would be followed by Route A.	Approximately 35 miles of existing road right-of-way would be followed by Route B.	Route B follows considerably more existing road rights-of-way.
Existing Electrical Transmission Systems or Rights-of-Way	Approximately 55 miles, 75 percent, of Route A follows existing transmission rights-of-way.	Route B would use less than one mile of existing transmission line right-of-way.	Route A follows considerably more existing transmission rights-of-way.
Existing Pipeline Systems or Rights-of-Way	Neither route follows existing pipeline systems or rights-of-way, although there are crossings of pipeline systems and their rights-of-way.		
Electrical System Reliability			
Electrical System Reliability	Either Route A or Route B is needed to support and enhance the reliability of the regional electrical system.		

Factor	Route A and Associated Facilities	Route B and Associated Facilities	Summary
Cost of Constructing, Operating, and Maintaining the Facility			
Construction Costs	Route A is approximately 73 miles long and has an estimated cost of $206 million. This cost includes removal of the existing Lakefield to Border 161 kV Transmission Line, where applicable.	Route B is approximately 73 miles long and has an estimated cost of $194 million. At least $28 million would be required to install a 161 kV circuit on the open position in the future.	Initial construction costs for Route A would be greater than Route B. The cost for Route B does not include installation of the 161 kV arms on the 345 kV/161 kV double-circuit capable structures at this time.
Operation and Maintenance Costs	The minimal difference in overall project length (less than one mile) would not result in any differences in the operational costs of Route A and Route B. Costs for operation and maintenance of the expanded Lakefield Junction and new Huntley substations would be the same under either route.		
Adverse Human and Natural Environmental Effects Which Cannot Be Avoided			
General	Overall, unavoidable adverse impacts primarily include physical impacts to agricultural land due to construction of the Project. ITC Midwest will implement appropriate mitigation measures during construction to minimize impacts and will compensate landowners for damage to agricultural lands.		
Route Specific	Route A would potentially disturb up to 1,545 acres of cropland and 191 acres of grassland within the right-of-way. Permanent impacts to these lands would be limited to pole locations.	Route B would potentially disturb up to 1,465 acres of cropland and 286 acres of grassland within the right-of-way. Permanent impacts to these lands would be limited to pole locations.	Permanent impacts for the routes are anticipated to be comparable.

Factor	Route A and Associated Facilities	Route B and Associated Facilities	Summary
Irreversible and Irretrievable Commitments of Resources			
General	A commitment of people and resources would be required to successfully construct Route A. Some resources could be scrapped and recycled at the end of the life of the project, such as concrete and rock for foundations and aggregate backfill, steel poles, conductor and shield wires. Other resources would be irreversibly committed to the project and would be irretrievable. These would include trees cleared along the right-of-way, and fuels and lubricants used by equipment during construction. Resources committed would be similar for either route due to less than one mile difference in length, and the same general area being crossed by each route.		
Route Specific	Route A is approximately 73.0 miles long and would require approximately 436 structures.	Route B is approximately 73.4 miles long and would require approximately 434 structures. Although longer in length than Route A, Route B would require fewer angle structures.	Route A would, primarily, replace H-Frame structures with single-pole structures. Resource commitments for the two routes are anticipated to be comparable.

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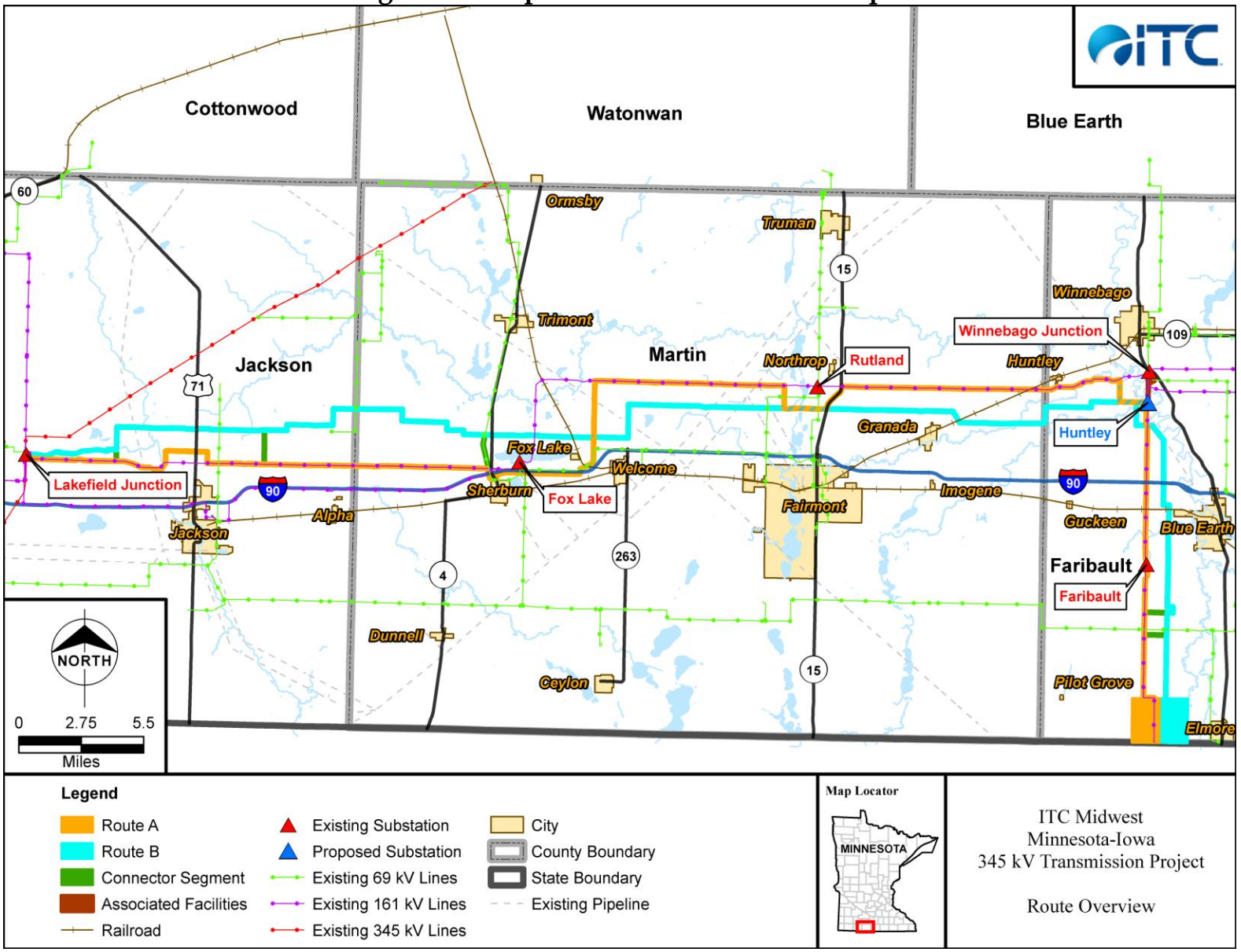
5.0 DESCRIPTION OF PROPOSED ROUTES

According to Minnesota statutes and rules, an applicant for a Route Permit must propose at least two routes for consideration by the Commission. ITC Midwest conducted a thorough and extensive process of obtaining data, seeking input from federal, State, and local officials and landowners, developing and reviewing alternative route options, and quantifying and analyzing human settlement and natural resource data. Ultimately, this process, as discussed throughout this Application, identified two routes for the Project and secured connector segments between the two routes. This section describes those two routes, referred to as Route A and Route B, and provides a general discussion of their location within each county. An overview map of Route A, Route B, connector segments, and associated facilities is provided in **Figure 13**. Route A and Route B were developed through the route selection process described in detail in **Chapter 4**. Detailed maps of the two routes are provided in **Appendix D**, while overview maps are presented in this Chapter and **Appendix C** on a county level to provide a general view of route locations throughout the Study Area.

Figure 13. Proposed Routes Overview Map



In general, Routes A and B extend eastward from the existing Lakefield Junction Substation in Jackson County, Minnesota, to the proposed Huntley Substation in Faribault County, Minnesota, then southward to the Iowa border near the City of Elmore, Minnesota. Except for short sections, they are geographically separated routes. ITC Midwest identified several connectors between Route A and Route B to provide opportunities for interconnections between the two routes. In Iowa, the 345 kV transmission line would continue south toward a new substation near the City of Ledyard, Iowa, before extending further southward to a new substation near the City of Burt, Iowa.

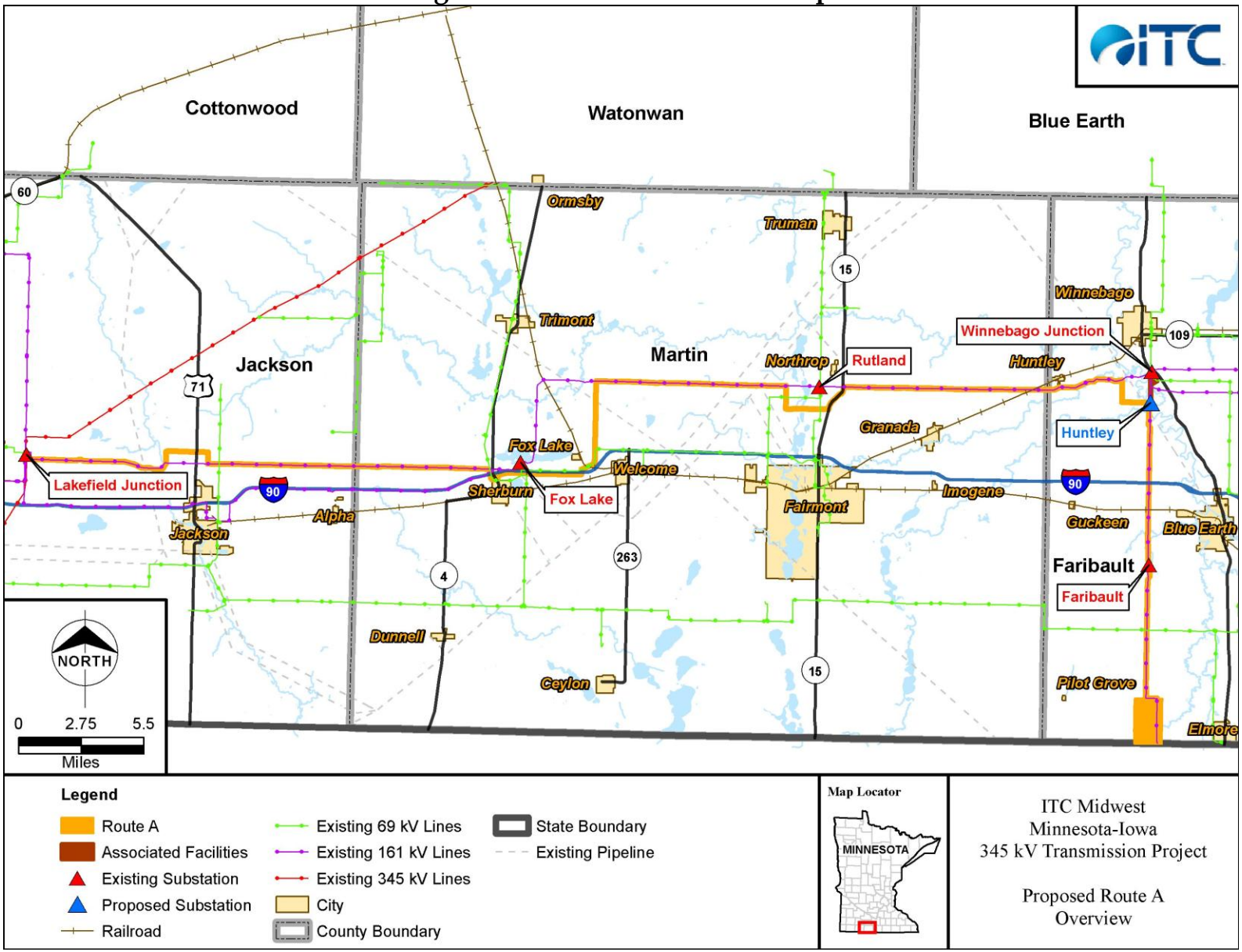
As part of overall route review and analysis, ITC Midwest considered two possible configurations for the Project to establish a centerline for the purpose of evaluating impacts on human settlement and natural resources. Where the Project is proposed to follow existing transportation rights-of-way, ITC Midwest looked at impacts for two different alignments: 100 feet from the road centerline and ten feet from the edge of the transportation right-of-way. An alignment located 100 feet from the road centerline would still take advantage of existing transportation rights-of-way but would avoid incidental encroachment of conductors during high wind conditions ("blowout"). An alignment located ten feet from the edge of a transportation right-of-way would take advantage of existing transportation rights-of-way and also minimize impacts to private property. The data from the analysis of these two impact review alignments are available in **Appendix H**. Based on an in depth review of the data, ITC Midwest determined that proposing to locate the centerline of the Project ten feet from the edge of the transportation right-of-way would be the least impactful to human settlement and natural resources. There is one roadway where ITC Midwest proposes to be located more than ten feet from the edge of the transportation right-of-way: Interstate 90 where ITC Midwest proposes to locate the transmission line 65 feet to 100 feet from the MnDOT right-of-way.

5.1 ROUTE A

Route A extends through the townships of Belmont, Des Moines, Hunter, and Wisconsin in Jackson County; Center Creek, Fox Lake, Manyaska, Fraser, Jay, and Rutland in Martin County; and Jo Daviess, Pilot Grove, and Verona in Faribault County. The total length of Route A is approximately 73 miles. For the majority of this line length (approximately 55 miles, or 75 percent, Route A follows the location of the existing ITC Midwest Lakefield to Border 161 kV Transmission Line. Existing 161 kV H-Frame structures would be replaced with single pole structures for the majority of the Project length and the 345 kV

transmission line would be co-located on these structures. There are four areas along Route A where considerable deviations from the existing Lakefield to Border 161 kV Transmission Line centerline are proposed. These include areas around Fox Lake, Lake Charlotte, north of the Jackson Municipal Airport, and immediately west of the Winnebago Junction Substation. In addition to these areas, several locations have been identified where development near the existing Lakefield to Border 161 kV Transmission Line will necessitate shifting the centerline of the Project from the existing centerline. For the majority of the Project, a 1,000-foot route width is requested, within which a 200-foot right-of-way would be established. At the Minnesota/Iowa border, ITC Midwest identified a route width of 1.25 miles to provide flexibility in extending the Project into Iowa. An overview of Route A for the Project is shown in **Figure 14**.

Figure 14. Route A Overview Map

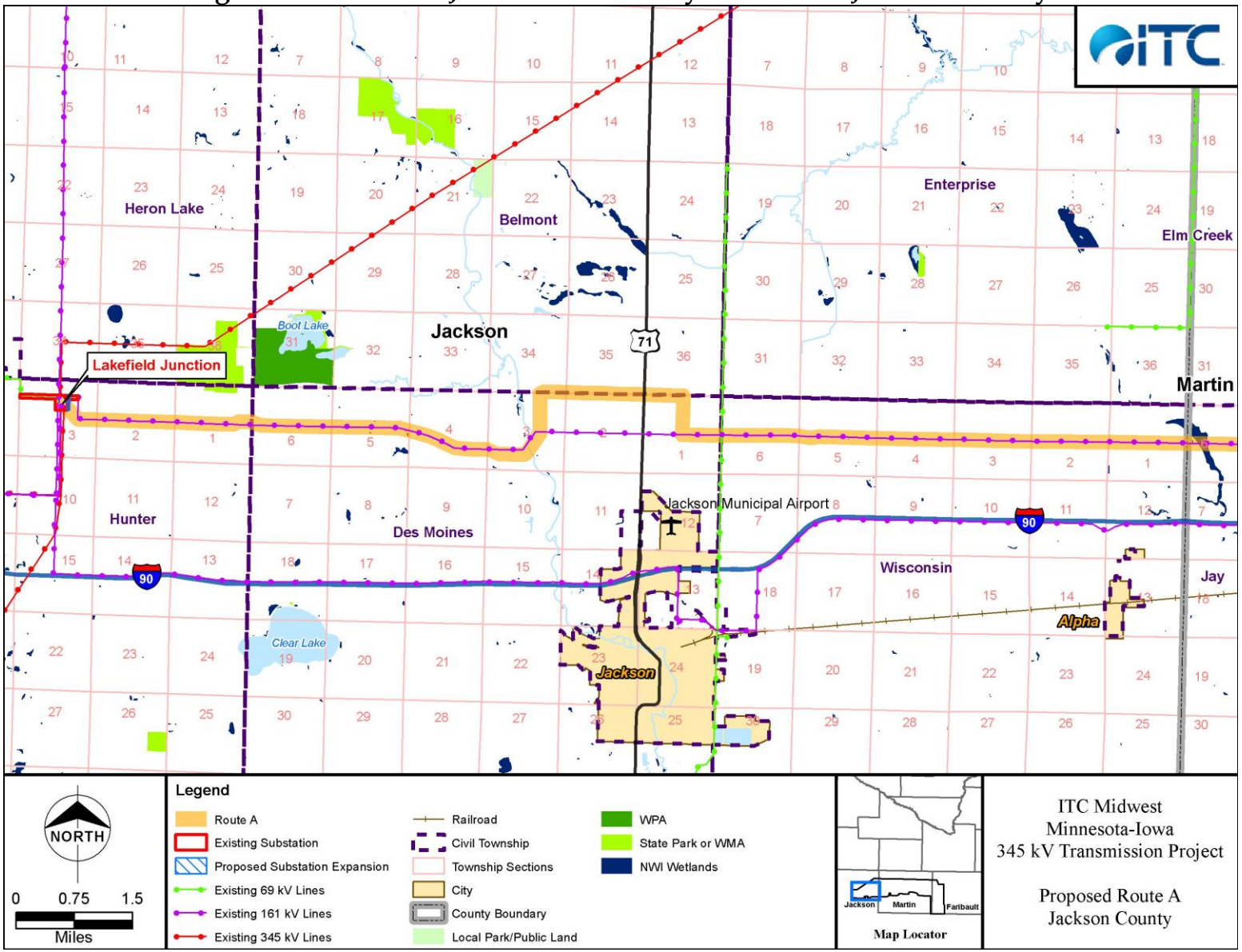


5.1.1 Lakefield Junction to Huntley – Jackson County

In Jackson County, Route A originates at ITC Midwest's existing Lakefield Junction Substation, located in Section 3 in Hunter Township. It extends southeast from the Lakefield Junction Substation approximately 0.5 mile north of 810th Street) and joins the existing Lakefield to Border 161 kV Transmission Line. It continues east approximately 0.5 mile until crossing 470th Street. From here, Route A continues east through the middle of Sections 2 and 1 in Hunter Township for approximately two miles until reaching 490th Avenue. Route A continues east through Sections 6 and 5 in Des Moines Township for approximately 1.8 miles. Route A turns to the southeast then east for approximately 1.6 miles crossing through the southern half of Section 4 in Des Moines Township. In the middle of Section 3, Route A turns north across the Des Moines River for 0.3 mile, at which point Route A deviates from the existing Lakefield to Border 161 kV Transmission Line to avoid creating a navigational hazard for the Jackson Municipal Airport. The reasons for this deviation are discussed in greater detail in **Section 4.4.3.**

The route continues north for another 0.5 mile to 525th Avenue, where it turns eastward. Route A extends along 525th Avenue for 0.9 mile, continuing east for an additional mile and across U.S. Highway 71 between Sections 3, 2, and 1 in Des Moines Township and 34, 35, and 36 in Belmont Township. Route A then turns south, 0.5 mile east of U.S. Highway 71 in Section 1 of Des Moines Township. Route A extends south for 0.5 mile and rejoins the alignment of the existing 161 kV line. It turns east in the middle of Section 1 of Des Moines Township, and extends another 0.5 mile to 550th Avenue/County Road 23 and Wisconsin Township. From here, Route A continues through the middle of Sections 6, 5, 4, 3, 2, and 1 of Wisconsin Township for approximately six miles until reaching 10th Avenue and the Martin County line. An overview of Route A through Jackson County is provided in **Figure 15**.

Figure 15. Lakefield Junction to Huntley Route A in Jackson County



5.1.2 Lakefield Junction to Huntley – Martin County

In Martin County, Route A continues eastward in Jay Township from the Jackson County border extending through the middle of Sections 6, 5, 4, 3, 2 and 1 for six miles until just west of Fox Lake. Route A then deviates from the existing Lakefield to Border 161 kV Transmission Line and extends south approximately 0.2 mile following the alignment of the existing ITC Midwest 69 kV Fox Lake-Watonwan Junction transmission line before crossing over Interstate 90 and extending further south through Section 1 of Jay Township and Section 6 of Manyaska Township. Route A then departs from the existing 69 kV transmission line and turns east at Section 12 of Jay Township and Section 7 of Manyaska Township. Route A extends east along the northern portion of the Town of Sherburn, south of the Interstate 90 interchange and Interstate 90, for approximately 3.9 miles through Sections 3, 4, 5, and 6 of Manyaska Township. West of 110th Avenue/Maple Road/County Highway 23, Route A turns north in Section 3 of Manyaska Township and crosses over Interstate 90 and 125th Street. Route A then turns northeast in Section 2 of Manyaska Township, and is proposed to be co-located with the existing ITC Midwest 69 kV Fox Lake–Fairmont transmission line. It continues for approximately 0.8 mile, crossing over 110th Avenue/Maple Road/County Highway 23 and an existing Union Pacific Railroad line. The route turns north, crosses 130th Street, entering Section 35 of Fox Lake Township, and continues north along field lines through Sections 26, 23, and 14 for 3.6 miles. At this point, in the center of Section 14 of Fox Lake Township, Route A turns east and rejoins the existing Lakefield to Border 161 kV Transmission Line before continuing east for 1.5 miles, through Sections 14 and 13, and into Fraser Township.

Continuing eastward through Fraser Township, Route A extends through the middle of Sections 18, 17, 16, 15, 14, and 13 for an additional 6.1 miles and enters Rutland Township after crossing 190th Avenue/County Highway 39. Within Fraser Township, Route A crosses 140th, 150th, 160th, 170th, 175th, and 190th Avenues as well as County Drainage Ditch Number Three. Development adjacent to the existing line may require that the centerline of the Project be adjusted from the existing Lakefield to Border 161 kV Transmission Line centerline to reduce adjacent residential impacts and maintain sufficient right-of-way clearance.

Route A extends east for 0.7 mile through Section 18 of Rutland Township where it turns south along 196th Street, deviating from the existing Lakefield to Border 161 kV Transmission Line right-of-way that extends across Lake Charlotte.

Route A continues to follow 196th Street for one mile before turning east and extending 1.9 miles east through Sections 19, 20, and 21 of Fraser Township and across 210th Avenue/County Road 143. The route then turns north along State Highway 15 in Section 21 of Rutland Township. Route A follows the State Highway northeast for approximately 1.2 miles through Sections 21 and 16 of Rutland Township before it re-connects with the existing Lakefield to Border 161 kV Transmission Line and turns east between Sections 16 and 15. The route continues east for three miles through Sections 15, 14, and 13 of Rutland Township before entering Center Creek Township, crossing 230th and 240th Avenues and Judicial Ditch Number Three.

Route A continues east for approximately one mile, crossing 255th Avenue and County Highway 53 (260th Avenue) in Section 18 of Center Creek Township. It continues east for an additional five miles through Sections 17, 16, 15, 14, and 13, of Center Creek Township, crossing 265th, 280th, 288th, 290th (County Road 159), 293rd (County Highway 59), and 298th Avenues before reaching the Faribault County line. It also crosses Judicial Ditches One, Twenty Eight, and Forty as well as a Canadian Pacific CP rail line. An overview of Route A through Martin County is provided in **Figure 16** (Fox Lake, Jay, and Manyaska townships) and **Figure 17** (Center Creek, Frasier, and Rutland townships).

Figure 16. Lakefield Junction to Huntley Route A in Western Martin County

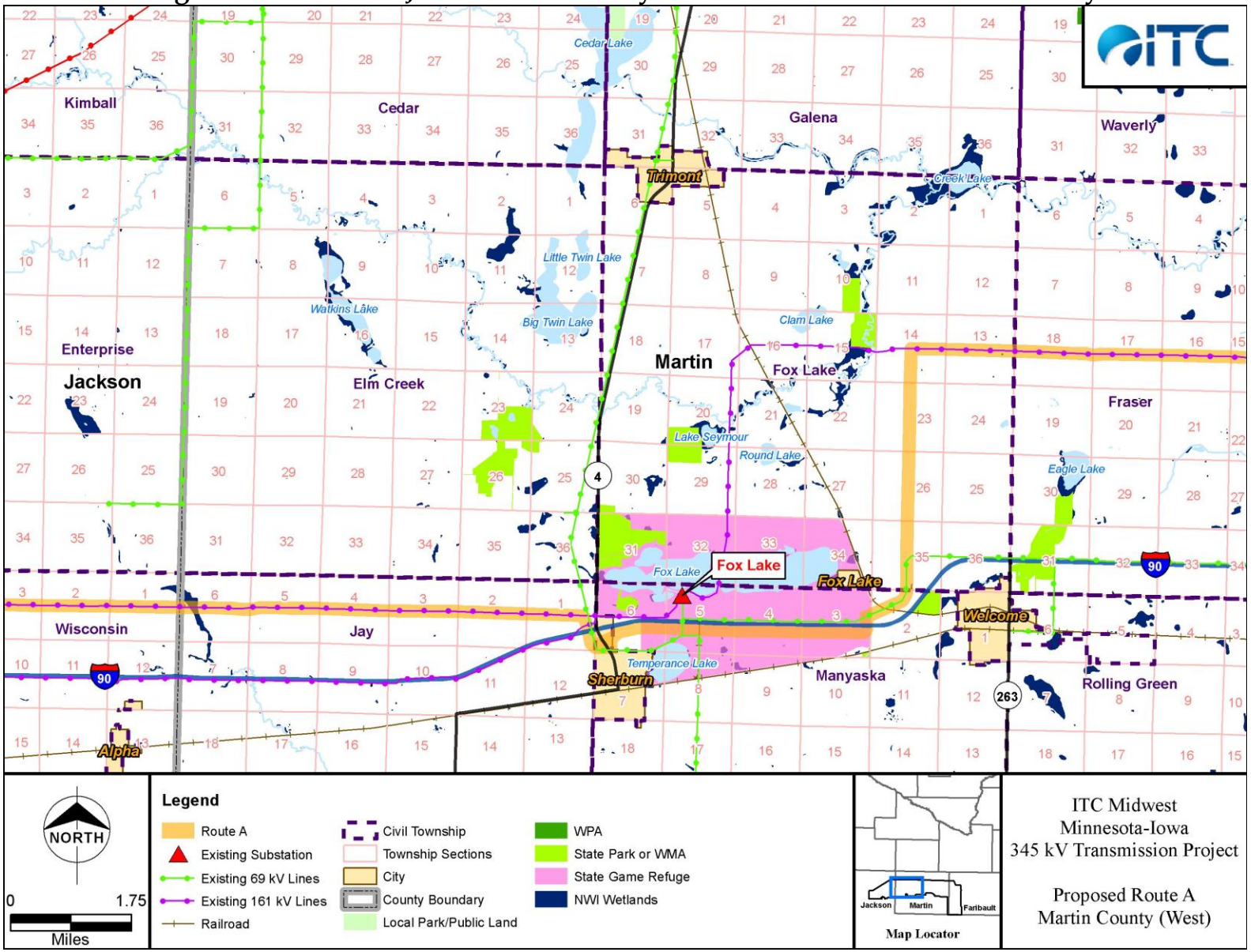
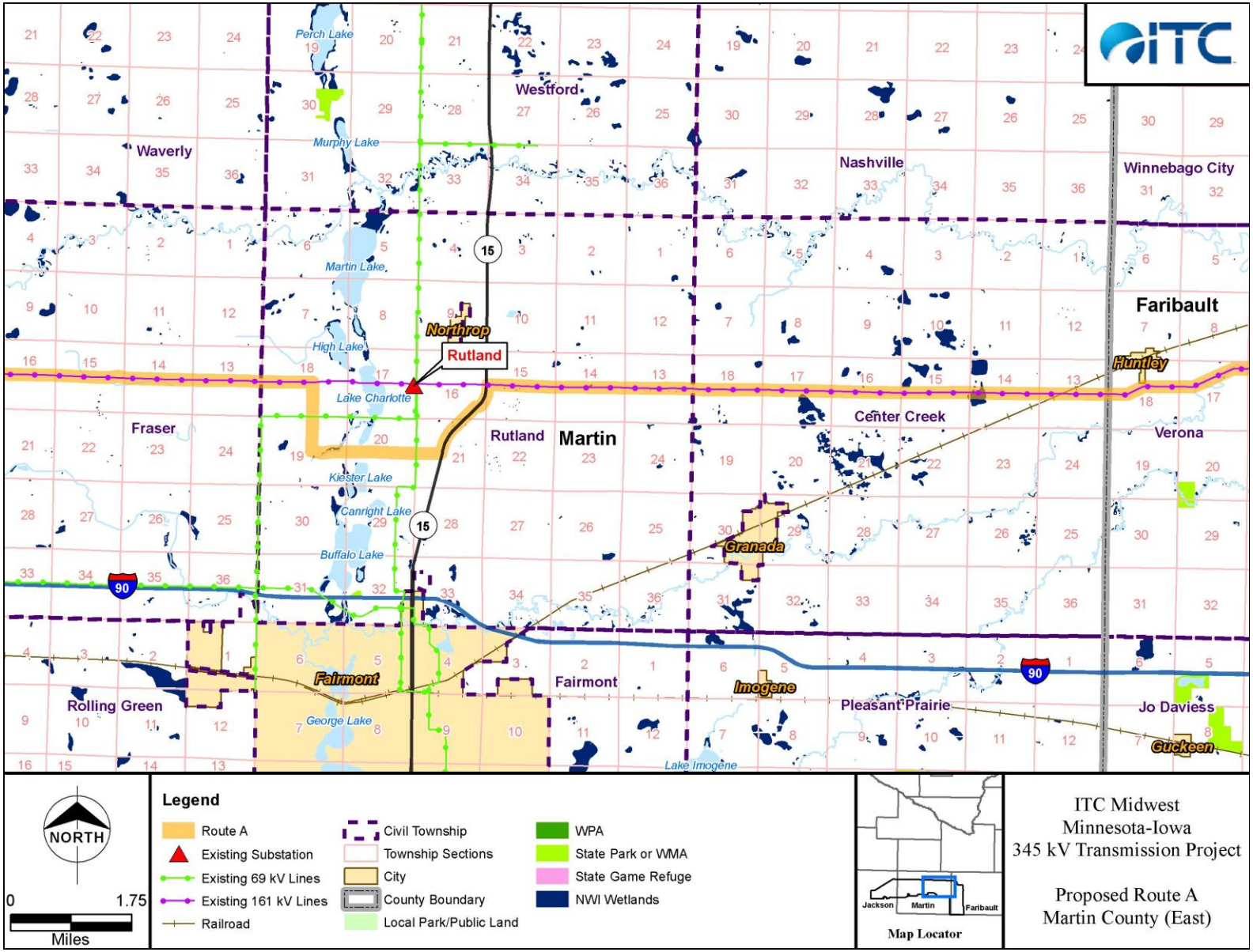


Figure 17. Lakefield Junction to Huntley Route A in Eastern Martin County

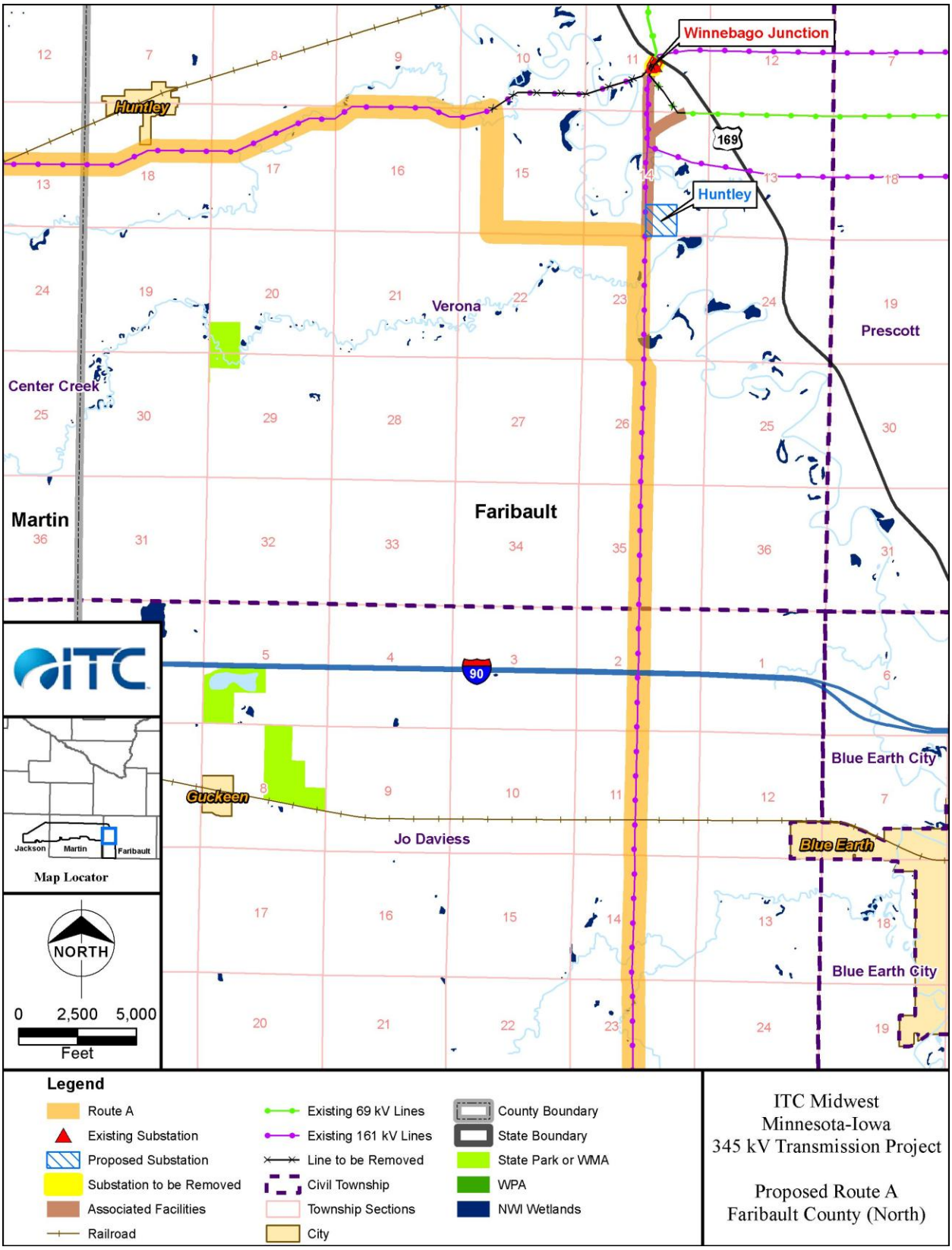


5.1.3 Lakefield Junction to Huntley – Faribault County

From the Martin/Faribault County border, Route A extends east into Verona Township through Sections 18, 17, 9/16, and 10/15 for approximately 3.2 miles, still co-located with the existing Lakefield to Border 161 kV Transmission Line of Verona Township, Route A then turns south for one mile along a field line in Section 15 to 160th Street. At 160th Street, Route A turns east and continues between Sections 15/22 and 14/23 of Verona Township for approximately 1.3 miles to the Huntley Substation site.

An overview of Route A for the Lakefield Junction to Huntley segment is provided in **Figure 18**.

Figure 18. Lakefield Junction to Huntley Route A in Faribault County



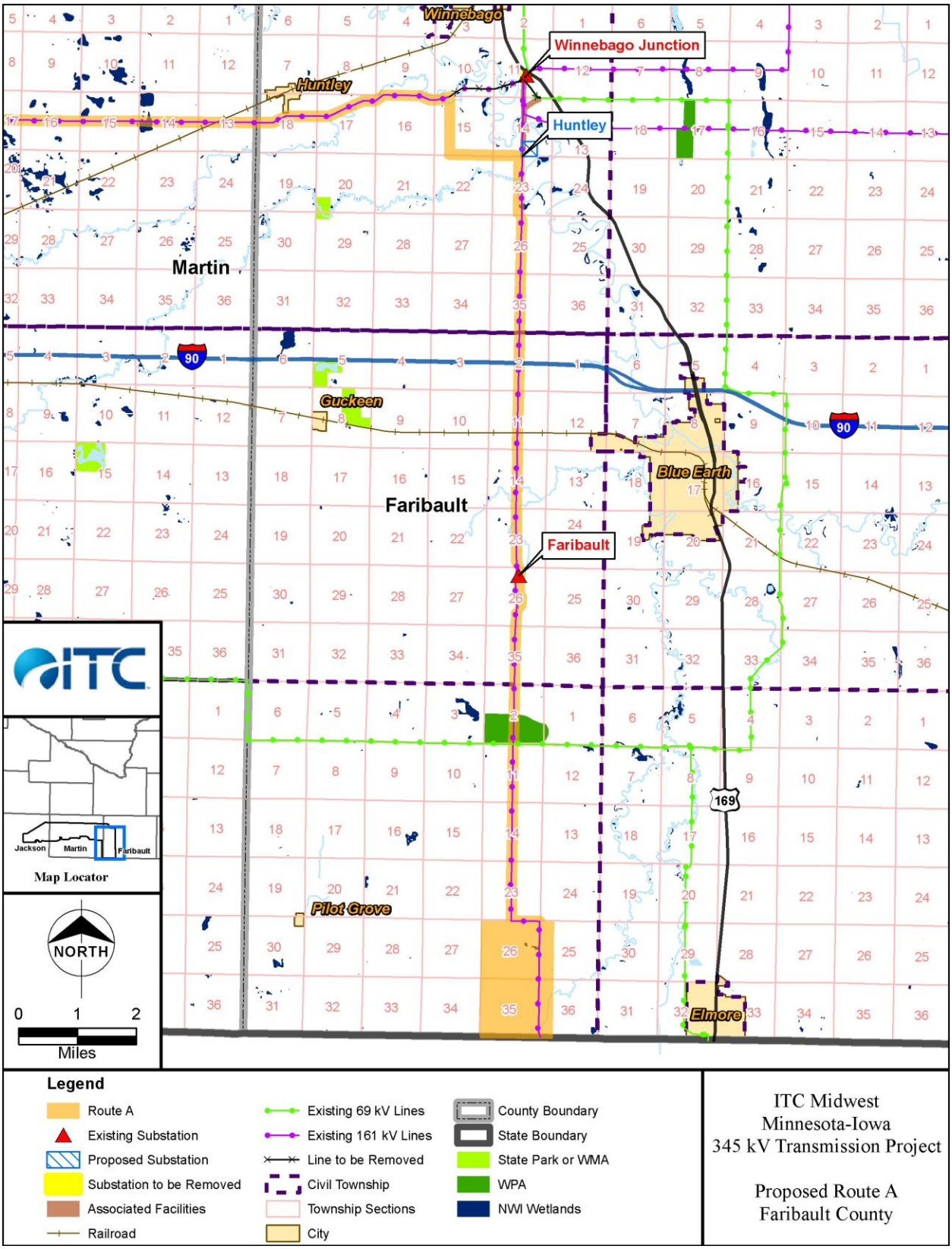
5.1.4 Huntley to Iowa Border – Faribault County

The Huntley to Iowa border segment of the Project would primarily involve co-locating the 345 kV transmission line with the existing Lakefield to Border 161 kV Transmission Line, making use of the existing centerline to the greatest extent feasible. From the new Huntley Substation, Route A extends south co-locating with the existing 161 kV transmission line for three miles in Verona Township, Sections 23, 26, and 35. It crosses 160th, 150th, 140th, and 130th (County Highway 8) Streets, as well as the Blue Earth River and South Creek in several locations.

Route A continues south approximately two miles into Jo Daviess Township through Sections 2 and 11, crossing Interstate 90, 120th Street, County Ditch Number Sixty, and 115th Street. Deviating from the existing 161 kV centerline may be necessary in this area due to construction of wind turbines (Section 11 of Jo Daviess Township) only a few hundred feet east of the existing 161 kV transmission line. After crossing 115th Street, Route A follows 355th Avenue for 0.5 mile, crossing a rail line and extending to 110th Street (County Highway 16). Route A then continues south from 110th Street along the existing 161 kV line for four miles, through Sections 14, 23, 26, and 35 of Jo Davies Township. It crosses 100th, 90th (County Highway 6), 80th, and 70th Streets, as well as Little Badger Creek (Section 14) and seven crossings of Badger Creek (two in Section 23, three in Section 26, and two in Section 35). It is likely that the alignment of Route A would be adjusted slightly from the existing route centerline in Section 26 to accommodate the Faribault Substation, just south of County Highway 6 which was constructed in 2012.

Route A enters Pilot Grove Township in Section 2, and extends south, continuing along the existing Lakefield to Border 161 kV Transmission Line, through the Pilot Grove Lake WPA and Sections 11, 14 and 23. It crosses 60th, 50th, 40th, and 30th Streets, and follows Judicial Ditch Number Seven for 0.3 mile before crossing it in Section 23. Route A widens to 1.25 miles at 30th Street (County Highway 2) at the border of Sections 23 and 26 in Pilot Grow Township. It continues south to the Iowa border through Sections 25, 26, 35 and 36 of Pilot Grove Township crossing the West Branch of the Blue Earth River (Section 36) before reaching the Minnesota/Iowa border at the intersection of 510th Street (Minnesota) and 160th Avenue (Iowa). An overview of Route A for the Huntley to Iowa border segment of the Project is provided in **Figure 19**.

Figure 19. Huntley to Iowa Border Route A in Southern Faribault County

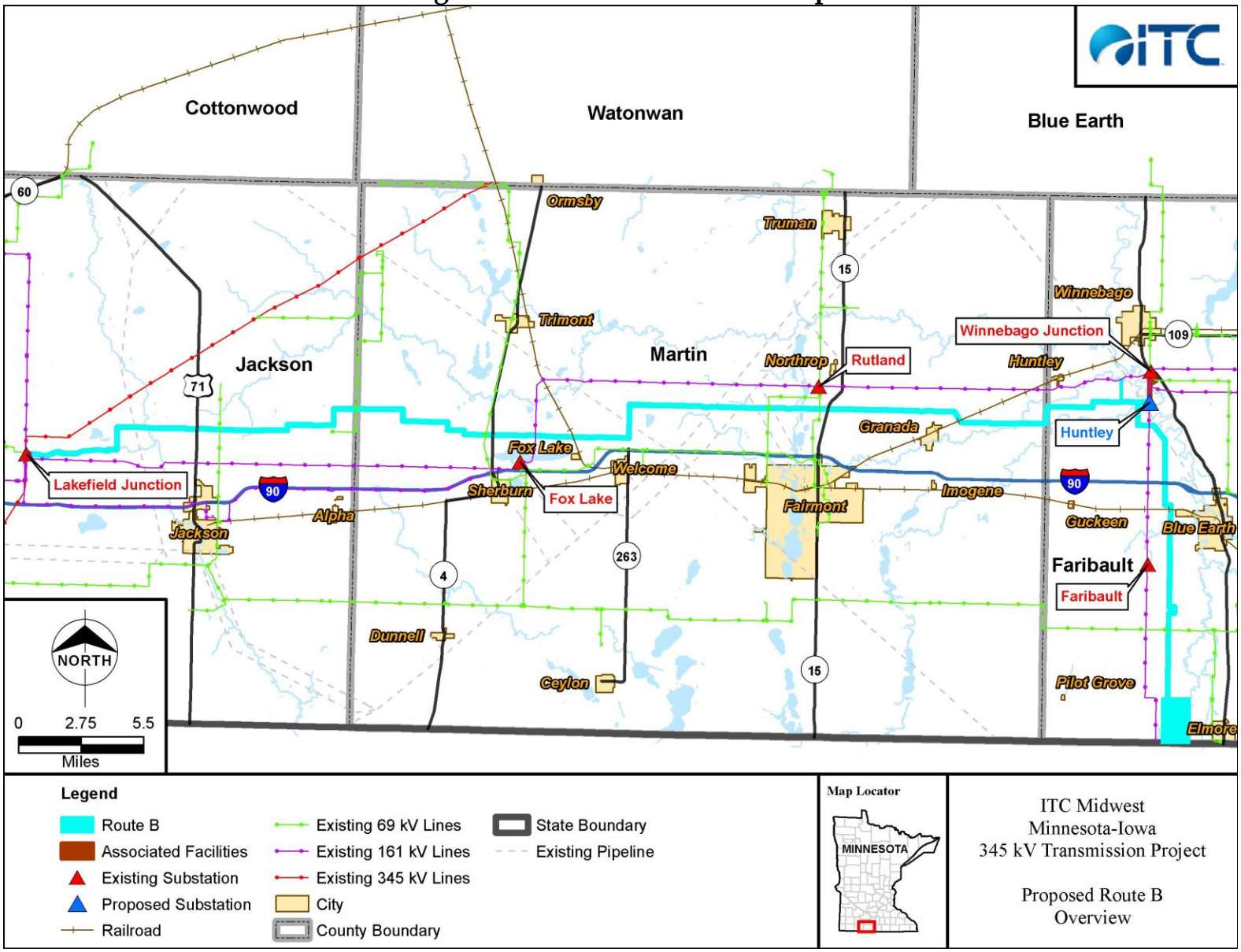


5.2 ROUTE B

Route B extends through the townships of Hunter, Des Moines, Belmont, and Enterprise, in Jackson County; Elm Creek, Fox Lake, Fraser, Rutland, and Center Creek in Martin County; and Verona, Jo Daviess, Pilot Grove, and Elmore, in Faribault County. The total length of Route B is approximately 73.4 miles. Between the Lakefield Junction and Huntley substations, Route B is located north of Route A in Jackson County and the western third of Martin County, crosses Route A near Fox Lake, and is located south of Route A in the eastern two-thirds of Martin County and in Faribault County. Between the Huntley Substation and the Iowa border, Route B is located to the east of Route A.

Route B uses virtually no existing transmission rights-of-way for any of its length. Route B is located on new right-of-way, generally following field, fence and property lines and roadways to the extent practicable. Where Route B follows roadways, some sharing of right-of-way may be possible. A 1,000-foot route width is requested for Route B for the majority of the Project, within which a 200-foot right-of-way would be established. For one mile of Route B that extends north to allow reconfiguration of a short segment of the Rutland-Winnebago Junction portion of the Lakefield to Border 161 kV Transmission Line, Route B is 600 feet in width. ITC Midwest identified a route width of 1.25 miles for Route B at the Iowa border to provide routing flexibility in extending the Project into Iowa. An overview of Route B for the Project is shown in **Figure 20**.

Figure 20. Route B Overview Map

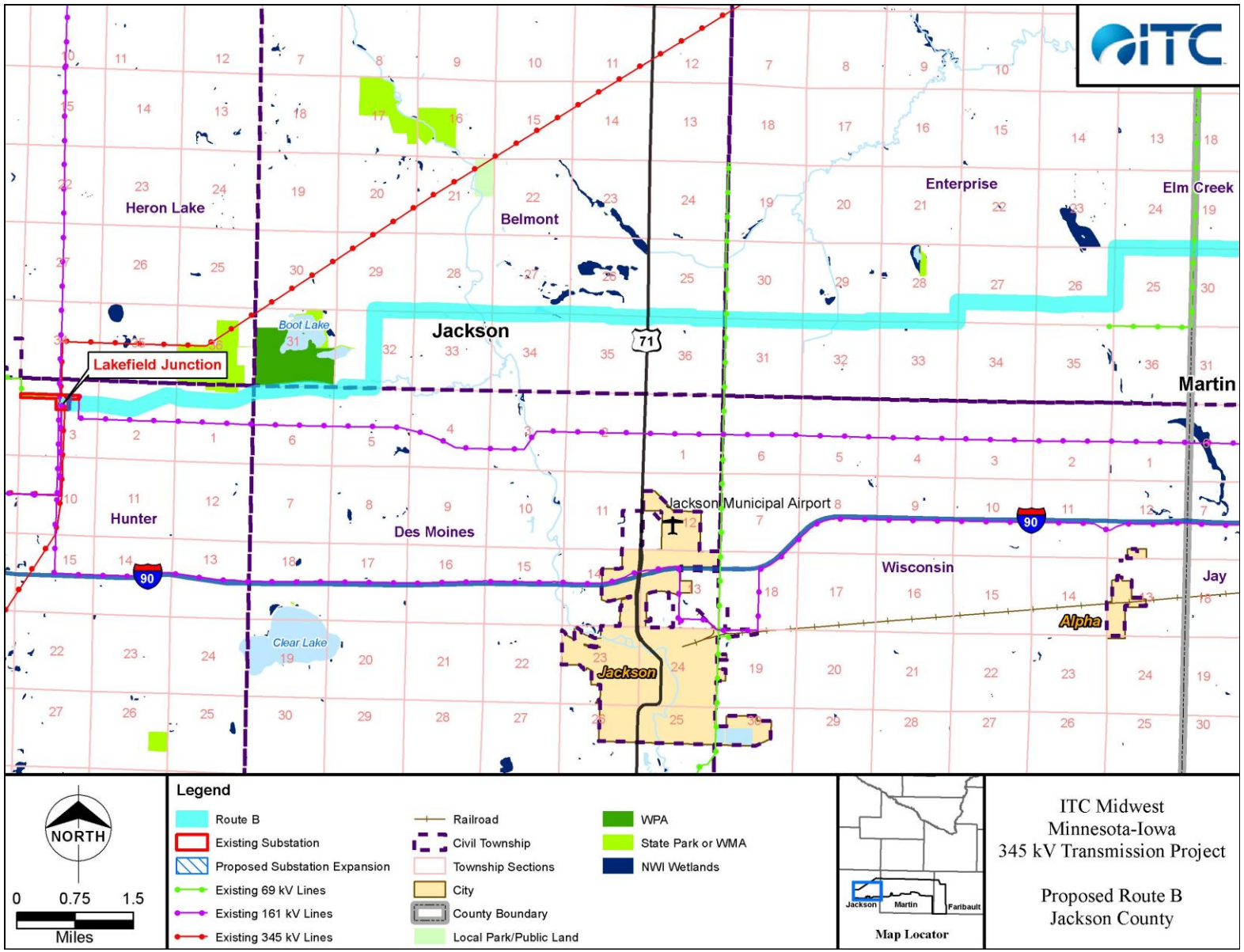


5.2.1 Lakefield Junction to Huntley – Jackson County

Route B originates at the Lakefield Junction Substation, located in Jackson County, Section 3 of Hunter Township. It extends east from the Lakefield Junction Substation and crosses Sections 3 and 2 for 1.5 miles until it reaches 480th Street through an area of wind turbines for a wind farm and local farmsteads. From 480th Street, Route B continues east/northeast for one mile across the northern portion of Section 1 in Hunter Township along the southern boundary of the Toe WMA. After crossing 490th Avenue (County Highway 17) and entering Des Moines Township, Route B follows County Highway 14 (820th Street) for approximately one mile across Sections 6 and 5 of Des Moines Township and Section 31 and 32 of Belmont Township, along the southern boundary of the Boot Lake WPA. Approximately 0.5 mile into Section 5 Des Moines Township/Section 32 Belmont Township, Route B turns north for approximately one mile through the center of Section 32 of Belmont Township. At Section 29/32, Route B turns and continues east between Sections 28/33 and 27/34 for two miles, crossing the Des Moines River between Sections 28 and 33 in Belmont Township. After crossing the Des Moines River, Route B follows 830th Street/County Highway 16 for approximately two miles between Sections 26/35 and 25/36 in Belmont Township, crossing State Highway 71.

Route B enters Enterprise Township between Sections 30 and 31 and continues east along 830th Street between Sections 29/32 and 28/33 for approximately three miles. At 580th Avenue (County Road 85), Route B turns north at the intersection of Sections 26/27/33/34 for 0.25 mile before turning east into Sections 27 and 26 of Enterprise Township at the quarter-quarter section line between farmsteads and a row of wind turbines for approximately two miles to 600th Avenue (County Highway 29). At 600th Avenue, Route B turns north for 0.7 mile, crossing Judicial Ditch Number Fifteen in Section 25/26 of Enterprise Township. Route B then turns east and extends approximately one mile between Sections 24 and 25 in Enterprise Township until it reaches the Martin County line at 10th Avenue. An overview of Route B for the Lakefield Junction to Huntley segment of the Project in Jackson County is provided in **Figure 21**.

Figure 21. Lakefield Junction to Huntley Route B in Jackson County



5.2.2 Lakefield Junction to Huntley – Martin County

Route B enters Martin County between Sections 19 and 30 in Elm Creek Township. It crosses Judicial Ditch Number Fifteen and continues approximately two miles between Sections 19/30 and 20/29 until reaching 30th Avenue. Route B turns south and follows 30th Avenue for 0.5 mile between Sections 28 and 29 of Elm Creek Township. The route then turns east and extends across the middle of Sections 28 and 27 of Elm Creek Township for approximately two miles, until turning south at 50th Avenue. Route B follows 50th Avenue for 0.3 mile to avoid the Caron WMA before turning east for approximately 0.8 mile across Section 26 of Elm Creek Township. Route B then turns south 0.2 mile to 140th Street before turning east and following 140th Street (County Road 132) between Sections 26/35 and 25/36 in Elm Creek Township and Sections 30/31, 29/32, 28/33, 27/34, 26/35 and 25/36 of Fox Lake Township for approximately 7.25 miles. Through this area, Route B would cross the Fox Lake Game Refuge, the edge of the Four Corners WMA along 140th Street, County Highway 4, a Union Pacific Railroad rail line, 80th, 90th, 100th, 110th, and 120th Avenues, the existing Lakefield to Border 161 kV transmission line, and Judicial Ditch Number Twenty Five.

At 130th Avenue (County Highway 27), Route B turns north for 1.5 miles along 130th Avenue between Sections 24 and 25 of Fox Lake Township and Sections 19 and 30 of Fraser Township. Route B then turns east in the middle of Section 19 of Fraser Township and continues in that direction for approximately 6.1 miles through the middle of Sections 20, 21, 22, 23, and 24. In this area, Route B crosses Lilly Creek and 140th, 150th, 160th/County Highway 33, 170th, and 175th Avenues. Route B crosses a drainage ditch and 190th Avenue into Section 19 of Rutland Township and continues east through the middle of Sections 19, 20, 21, 22, 23, and 24 of Rutland Township for approximately 6 miles. In Rutland Township, Route B crosses 196th and 210th Avenues, County Highway 15, 220th, 230th, and 240th Avenues and Judicial Ditch Number Three before reaching Center Creek Township. At Center Creek Township, Route B continues east for approximately 2.1 miles through the middle of Sections 19 and 20, crossing 255th, 260th, and 265th Avenues. At Section 20, Route B turns southeast into Section 21 of Center Creek Township for approximately 0.6 mile across a rail line before turning east to follow 150th Street for approximately 3.75 miles between Sections 21/28, 22/27, 23/26, and 24/25 to the Faribault County border. An overview of Route B for the Lakefield Junction to Huntley segment of the Project in Martin County is provided in **Figure 22** and **Figure 23**.

Figure 22. Lakefield Junction to Huntley Route B in Western Martin County

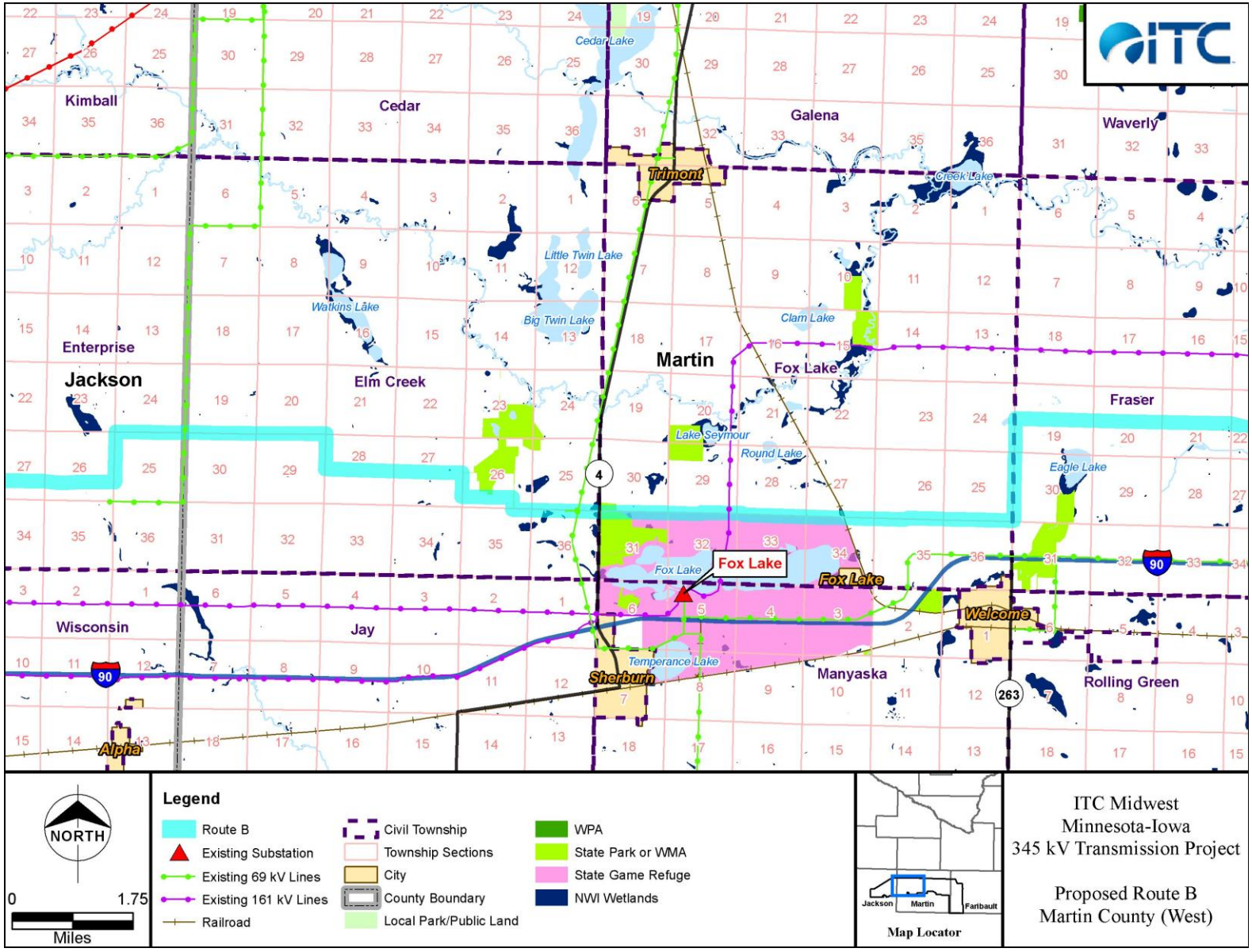
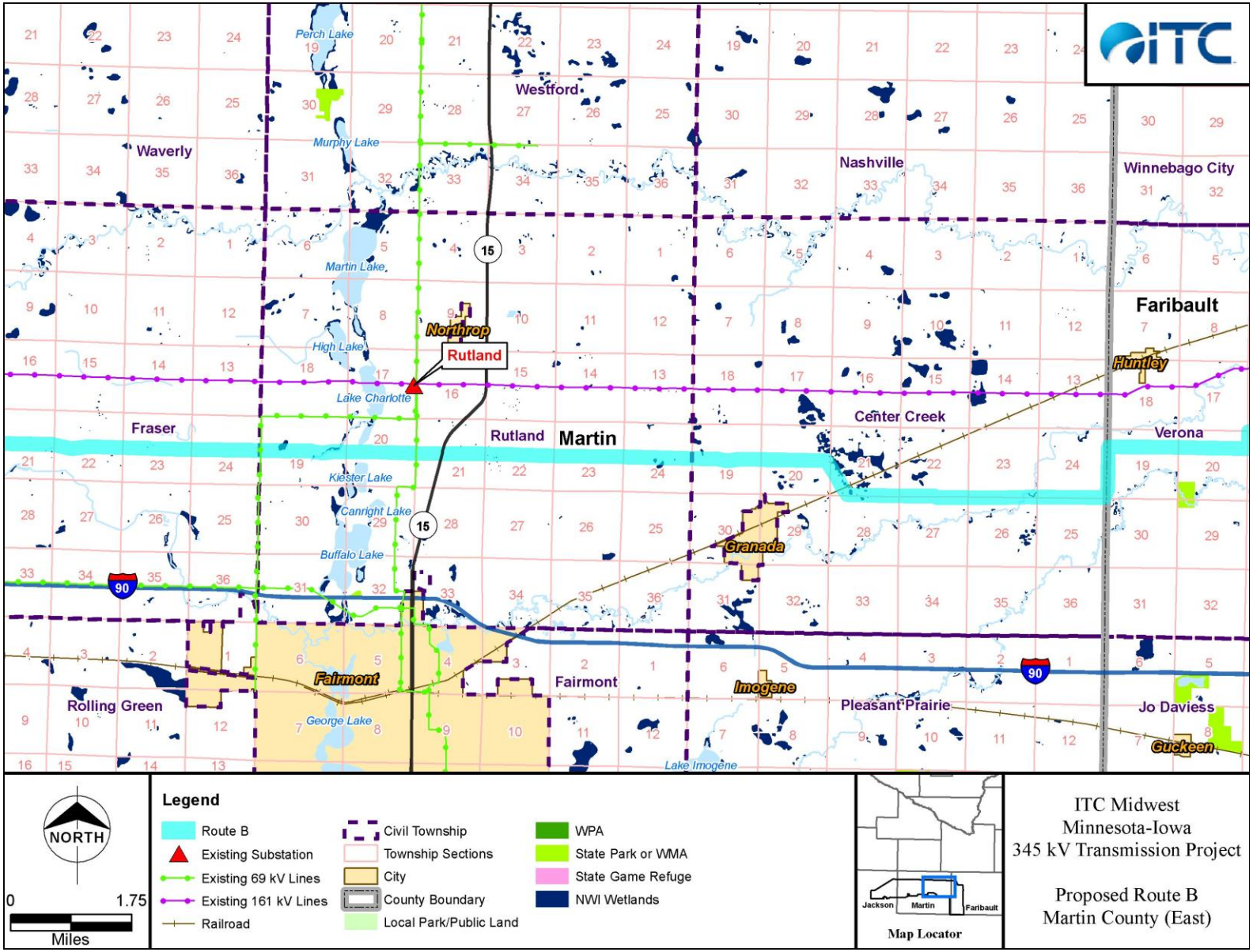


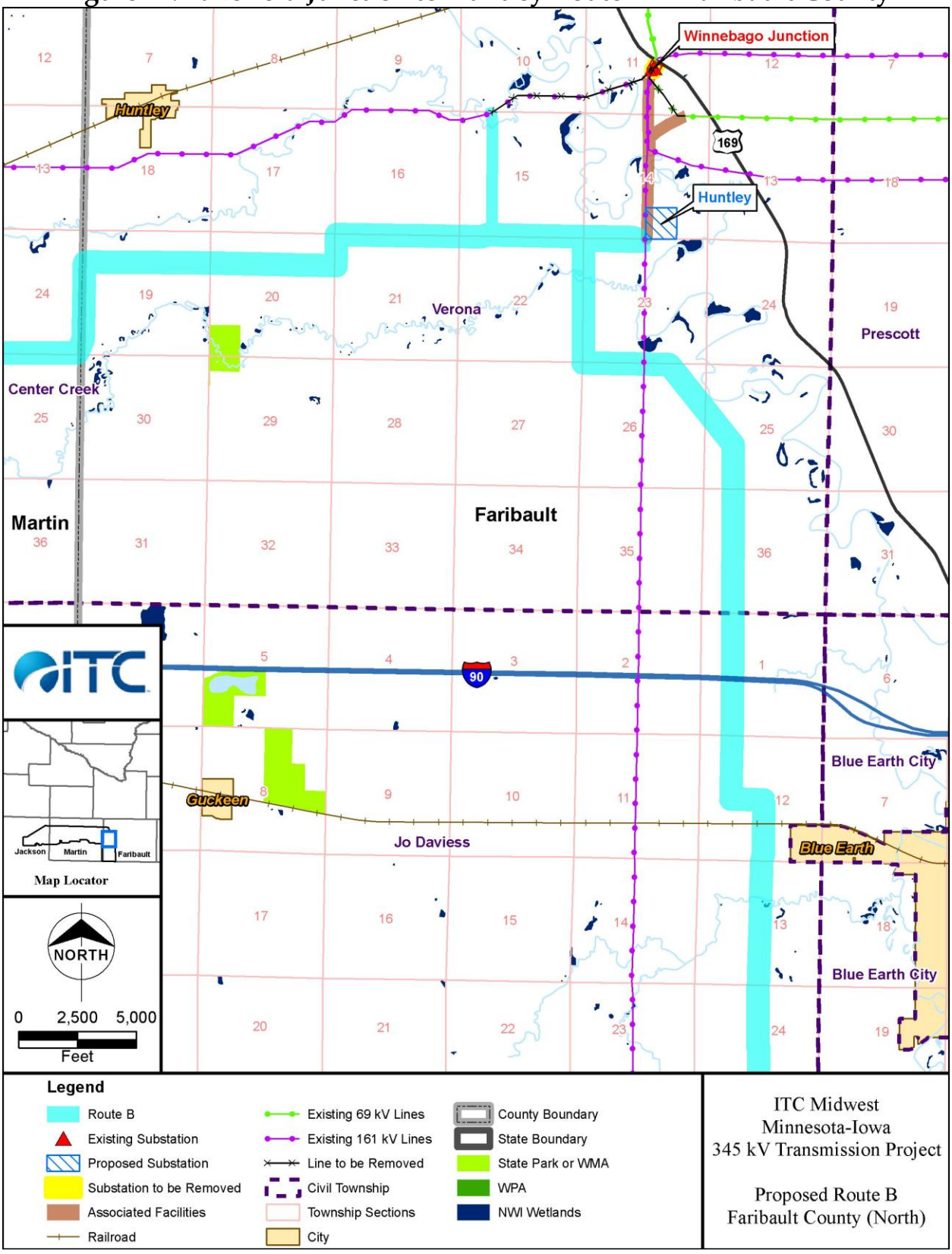
Figure 23. Lakefield Junction to Huntley Route B in Eastern Martin County



5.2.3 Lakefield Junction to Huntley – Faribault County

At the Faribault County border with Martin County, Route B turns north at 310th Avenue for 0.7 mile between Section 24 of Center Creek Township in Martin County and Section 19 of Verona Township in Faribault County. At 157th Street, Route B turns east and crosses Sections 19 and 20 of Verona Township for two miles. Route B then turns north between Sections 20 and 21 for 0.3 mile before turning east at 160th Street at the border of Sections 16 and 21 of Verona Township. Route B continues east along 160th Street for approximately 2.5 miles between Sections 16/21, 15/22, and 14/23 to the new Huntley Substation site located on the north side of 160th Street in Section 14 of Verona Township. Approximately 0.3 mile into Section 15/22 in Verona Township, a portion of Route B extends north approximately one mile to the existing Lakefield to Border 161 kV Transmission line near Section 10 to allow for rerouting of this line into the Huntley Substation. In Section 10 of Verona Township, Route B is only 500 feet wide. This one mile section would be constructed as a single-circuit 161 kV line with a 150-foot right-of-way. This rerouting would require that approximately 1.25 miles of Route B along the border of Sections 15/22 and 14/23 in Verona Township would be constructed to, and operated at, 345 kV/161 kV at the time of construction. An overview of Route B for the Lakefield Junction to Huntley segment of the Project in Faribault County is provided in **Figure 24**.

Figure 24. Lakefield Junction to Huntley Route B in Faribault County

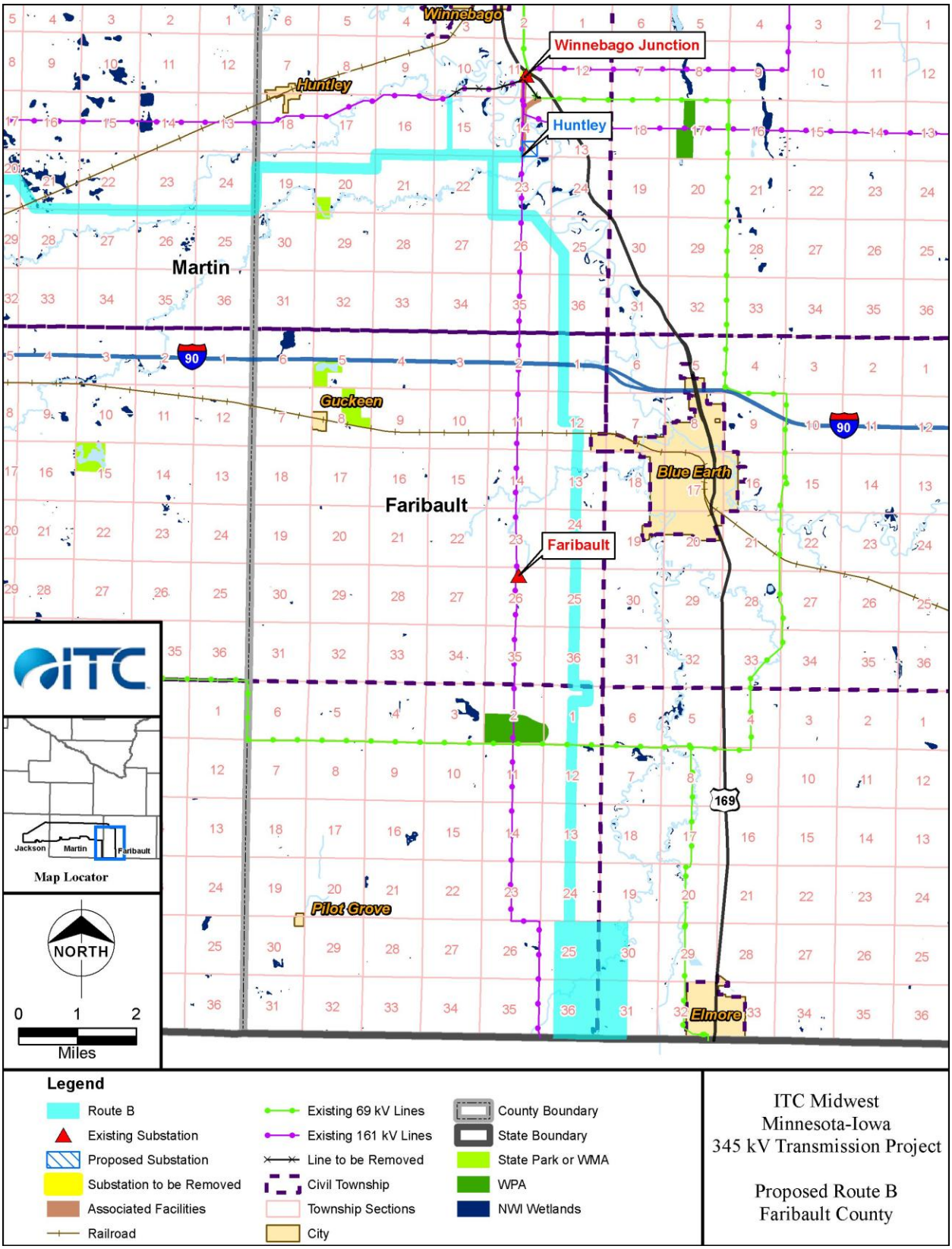


5.2.4 Huntley to Iowa Border – Faribault County

Route B exits the new Huntley Substation and heads to the west continuing west along 160th Street for approximately 0.5 mile between Sections 14 and 23 of Verona Township. Route B turns south between Sections 22 and 23 of Verona Township and continues south for one mile until it turns east at 150th Street for 0.7 mile between Sections 23 and 26. Route B then turns southeast and continues for approximately 0.8 mile until turning south in Section 25 of Verona Township. Route B continues south for approximately 3.7 miles through Sections 25 and 36 of Verona Township, crossing 140th and 130th (County Highway 8) Streets, and into Sections 1 and 12 of Jo Daviess Township where it crosses Interstate 90, County Drainage Ditch Number Sixty, and 120th and 115th Streets. At 115th Street, Route B then turns east for approximately 0.3 mile in Section 12 of Jo Daviess Township before turning south.

After turning south, Route B continues approximately two miles south where it crosses a rail line and 110th Street/County Highway 16 before following 365th Avenue further south to 96th Street through Sections 13 and 24. Where 365th Avenue ends, Route B continues south through Sections 24, 25, and 36 of Jo Daviess Township for approximately 2.5 miles. At the border between Section 36 of Jo Daviess Township and Section 1 of Pilot Grove Township, Route B turns east along 70th Street for 0.25 mile, turns south for 0.25 mile, and then turns west for 0.25 mile to avoid a routing pinch point. In Section 1, Route B turns and continues south for approximately 45.7 miles through the middle of Sections 1, 12, 13, 24, 25, and 36 in Pilot Grove Township and Sections 30 and 31 in Elmore Township to the Iowa border. In Pilot Grove Township, Route B crosses Judicial Ditch Seven three times, 40th and 30th Streets, the West Branch of the Blue Earth River, and 15th Street. In Sections 25 and 36 in Pilot Grove Township and Sections 30 and 31 in Elmore Township a route width of 1.25 miles is requested for the Project. An overview of Route B for the Huntley to Iowa segment of the Project in Faribault County is provided in **Figure 25**.

Figure 25. Huntley to Iowa Border Route B in Faribault County



5.3 ASSOCIATED FACILITIES BETWEEN WINNEBAGO JUNCTION AND HUNTLEY SUBSTATIONS

Certain 69 kV and 161 kV associated facilities will need to be reconfigured as part of the Project that are located in Sections 10, 11, 14, and 15 of Verona Township in Faribault County. Four 161 kV transmission lines that currently terminate at the Winnebago Junction Substation need to be reconfigured as part of the Project. The current designations of the four 161 kV lines are:

a. Rutland—Winnebago Junction;

b. N.B.E.I.—Winnebago Junction (Owned by Xcel Energy);

c. Faribault—Winnebago Junction; and

d. Freeborn—Winnebago Junction.

There are also three 69 kV transmission lines that need to be reconfigured to terminate at the Huntley Substation:

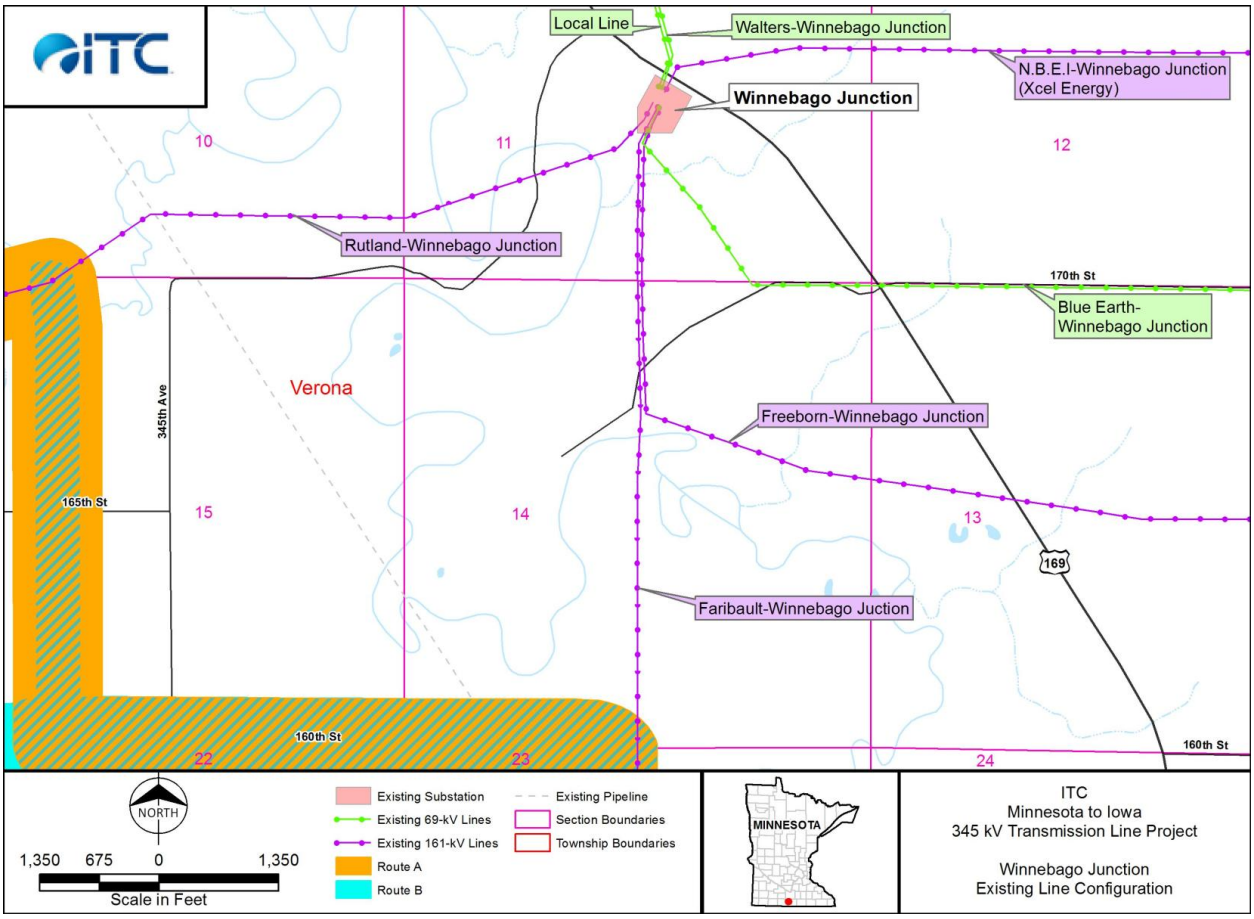
a. Winnebago Junction—Winnebago Local;

b. Blue Earth—Winnebago Junction; and

c. Walters—Winnebago Junction.

The current configuration of these associated facilities is shown in **Figure 26**.

Figure 26. Current Configuration of Associated Facilities



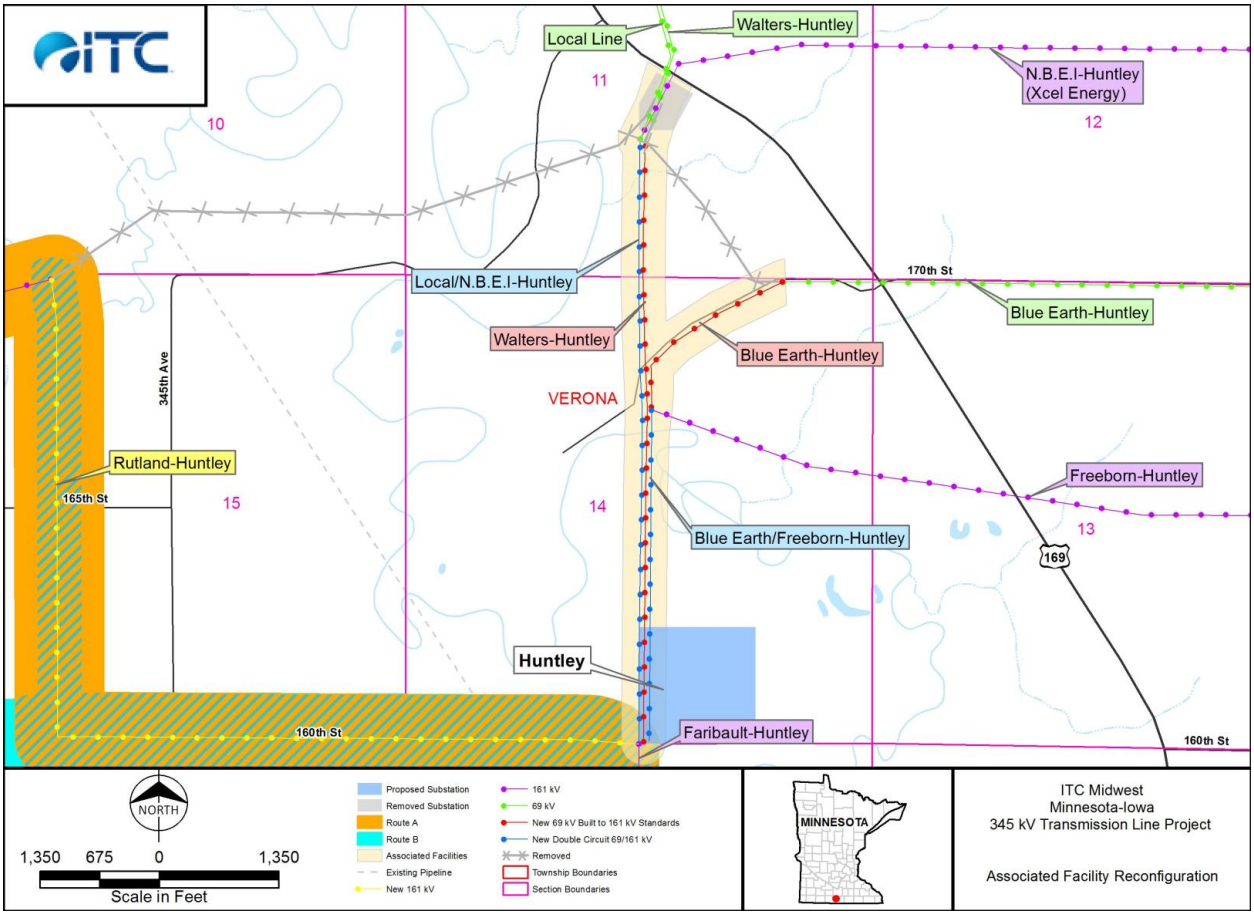
All of these lines, except for the N.B.E.I.—Winnebago Junction line, are owned by ITC Midwest. The N.B.E.I.—Huntley line is owned by Xcel Energy. The circuit would be co-located with a 69 kV line owned by ITC Midwest, but Xcel Energy would own the N.B.E.I.—Huntley insulators and conductor while ITC Midwest would construct the double-circuit line and would own the right-of-way, the structures, and the support arms.

As part of the Project, the Rutland—Winnebago Junction line would be reconfigured as part of either Route A or Route B. Because the Faribault—Winnebago Junction line which currently enters the Winnebago Junction would terminate at the Huntley Substation as part of this Project, the right-of-way north of the Huntley Substation site would no longer be needed for this line. The two other 161 kV associated facility lines (N.B.E.I. and Freeborn) and the three 69 kV associated facility lines would be reconfigured along the existing, but expanded, right-of-way currently occupied by the Faribault—Winnebago Junction 161 kV transmission line. Two of the 69 kV lines would be co-located with two reconfigured 161 kV lines on 161 kV/161 kV structures, operated at

161 kV/69 kV until permission was sought and granted to increase the operational voltage of the 69 kV lines. The Walters Line and the short portion of the Blue Earth Line that will require reconfiguration, but will not be co-located with a 161 kV line, are proposed to be constructed to 161 kV standards but operated at 69 kV.

The proposed construction configuration of the associated facilities, and the requested 500-foot route width for these facilities is shown in **Figure 27.**

Figure 27. Proposed Reconfiguration of Associated Facilities



5.4 CONNECTOR SEGMENTS BETWEEN ROUTES A AND B

Connector segments have been identified in multiple areas along the Project to allow for use of different Routes, if the Commission so chooses. Connector segments would allow, for example, a portion of Route B to be combined with a different portion of Route A to create a new, hybrid, route. Connector segments provide opportunities for avoiding potential routing constraints by allowing a route to access a segment on another route that may avoid one or more

constraints or constraint areas (such as residential development, airport, or lake crossing). Connectors for the Project have been developed at logical locations where Routes A and B are in close proximity or otherwise provide an opportunity to cross from one route to the other with relative ease.

Routes A and B also intersect in several locations that would provide logical "connector segments" for the Project. Although ITC Midwest prefers Route A for the Project, these connector segments were developed and evaluated to provide options should the Commission determine that a portion of each route be used.

Ten connector segments are discussed in greater detail below. A detailed map of each location is provided in the corresponding section below.

5.4.1 Jackson Municipal Airport

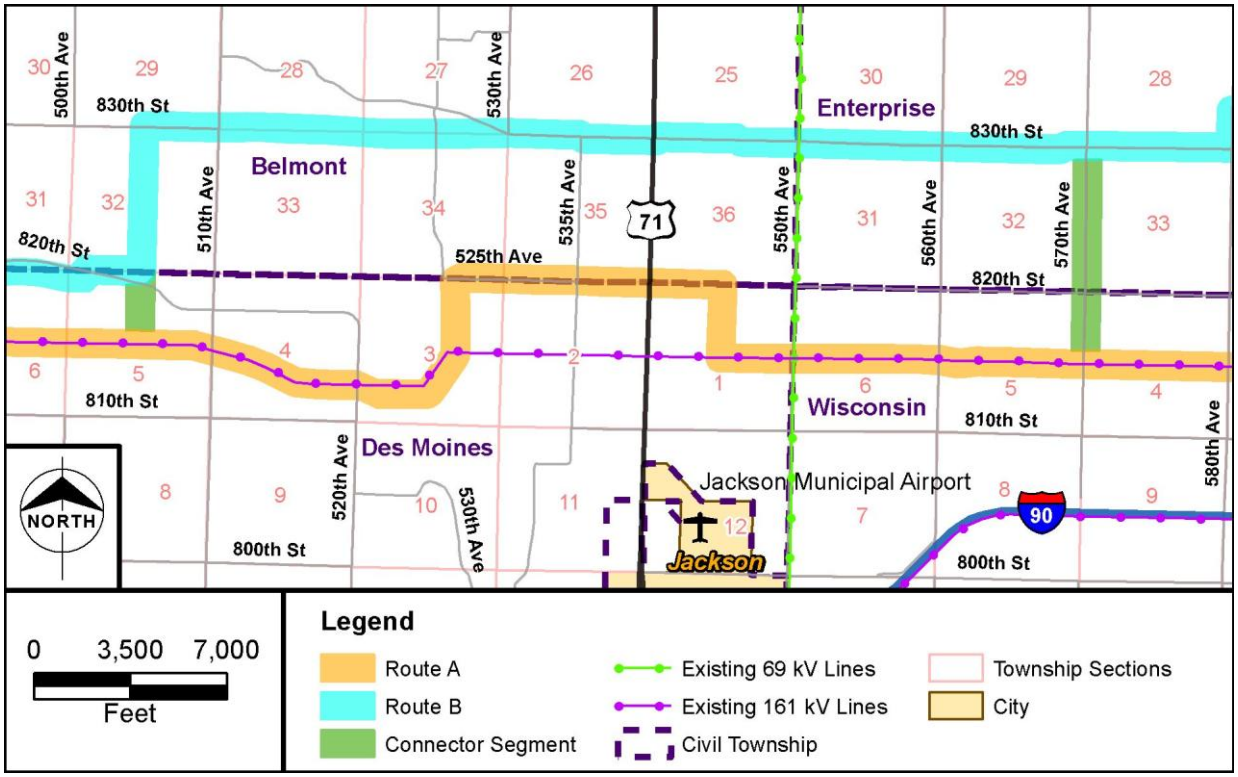
The existing Lakefield to Border 161 kV Transmission Line is located north of the existing Jackson Municipal Airport. Rebuilding this line as a double-circuit 345 kV/161 kV line with typical heights of 130-150 feet was determined to present a potential navigational hazard for airport operations. As a result, the alignment of Route A along the existing line, was shifted slightly further north from the existing 161 kV line to reduce the potential for the new line creating conflicts with airport operations. This adjustment was also considered under the proposed expansion plans for the airport, discussed in greater detail in **Chapter 6**, which include development of a longer runway located slightly north of the existing runway. The airport layout plan ("ALP") for the expansion of the Jackson Municipal Airport is available in **Appendix K**. In late 2012 and early 2013, the FAA provided additional feedback on the proposed locations of Route A and Route B with respect to any impacts on the Jackson Municipal Airport (**Appendix L**). ITC Midwest evaluated the feedback from the FAA and believes use of low profile structures along Route A or a portion of Route B in this area will avoid conflicts with air traffic. Although Route A is not anticipated to conflict with operation of the existing expanded airport, a route variation requiring connector segments was developed to provide greater distance from the airport.

The western connector segment would extend north from Route A in the center of Section 5 of Des Moines Township, Jackson County. It would extend north approximately 0.5 mile, across 820th Street and into Belmont Township to follow the alignment of Route B north and east around the airport. This connector segment would enable Route A to take a more northerly track around the Jackson Municipal Airport, as well as enable portions of Route B to connect to the

existing Lakefield to Border 161 kV Transmission Line alignment of Route A when extending through the wind farm east of Lakefield Junction Substation to connect to the substation.

Route B extends north from the west connector segment to 830th Street, turns east and follows 830th Street for several miles across Belmont Township and into Enterprise Township as discussed in the description of the Route B alignment. At 570th Street, the east connector segment extends south from Route B along 570th Avenue. It would follow 570th Avenue for 1.5 miles to rejoin the alignment of Route A and the existing 161 kV line in Section 4 of Wisconsin Township. These segments would allow for a variation to take Route A further north of the Jackson Municipal Airport if necessary to avoid operational conflicts with the airport. This segment would also enable Route B to extend south and follow the alignment of Route A to the Lakefield Substation. An overview of these connector segments is provided in **Figure 28**.

Figure 28. Jackson Municipal Airport Connector Segments

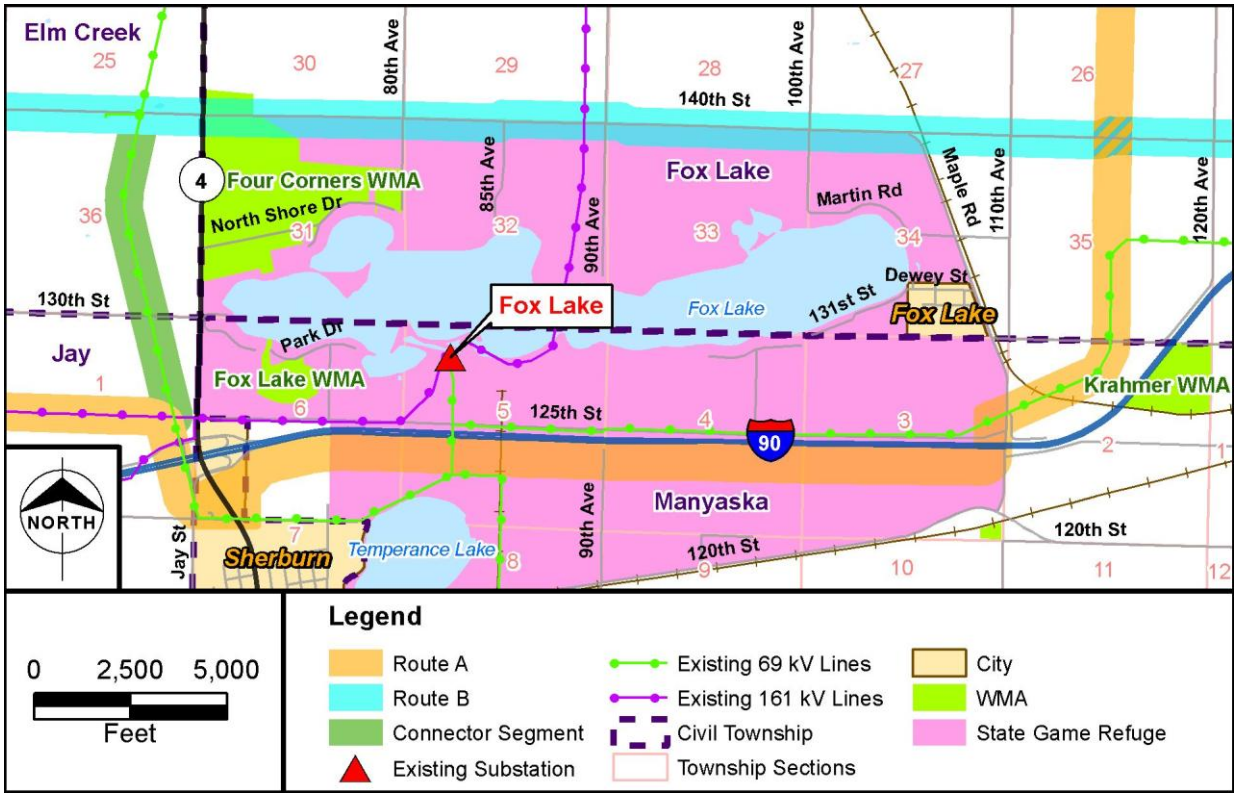


5.4.2 Fox Lake Game Refuge

The Fox Lake Game Refuge includes considerable lands around Fox Lake. In addition to the Refuge, the Four Corners, Fox Lake and Krahmer WMAs occur

within or in close proximity to the Refuge property. The existing Lakefield to Border 161 kV transmission line currently extends through the Refuge and across Fox Lake. In an effort to minimize additional lines across the Refuge and the lake, both Route A and Route B were developed to avoid crossing the lake and be located off or along the edge of Refuge and WMA properties. Route A avoids the WMAs in the area of Fox Lake entirely. Route B crosses through the Four Corners WMA adjacent to where 140th Street crosses through the WMA. This area is shown in **Figure 29**.

Figure 29. Fox Lake Game Refuge Routes

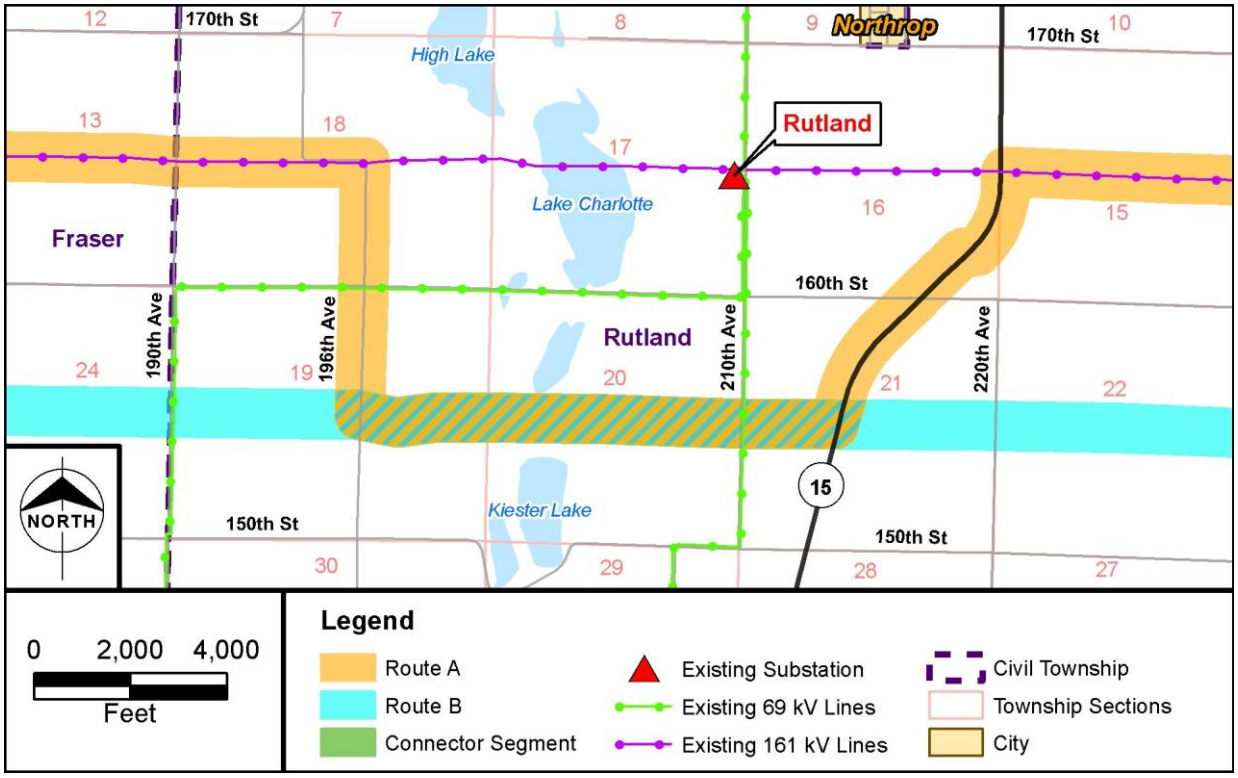


A short connector segment to the west of the Fox Lake Game Refuge and County Highway 4 was developed to allow a connection point between Route A and Route B. Use of the connector would co-locate the 345 kV line with the existing Fox Lake to Watonwan Junction 69 kV transmission line in this area along the existing, but widened, 69 kV right-of-way. Use of this connector would allow routing that would avoid all existing WMAs in the Fox Lake area as Route A and Route B also intersect approximately 0.5 mile east of the intersection of 110th Avenue and 140th Street in Fox Lake Township.

5.4.3 Lake Charlotte

The existing Lakefield to Border 161 kV Transmission Line crosses Lake Charlotte. Route A deviates from the existing line to avoid crossing the lake and surrounding residential area. Likewise, Route B also avoids crossing Lake Charlotte as it shares the same route with Route A in this area. The common segment provides the opportunity for Route A and Route B to connect and extend along the other route. The routes near Lake Charlotte and the connector segment are shown in **Figure 30**.

Figure 30. Lake Charlotte Routes



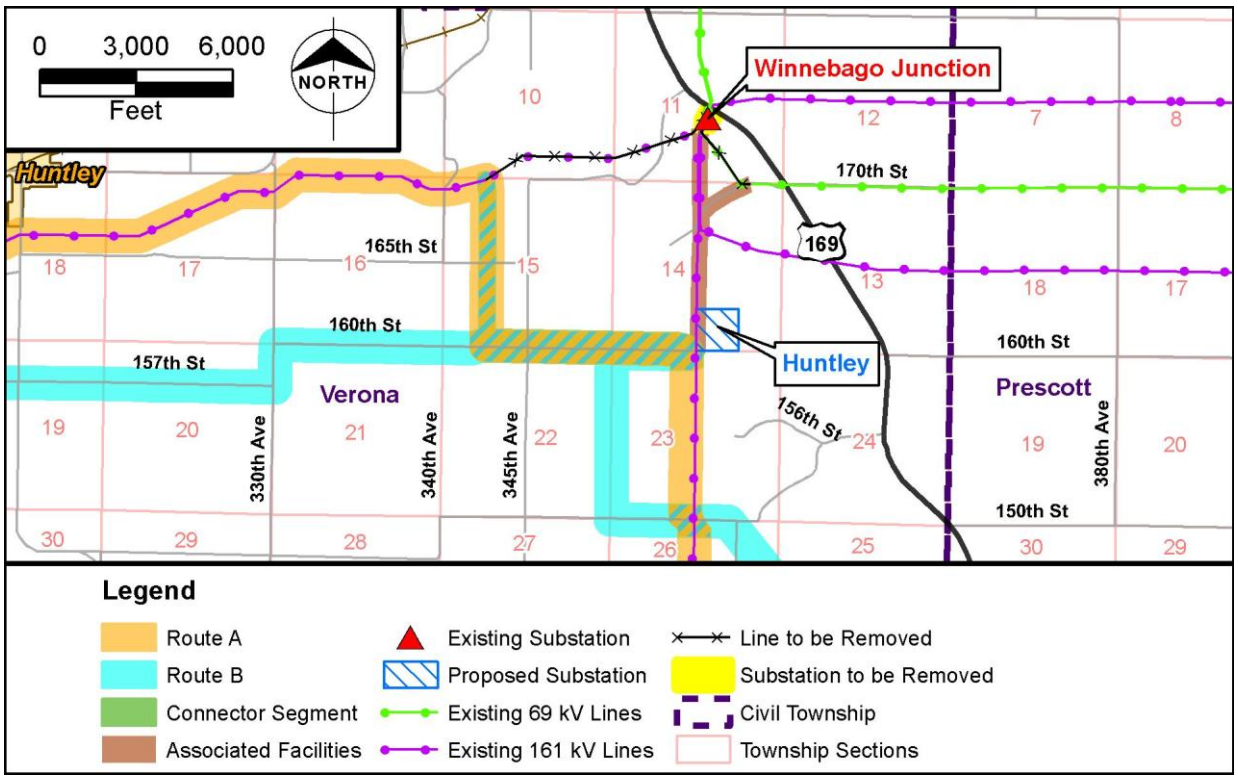
The connector segment extends east from 196th Avenue, generally along the quarter section line between residences and lakes in Rutland Township, Sections 19, 20, and 21. It ends just west of County Highway 15 at the point where Route B continues east across the highway and Route A turns north along the highway. At this point, either Route A or Route B could be followed.

5.4.4 Huntley Substation

While not a connector segment, the Huntley Substation provides an intersection for Route A and Route B. **Figure 31**. Both routes connect to the substation from

Lakefield Junction on the west and then extend south to Iowa. This substation connection provides a convenient location to change from one route to the other.

Figure 31. Huntley Substation and 150th Street



5.4.5 150th Street—Faribault County

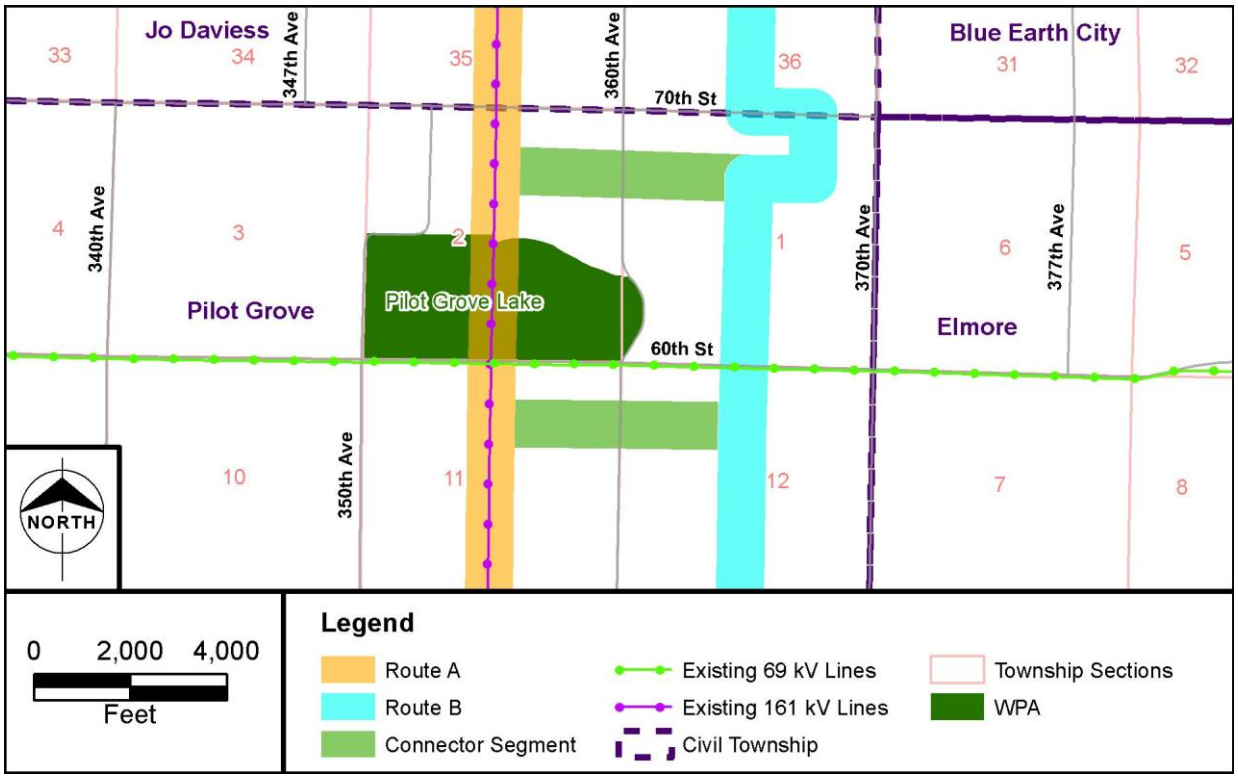
Approximately one mile south of Huntley Substation, Routes A and B cross. **Figure 31**. While only a short distance from the substation, this crossing would provide an opportunity to shift from one route to the other. Between the Huntley Substation and this location, Route A crosses the Blue Earth River twice and South Creek once, with several thousand feet of length crossing areas prone to flooding. This intersection point would enable Route A to follow Route B and avoid this area. Conversely, the intersection point would also enable Route B to follow the existing line into the substation, avoiding the need to develop all new right-of-way.

5.4.6 Pilot Grove Lake WPA

As Route A extends south along the existing 161 kV line, it passes through the Pilot Grove Lake WPA. The Pilot Grove Lake WPA was established after the construction of the existing Lakefield to Border 161 kV Transmission Line. Remaining on the existing alignment minimizes new line construction and

impacts to adjacent lands while maximizing use of existing transmission right-of-way. However, two connector segments were developed to provide an opportunity for Route A to extend over to Route B north of the WPA and, once south of the WPA, extend back to Route A, as shown in **Figure 32**.

Figure 32. Pilot Grove Lake WPA



The connector segment north of the WPA extends east from Route A in Pilot Grove Township, Section 2, approximately 0.2 mile north of the WPA. It would continue one mile to intersect with Route B in Section 1, following the alignment of Route B south, approximately 0.4 mile east of the WPA.

Approximately 0.2 mile south of Pilot Grove Lake WPA a second connector segment extends west from Route B, approximately one mile west to intersect with the existing 161 kV line and the Route A alignment. It extends from Route B in Section 12 and connects to Route A in Section 11, of Pilot Grove Township.

Both connector segments provide a connection between Routes A and B. However, the most reasonable use of these connectors would be for purposes of avoiding the Pilot Grove Lake WPA. Route A could use both connector segments and a short section of Route B to bypass the WPA. The evaluation of impacts of the Project on the Pilot Grove Lake WPA are discussed in **Chapter 6**.

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6.0 ENVIRONMENTAL INFORMATION: ROUTE A

The following is a description of the environmental aspects of Route A. A general description of the environmental and human setting is provided, as well as information regarding land-based economies, archaeological and historic resources, the natural environment, and rare and unique natural resources. Potential project-related effects and mitigation measures proposed to minimize effects are also discussed.

Where specific, quantified, impacts are discussed, ITC Midwest quantified these based on the application alignment shown in **Appendix D**. This application alignment was identified based on the best data available and no soil borings, detailed design, or physical survey work has been performed at the time of this Route Permit Application. ITC Midwest anticipates that portions of the application alignment will need to be modified either before a Route Permit is issued or before construction begins to address design, engineering, or stakeholder concerns, including those of agencies and landowners.

6.1 DESCRIPTION OF ENVIRONMENTAL SETTING

6.1.1 Ecological Provinces

There are several ecological provinces within the State of Minnesota. Jackson, Martin, and Faribault counties are within the Prairie Parklands Province. The Prairie Parklands Province traverses western Minnesota, Manitoba, South Dakota, North Dakota, Iowa, Nebraska, Kansas, Oklahoma, Missouri, Illinois and Indiana. The average annual temperature in the southern range of the Prairie Parklands Province is 48°F. The southern portion of the province in Minnesota receives approximately 33 inches of precipitation each year. The province is prone to spring fire seasons due to its low levels of winter precipitation, the short snow cover season, and western winds. The land in this region was shaped by the Wisconsin glaciation, during which ice sheets crossed the area several times and deposited a mantle of drift hundreds of feet thick in places (MnDNR 2012a).

The Prairie Parklands Province is made up of the Red River Valley Section to the north and North Central Glaciated Plains Section to the south. The Study Area is located within two subsections of the North Central Glaciated Plains Section: the Minnesota River Prairie Subsection and the Coteau Moraines Subsection (MnDNR 2012b). The majority of the Study Area is in the Minnesota River Prairie Subsection, where loamy ground moraine is the dominant landform and the topography is level to gently rolling. The area receives an average annual rainfall

of 25 inches in the west to 30 inches in the east. The subsection drains into the Minnesota River and the Upper Iowa River. Agriculture currently accounts for the vast majority of land use in this subsection (MnDNR 2012c).

The western portion of the Study Area is located within the Coteau Moraines Subsection. This subsection ranges from gently undulating to steeply rolling and hilly terrain. It is made up of rolling moraine ridges, terminal and end moraines, and ground moraines. Glacial till covering the bedrock ranges from 600 feet to 800 feet deep. The area receives an average annual rainfall of 24 inches in the west to 27 inches in the east. The area drains to the Minnesota River or to the Des Moines River. Currently, agriculture is the dominant land use in the area with few remnants of presettlement vegetation remaining (MnDNR 2012d).

Route A is approximately 73 miles in length, encompassing approximately 10,193 acres. The Project will require a 200-foot right-of-way for the 345 kV facilities. The Route A right-of-way crosses approximately 1,770 acres of land, of which, at least 540 acres are already maintained for the existing Lakefield to Border 161 kV Transmission Line.

6.1.1 Lakefield Junction to Huntley

The Lakefield Junction to Huntley segment of the Project extends primarily west to east. Route A passes through Jackson, Martin, and Faribault counties. Route A is approximately 57.5 miles in length in this segment and is largely co-located with an existing 161 kV transmission line owned by ITC Midwest.

Predominant features near this segment of the Project include cropland with scattered rural residences and commercial hog operations, wind development in eastern Jackson County, the Jackson Municipal Airport and proposed expansion, numerous WMAs along but outside Route A, Fox Lake, the Chain of Lakes area (including Lake Charlotte), the Des Moines River, and several remnant prairie sites identified by the Minnesota County Biological Survey ("MCBS"). Although areas of remnant prairie do occur within Route A, no federally- or State-listed threatened or endangered species known occurrences have been identified within Route A.

6.1.2 Huntley to Iowa Border

The Huntley to Iowa border segment of the Project runs, primarily, north to south. This segment of Route A is approximately 15.5 miles in length and is co-located with the existing Lakefield to Border 161 kV Transmission Line.

This segment of the Project is wholly in the Minnesota River Prairie Subsection in Faribault County, where loamy ground moraine is the dominant landform and the topography is level to gently rolling. Predominant features for this segment of Route A include cropland, scattered rural residences and farmsteads, wind development in the western area of the county, crossing of Interstate 90, and the Pilot Grove Lake WPA, currently crossed by the existing Lakefield to Border 161 kV Transmission Line.

6.2 LAND COVER

Land cover and land use varies throughout the region. Agricultural land in the Study Area accounts for the vast majority of land use, with typical crops including corn (*Zea mays*), soybean (*Glycine max*), alfalfa (*Medicago sativa*), and winter wheat (*Triticum aestivum*). Grassland, burr and white oak forests, and lowland deciduous forests also make up a portion of the Study Area. Less prevalent in the Study Area are low and high density urban areas, sedge meadows, maple and basswood forests, upland shrub land, broadleaf sedge and cattail areas, and cottonwood forests (MnDNR Division of Forestry 2006).

Typical prairie vegetation in this area includes big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), indiangrass (*Sorghastrum nutans*), sideoats grama (*Bouteloua curtipendula*), prairie june-grass (*Koeleria macrantha*), and sun sedge (*Carex heliophila*).

The majority of the Study Area is farmland, including cropland and pasture. Additional land areas are enrolled in the Conservation Reserve Program ("CRP") and the Conservation Reserve Enhancement Program ("CREP"). Scattered rural residences, commercial hog operations, agricultural support facilities, and commercial business are found throughout the Study Area. Several small communities with more concentrated residential and commercial development occur within the Study Area, with larger communities of Fairmont, Blue Earth, Jackson, Sherburne, Trimont, and Welcome occurring on the fringe or just outside the Study Area. Considerable wind farm development has occurred in the area of eastern Jackson County in the Study Area over the prior decade, and further development is progressing in western Faribault County, resulting in construction of wind turbines, substations, and electric collection transmission lines.

Table 11 summarizes the land cover crossed by Route A. The primary land cover in the Study Area is agricultural, but also includes grassland/pasture areas, aquatic environments, lowland deciduous forests, upland deciduous forests, and

non-vegetated areas. Grassland/pasture areas comprise the majority of non-cropland land cover along the application alignment of Route A. Land cover can be generally identified in **Appendix D** with detailed tables quantifying impacts in **Appendix H**.

Table 11. Land Cover Along Route A

Route A Impacts	Total
Route Length (miles)	73
200-foot Right-of-Way (acres)	1,770
Land Cover	
Cropland in 200-foot Right-of-Way (acres)	1,545
200-foot Right-of-Way Percent Cropland	87
Aquatic Environments in 200-foot Right-of-Way (acres)	8
Grassland in 200-foot Right-of-Way (acres)	191
Lowland Deciduous Forest in 200-foot Right-of-Way (acres)	6
Upland Deciduous Forest in 200-foot Right-of-Way (acres)	18
Shrubland in Right-of-Way (acres)	0
Upland Conifer Forest in Right-of-Way (acres)	0
Non-Vegetated Right-of-Way (acres)	3

6.2.1 Impacts and Mitigation

Approximately 1,545 acres of cropland would be within the 200-foot right-of-way for Route A. There are 16 CRP parcels within Route A. Only 11 of these parcels are within the Route A right-of-way. The application alignment of Route A only crosses five CRP parcels. There are five CREP land parcels within Route A. The Route A right-of-way contains four CREP parcels. The application alignment of Route A only crosses one CREP land parcel. All of these parcels are also part of the Reinvest in Minnesota ("RIM") program.

Several other land cover types comprise the remaining 225 acres of right-of-way that would be impacted by Route A. Of the 225 non-cropland acres of right-of-way, approximately 191 acres are grassland. The 200-foot right-of-way would include approximately six acres of lowland deciduous forest and 18 acres of upland deciduous forest. Route A would have approximately eight acres of aquatic environment within the right-of-way and would not cross any shrubland or upland conifer forest.

To minimize any undue impacts to land cover, alteration of land cover would be limited to that necessary for safe operation of the line or as part of construction. As previously noted, only minimal additional clearing would be required. One remnant prairie grassland is crossed by the 200-foot Route A right-of-way. ITC Midwest will coordinate with MnDNR to identify measures to avoid disturbance to this area, which can be spanned during right-of-way clearing and construction. Further additional measures would be developed with the MnDNR to avoid migration of invasive species into any identified remnant prairie components prior to right-of-way clearing. Any disturbed areas would be restored. ITC Midwest will limit vehicle traffic to the extent practical to roads and pathways along the right-of-way.

In agricultural areas, ITC Midwest plans to inform landowners of the timing of clearing and construction activities. Depending on the timing of construction, some crop damage may occur. ITC Midwest will restore disturbed cropland and compensate landowners if crop losses occur. Additionally, Route A would result in the reconstruction of existing two-pole H-frame structures to new single pole structures on a concrete foundation where co-location is proposed (**Appendix D**). These structures would occupy less space and present less of an obstruction to farming operations, lessening the inconvenience to farmers needing to work around the structures and enabling more area to be farmed around the structure. Also, the new structures would likely enable longer span distances between structures, lessening the number of structures required. Reduction in the number of structures would also reduce obstructions for farmers and provide additional area for crop production.

6.3 SOILS

There are many different soil types within the Study Area (USDA NRCS 2003). The majority of the area is covered by the following soil types: Canisteo, Clarion, Coland, Collinwood, Crippin, Delft, Glencoe, Nicollet, Truman, Waldorf, and Webster (**Appendix M**). These soils are typically considered to be loamy, silty clay loam, or clay loam, are typically used for agricultural purposes, and are moderately well- to poorly-drained. Most of the Study Area is considered "prime farmland" or "prime farmland if drained" according to the Natural Resources Conservation Service ("NRCS") (USDA NRCS 2003). Farmland classifications along Route A are summarized in **Table 12**.

Table 12. Farmland Classifications Along Route A

Route A	Total
Right-of-Way Acres	1,770
Prime Farmland within Right-of-Way (acres)	566
Percent of Right-of-Way that Crosses Prime Farmland	32
Prime Farmland if Drained within Right-of-Way (acres)	909
Percent of Right-of-Way that Crosses Prime Farmland if Drained	52
Farmland of State Importance within Right of Way (acres)	169
Percent of Right-of-Way that Crosses Farmland of State Importance	9.5
Prime Farmland if Protected from Flooding within Right-of-Way (acres)	21
Percent of Right-of-Way that Crosses Prime Farmland if Protected from Flooding	2
Right-of-Way Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding (acres)	1,665
Right-of-Way Percent Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding	94

Source: MnDNR, MNDOT, ITC Midwest, NAIP

6.3.1 Impacts and Mitigation

Farmland classified as prime farmland or farmland of Statewide importance will be crossed by the 200-foot right-of-way for the Project. Soil compaction in areas where construction equipment is used may occur. To minimize overall impacts, ITC Midwest will limit vehicle traffic to the Project right-of-way and existing access points to the greatest extent feasible. If compaction of soil occurs, ITC Midwest will reimburse the landowner accordingly.

6.4 LINEAR FEATURE SHARING

Sharing of linear features reduces the amount of disturbance to the surrounding environment, thus reducing the overall impacts of a transmission line and mitigating unnecessary environmental disturbances. Route A is approximately 73 miles in length from the Lakefield Junction Substation to the Iowa border (not including the length of associated facilities that will be necessary between the Winnebago Junction and Huntley substations). Approximately 10,193 acres of land are crossed by Route A, and approximately 1,770 acres of right-of-way will be required for the Project, of which, at least 540 acres are already maintained for existing transmission lines. Linear feature sharing can be seen in **Appendix D**.

Route A shares a total of approximately 67 miles (approximately 92 percent) of its overall route length with existing linear features, including existing transmission lines, roads, and field lines. Paralleling roads, including Interstate 90, accounts for approximately 12 miles of this total. Route A would co-locate with approximately 55 miles of existing transmission lines. Only approximately six miles of Route A would not share or follow some type of existing linear feature (**Table 13**). Deviations from the existing 161 kV transmission line were identified near Fox Lake and Lake Charlotte, to avoid potential conflicts with the Jackson Municipal Airport, and to connect to the proposed Huntley Substation.

Table 13. Linear Feature Sharing for Route A

Linear Feature Sharing – Type	Miles
Length along Existing Transmission Alignment	55*
-and also along roads (miles)	3.1
-and also along field lines (miles)**	38
Length Not Along Existing Transmission Alignment	18
-but along roads (miles)	8.2
-but along field lines (miles)	14
No Linear Feature Sharing (miles)	6.1
Total Linear Feature Sharing (miles)	67
Total Linear Feature Sharing (percent)	92

Source: MnDOT, Energy Velocity, ITC Midwest, Burns & McDonnell

*Includes approximately 1.5 miles where the existing alignment was shifted slightly to accommodate the wider right-of-way requirements of the proposed Project. While the centerline of the new 345 kV transmission line would not be the same as the existing 161 kV centerline, these adjustments would still utilize a portion of the existing 161 kV right-of-way.

**Field lines also include roads that are along the edge of the field.

6.4.1 Impacts and Mitigation

Opportunities for co-location have been identified and utilized to the greatest extent practicable along Route A. No impacts to existing linear features are anticipated.

6.5 HUMAN SETTLEMENT

6.5.1 Public Health and Safety

The proposed Project will be located primarily in rural, agricultural areas with low population densities. Public services within the Project vicinity are provided

by local law enforcement and emergency response agencies located in nearby communities. The Jackson, Martin, and Faribault county Sheriff's Offices and municipal police departments in nearby towns provide law enforcement in the Study Area. Fire services within the Study Area are provided by city and community fire departments, volunteer fire departments, rural fire departments, and fire protection districts. Various ambulance districts provide emergency medical response services in the Study Area. Hospitals located within the Study Area include the United Hospital District located in Blue Earth, the Mayo Clinic Health System located in Fairmont, and the Sanford Jackson Medical Center in Jackson.

As part of Minnesota's Statewide Communication Interoperability Plan ("SCIP"), a system of facilities designed to improve VHF communications for emergency responders, particularly law enforcement, is under implementation throughout the State. Several towers that are part of the Allied Radio Matrix for Emergency Response ("ARMER") occur in southern Minnesota. Local law enforcement officials expressed concern during a meeting with ITC Midwest in June 2012 over potential Project-related impacts to a new ARMER tower in Jackson County. No current ARMER towers, however, are located within the Study Area. Only three ARMER towers are within one mile of the Study Area. One tower is located west of Sherburn just south of Interstate 90 and outside the Study Area by approximately 0.25 mile. A second tower is located on the north side of Blue Earth, approximately 0.75 mile outside the Study Area. A third tower is located north of the Lakefield Junction Substation, approximately 0.25 mile outside the Study Area.

(a) *Impacts and Mitigation*

The influx of construction workers to the Study Area would not be expected to influence public health or emergency services as it would generally be only a small number of workers at any given time. Additional law enforcement resources may be required for traffic control and law enforcement.

Construction of the Project would likely progress in a reasonably short time frame and involve different crews for different aspects of the Project – clearing, site preparation, foundation installation, structure assembly and erection, conductor stringing, and site restoration. As a result, construction workers are not expected to relocate to the area permanently. Any additional requirements for public services would be minimal and temporary.

No ARMER towers are located within the Study Area. Route A would be a sufficient distance from existing ARMER facilities to avoid any interference with their signals or operation. No effects to the ARMER system are anticipated as a result of this Project. ITC Midwest will work with local ARMER operators during the design phase to ensure that no structure placement would interfere with tower communications, although none are anticipated as part of the Project.

Proper safeguards will be implemented for construction and operation of the facility. Route A would be designed according to ITC Midwest and NESC standards regarding ground clearance, crossing utilities clearance, building clearance, strength of materials and right-of-way widths. Construction crews and/or contract crews will comply with local, State, and NESC standards regarding facility installation and standard construction practices. Construction, operations, and maintenance crews will comply with appropriate Occupational Safety and Health Administration ("OSHA") measures. ITC Midwest's safety procedures will be followed during and after installation of the transmission line. ITC Midwest will work with local landowners as necessary to appropriately ground fences, gates, buildings, or other structures that may be subject to induced current from the line and educate landowners on these concerns and protective measures. Should landowners identify safety concerns, ITC Midwest will investigate and take appropriate corrective action.

The Project will be equipped with protective devices (circuit breakers and relays located in substations where transmission lines terminate) to safeguard the public in the event of an accident, or if a structure or conductor falls to the ground. The protective equipment will de-energize the transmission line should such an event occur. In addition, substation facilities will be properly fenced and accessible only by authorized personnel.

Once completed, the proposed project will provide a more reliable electrical system for the Study Area and southern Minnesota. More reliable electrical service will help maintain facilities and equipment necessary to provide emergency medical, fire, and law enforcement services throughout the region.

6.5.2 Commercial, Industrial, Residential Land Use

Route A extends through Jackson, Martin, and Faribault counties, primarily through areas that are rural in nature. Agriculture is the primary land use in the Study Area counties, and much of the land is used for crop production and livestock operations. Rural residences, farmsteads, and numerous commercial

hog operations dot the landscape. The Study Area contains relatively little commercial or industrial land uses beyond commercial agricultural operations.

Larger cities in the Study Area include Jackson and Lakefield in Jackson County, Fairmont, Trimont, and Sherburn in Martin County, and Blue Earth in Faribault County. Commercial, industrial, and residential land uses in the Study Area are primarily concentrated in these towns. This area of the State is attractive for wind energy development, with wind farms in the Study Area located:

- West of the town of Jackson, immediately east of the Lakefield Junction Substation;
- Northeast of Jackson near the Jackson/Martin county line; and
- West of Blue Earth in Faribault County near the Faribault/Martin county line.

Land use and development in the Study Area is regulated by county land use plans and zoning ordinances. Jackson County adopted the Jackson County Comprehensive Plan on June 8, 2010, as a framework for guiding future land use and growth in the county (Jackson County Board of Commissioners 2010). The Jackson County Development Code, adopted May 22, 2012, establishes 10 zoning districts for the unincorporated areas of the county: Agricultural Preservation, Conservancy, Urban/Rural Residential, Multi-Family Urban, General Business, General Industry, Floodplain, Shorelands, Airport Approach, and Community Sanitary Sewer Service Area. In Jackson County, the majority of Route A extends through lands zoned Agricultural Preservation District. Route A also crosses lands zoned Conservancy District and protected waters where the route crosses major streams, including the Des Moines River and its tributaries. Land use along Route A can generally be seen in **Appendix D** and land use maps for the Jackson, Martin, and Faribault counties are available in **Appendix M**.

Martin County adopted the Martin County Land Use Plan on March 4, 2003, which set goals for parks and recreation, transportation, natural resources, urban and rural cooperation, and feedlot regulation (Martin County 2003). The Martin County Zoning Ordinance, adopted August 2008, establishes eight zoning districts (Agricultural, Highway Business, Industrial, Residential, Shoreland Special Protection, Shoreland Residential Recreational, Shoreland Business, and Shoreland Conservation) in addition to a Floodplain District, which is regulated under a separate ordinance. All of Route A, in Martin County, extends through lands zoned as Agricultural.

The Faribault County Zoning Ordinance, adopted December 27, 1994, establishes nine zoning districts for the unincorporated portions of the county: Shoreland Agriculture, General Agriculture, Rural Residence, Shoreland Residence, Manufactured Home Park, Highway Service Business, General Business, Light Industry, and Heavy Industry. Route A primarily extends through the General Agriculture District in Faribault County. Route A also crosses the Shoreland Agriculture District where it crosses tributaries to the Blue Earth River (Faribault County Board of County Commissioners 1994).

(a) *Impacts and Mitigation*

Route A is compatible with current zoning designations across Jackson, Martin, and Faribault counties. As a result, Route A is not anticipated to have any impact on planning and zoning within in these counties.

The Study Area is relatively rural, with little commercial or industrial development. Agricultural impacts are summarized in **Section 6.6.1**. Route A was developed using the existing Lakefield to Border 161 kV Transmission Line right-of-way to the greatest extend feasible. Additionally, other linear features were utilized where practicable if the existing right-of-way was not a feasible alternative. The use of existing rights-of-way minimizes impacts to agricultural lands, commercial and industrial properties, and residences by reducing the amount of new right-of-way required for the Project.

6.5.3 Displacement

Residences, barns, shop buildings, hog barns, grain bins, convenience stores, small businesses, offices, hunting cabins, and other facilities occur throughout the Study Area. Many of these facilities would be located within Route A. Route A encompasses 33 residences. A total of 27 residences are within 500 feet of the Route A application alignment. However, the Route A 200-foot right-of-way does not cross any residences or other structures. No displacement of any non-residential or residential structure is anticipated. **Table 14** summarizes the total residences within 500 feet of the Route A application alignment. **Appendix D** shows the application alignment and residences within 500 feet of the application alignment.

Table 14. Proximity of Residences to Route A Application Alignment

Proximity (Feet)	Lakefield Junction to Huntley	Huntley to Iowa
Residences 0-75	0	0
Residences 75-150	2	0
Residences 150-300	8	5
Residences 300-500	7	5
Total Residences	17	10
Density (homes/mile)	0.3	0.6

Source: MnDOT, ITC Midwest, NAIP

(a) *Impacts and Mitigation*

As noted previously, numerous homes and other buildings and structures are within Route A. The Route A application alignment was developed to avoid displacement of residential or non-residential structures. None of the residential structures are within 100 feet of the Route A application alignment. Displacement of homes due to construction of the Project is not anticipated.

6.5.4 Noise

Sound is caused by the vibration of air molecules and is measured on a logarithmic scale with units of decibels ("dB"). Sound is composed of various frequencies, which are measured in Hz, or the number of cycles per second. The typical human ear can hear frequencies ranging from approximately 20 Hz to 20,000 Hz. Typically, the human ear is most sensitive to sounds in the middle frequencies (1,000 to 8,000 Hz) and is less sensitive to sounds in the low and high frequencies. As such, the A-weighted scale was developed to simulate the frequency response of the human ear to sounds at typical environmental levels. The A-weighted scale emphasizes sounds in the middle frequencies and de-emphasizes sounds in the low and high frequencies. Any sound level to which the A-weighted scale has been applied is expressed in A-weighted decibels, ("dBA"). For reference, the A-weighted sound pressure level and subjective loudness associated with some common noise sources are listed in **Table 15**.

Table 15. Typical Sound Pressure Levels Associated with Common Noise Sources

Sound Pressure Level (dBA)	Subjective Evaluation	Outdoor Environment	Indoor Environment
140	Deafening	Jet aircraft at 75 feet	
130	Threshold of pain	Jet aircraft during takeoff at 300 feet	
120	Threshold of feeling	Elevated train	Hard rock band
110		Jet flyover at 1000 feet	Inside propeller plane
100	Very loud	Power mower, motorcycle at 25 feet, auto horn at 10 feet	
90		Noisy urban street	Full symphony or band, food blender
80	Moderately loud	Diesel truck (40 mph) at 50 feet	Garbage disposal, dishwasher
70	Loud	B-757 cabin during flight	Vacuum cleaner, electric typewriter
60	Moderate	Air-conditioner condenser at 15 feet	General office
50	Quiet		Private office
40		Farm field with light breeze, birdcalls	Soft stereo music in residence
30	Very quiet	Quiet residential neighborhood	Bedroom, average residence (without TV and stereo)
20		Rustling leaves	Whisper
10	Just audible		Human breathing

Source: Adapted from Egan 1988 and Ramsey and Sleeper 1994

It has been found that the A-scale weighting best approximates the frequency response of the human ear. The human ear responds to noises in the audible frequencies in a similar manner in most individuals. Most humans perceive the change in a noise level as follows:

- 3 dBA – Barely perceptible change

- 5 dBA – Readily perceptible change
- 10 dBA – Doubling (or halving) of the apparent loudness

There are also objective factors to consider when determining noise and how people may be affected by noise. Environmental noise is constantly fluctuating, such as when a car passes by, a dog barks, or a plane passes overhead. Therefore, noise metrics have been developed to quantify fluctuating environmental noise levels. These metrics include the exceedance sound level ("Lx"). The Lx is the sound level exceeded "X" percent of the sampling period and is referred to as a statistical sound level. The most common Lx values are L_{eq}, L_{90}, L_{50}, and L_{10}. Leq is the level of a constant sound over a specific time period that has the same sound energy as the actual sound over the same period.

Ambient sound levels can be highly variable and are influenced by the sound sources in the immediate area. Noise levels within the Study Area and along Route A would be largely influenced by levels of traffic on Interstate 90 and the level of agricultural activity occurring at a particular time of year. For example, during harvest time, noise generated by tractors, combines, trucks, grain handling equipment and driers, and other related equipment would create higher levels of ambient noise. In winter, noise levels would be largely a result of interstate and local vehicle traffic and wind.

Standards for the regulation of noise levels have been established by the MPCA. Standards are identified by land use activities, generally classified as residential, commercial, and industrial land uses in Noise Area Classifications ("NAC"). *See* Minn. R. 7030.0050. Each NAC has been assigned daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) limits for noise. Minn. R. 7030.0040. These limits are identified in **Table 16**. Limits are expressed as the range of permissible dBA within an hour period. L_{50} is the dBA that may be exceeded 50 percent of the time within an hour (30 minutes) and L_{10} is the dBA that may be exceeded 10 percent of the time within an hour (6 minutes).

Table 16. MPCA Noise Limits

NAC	Daytime (dBA)		Nighttime (dBA)	
	L_{50}	L_{10}	L_{50}	L_{10}
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

Residences are in the most restrictive NAC and are classified as NAC 1, business areas are classified as NAC 2, and industrial/agricultural areas are classified as NAC 3.

(a) *Impacts and Mitigation*

The proposed Project is anticipated to have maximum calculated noise levels during rainy conditions. It is likely however, the sound of falling rain would result in inaudible noise from the Project. Noise during fair conditions is anticipated to be inaudible. Calculated noise levels are summarized in **Table 17.**

Table 17. Noise Calculations for Transmission Lines

Operating Voltage	L_{50} Rain (dBA)		L_{50} Fair (dBA)	
	0′	100′	0′	100′
345 kV/161 kV	41	38	16	13
345 kV/161 kV Low Profile	43	39	18	14
345 kV/69 kV	41	38	16	12
345 kV	40	37	16	12
161 kV/161 kV	30	23	5	0
161 kV/69 kV	33	27	8	2
161 kV	24	17	1	0

Local noise levels at certain times of construction activities may be higher or lower depending on the presence and distance to noise-generating sources. **Table 18** provides a range of construction equipment noise levels that would be intermittent related to construction of the Project.

Table 18. Range of Typical Construction Equipment Levels (dBA)

Generic Construction Equipment	Minimum Noise at 50 feet	Maximum Noise at 50 feet
Backhoes	74	92
Compacters (Rollers)	73	76
Compressors	73	86
Concrete Mixers	76	88
Cranes (movable)	70	94
Dozers	65	95
Front Loaders	77	96
Generators	71	83
Graders	72	91
Jack Hammers and Rock Drills	80	98
Pavers	85	87
Pumps	69	71
Scrapers	76	95
Tractors	77	95
Trucks	83	96

Source: FHWA Highway Construction Noise Handbook (August 2006) – http://www.fhwa.dot.gov/environment/noise/construction_noise.

Noise impacts resulting from construction activities are anticipated to be highly localized, temporary, and minor, typically occurring between 7 a.m. and 7 p.m. Noise impacts during operation of Route A are anticipated to be negligible. Potential noise impacts as a result of construction and operation of Route A would include:

- Temporary increases in noise levels along the right-of-way from construction vehicles and equipment;
- Temporary increases in noise levels along the right-of-way from vehicle and equipment during line maintenance activities; and
- Potential increase in ambient noise levels as a result of the operation of the transmission line.

While construction noise would occur along the entire line, it would only occur in locations where active construction is taking place. Construction would occur in sequence with different crews and activities occurring at different locations and different times during construction. Construction activity and crews would only be present at a particular location for a few days at a time but on multiple occasions throughout the period between right-of-way clearing and restoration. Noise generated by construction equipment would be temporary and localized to the limited site of construction activities at any given time.

Noise increases would only be a concern if sensitive noise receptors (such as residences, schools, churches, libraries) are located in proximity to the construction area so as to experience increases in noise exposure. Temporary, and highly localized, noise increases would be generated from construction vehicles and equipment. Increased traffic along roadways near construction areas would lead to a temporary increase in noise levels adjacent to these roads. No sensitive noise receptors are located along the vast majority of these areas due to the rural nature of the Study Area. Only 27 sensitive noise receptors (all residences) are located within 500 feet of Route A. These receptors would only potentially be exposed to increased construction noise when construction was occurring along those sections of line in proximity to them. Construction-related noise impacts would be temporary and would only occur along small sections of the line where active construction would be taking place. Only certain areas along the length of the route would experience increases in noise at any one time. Construction-related noise impacts would occur during normal construction hours, mainly during daylight hours. Increases in noise levels related to construction activities would cease upon completion of construction.

Noise generated from the operation of the Project is expected to be negligible. The primary source of noise as a result of operation of the transmission line would be related to the "corona effect." This term refers to a type of electrical conduction that occurs in the atmosphere near the conductor. Local atmospheric pressure changes that occur with corona may result in a hissing and cracking sound that may be audible from directly under the transmission line to within a few feet of the right-of-way, depending on local atmospheric conditions. Damp air or mist are the types of atmospheric conditions that contribute to this noise. Corona noise is most common at higher voltages, including those above 230 kV.

Sensitive receptors are located along Route A, as the application alignment passes within 500 feet of 27 residences. There are no sensitive receptors within 100 feet of the Route A application alignment. The closest sensitive receptors

would be two residences between 100 and 150 feet from the alignment. At the 161 kV level of the existing line, corona noise less than 17 dBA is likely unnoticed by these residences as it would be below ambient noise levels. Because of the addition of a 345 kV line, corona noise would likely increase from the proposed facilities. However, while the closest of the residences along Route A may periodically be aware of corona noise, the majority of these residences are not located close enough to the route to notice or experience any changes in noise level during project operation. At a maximum of 39 dBA 100 feet from the application alignment, the transmission line would be far enough away so as not to be regularly heard above the ambient noise produced by other noise sources in the area. In all cases, noise levels at sensitive noise receptors resulting from the operation of Route A would be below MPCA NAC noise limits.

6.5.5 Aesthetics

Scenic quality is based on the evaluation of the overall character and diversity of the terrain, vegetation type, water, and cultural features of a particular landscape in relation to a viewer's sensitivity. Landowners within the Study Area would have a different sensitivity level to changes in the landscape as opposed to motorists or tourists who are viewing the area for a limited period of time or at dispersed intervals.

The Study Area is located in the Western Corn Belt Plains ecoregion, which extends through the southwestern portion of Minnesota, most of Iowa, and the eastern portion of Nebraska (U.S. EPA 2011). The topography in this ecoregion is characterized by nearly level to gently rolling plains. Historically, the region was covered with tallgrass prairie, but today land cover is dominated by cropland and forage land. Viewsheds in the area are generally long and open with only small scattered areas where the view from a location would be blocked by trees or topography. The region is also an area of concentrated livestock production. Highways and county roads traverse the Study Area as part of the built environment. Overhead transmission and distribution lines also occur within the Study Area. Numerous wind farm turbines are the tallest and at many locations, the dominant visual feature.

Dominant natural features in the landscape include numerous lakes throughout the Study Area, as well as the Des Moines and Blue Earth rivers and their associated tributaries, floodplains, and wooded riparian corridors. Although a largely rural agricultural area with numerous natural resources, viewsheds within the Study Area and along Route A include human features such as

residences, farmsteads, distribution and transmission lines, rail lines, wind turbines, and radio towers, many of which are visible from considerable distances.

Potential sensitive viewpoints along Route A may include nearby residences as well as recreation areas. Recreation areas within one mile of Route A, as discussed in **Section 6.5.8**, include State WMAs, federal conservation lands, designated snowmobile trails, and designated water trails. The majority of these resources currently have an existing 161 kV transmission line as part of their viewshed. Route A crosses both the Des Moines River and Blue Earth River in the same locations as the existing Lakefield to Border 161 kV Transmission Line.

(a) *Impacts and Mitigation*

Construction and operation of Route A would alter the visual appearance of the existing 161 kV line. Route A also introduces a new transmission line in some areas. Construction of the Project along Route A would alter the viewshed throughout the Study Area. The structures for Route A would be taller than most of the transmission line structures in the Study Area but similar in appearance to other steel monopole structures present in the area. These structures would be considerably shorter than the wind turbines throughout the Study Area and would not create a new type of feature in the landscape as transmission and distribution lines are prevalent within the visual landscape of Route A. Following and using existing rights-of-way where feasible would reduce visual impacts and confine them to areas with a previous transmission line in the viewshed, avoiding placement in previously-undisturbed areas. Where practicable, structures would be placed to take advantage of existing natural screening to reduce the view of the line from nearby residences and roadways, and placement in front of residences would be avoided.

6.5.6 Socioeconomics

The area of study for the socioeconomic analysis includes Jackson, Martin, and Faribault counties in southern Minnesota. The existing socioeconomic conditions within the Study Area are reported based on data from the U.S. Census Bureau, 2010 Census and 2006-2010 American Community Survey 5-Year Estimates, and the Minnesota State Demographic Center Population Projections. Data is reported as township and county level-data to characterize the socioeconomic conditions in the area along Route A and at the State level for the purpose of comparison.

The total population of the townships through which Route A extends is 3,429 (**Table 19**). The three counties in the Study Area have very small populations compared to the State of Minnesota as a whole, comprising less than one percent of the State's total population. Projections indicate that while the State's population will increase by 23 percent between 2010 and 2040, the populations in Faribault, Jackson, and Martin Counties will decrease by 23 percent, 19 percent, and 12 percent, respectively during this same time period (Robertson 2012).

Table 19. Population Characteristics – Route A

Location	Total Population	Caucasian	Black or African American	Asian	Other	Hispanic	Total Minority
Route A[1]	3,429	98.5%	0.1%	0.1%	1.3%	1.3%	1.9%
Faribault County	14,553	96.5%	0.3%	0.3%	2.9%	5.6%	7.1%
Jackson County	10,266	95.8%	0.5%	1.4%	2.4%	2.7%	5.5%
Martin County	20,840	96.7%	0.3%	0.5%	2.5%	3.6%	5.2%
State	5,303,925	85.3%	5.2%	4.0%	5.5%	4.7%	16.9%

Source: U.S. Census Bureau 2010 Census

[1] Includes Jo Daviess, Pilot Grove, and Verona Townships in Faribault County; Belmont, Des Moines, Hunter, and Wisconsin Townships in Jackson County, and Center Creek, Fox Lake, Fraser, Jay, Manyaska, and Rutland Townships in Martin County

A large majority of the population in the Study Area is Caucasian (**Table 19**). The percentage of total minority[4] residents is lower in the Study Area counties and townships along Route A as compared to the State of Minnesota as a whole. However, Faribault County has a slightly higher percentage of Hispanic residents compared to the State.

Household incomes in the townships along Route A tend to be higher than the Study Area county averages, ranging from $47,188 to $70,500 (**Table 20**). Compared to the State, eight of the townships have higher median household incomes and five townships have lower median household incomes. Unemployment rates are slightly lower in the Study Area counties and

[4] Total minority is calculated by adding the populations for all non-white races and the population for white-Hispanic.

townships compared to the State. Poverty rates are generally lower in the townships along Route A compared to the poverty rates for the Study Area counties and the State as a whole.

Table 20. Economic Characteristics – Route A

Location	Median Household Income	Unemployment Rate	Percent of Population Below Poverty
Faribault County	**$41,631**	**4.8%**	**10.9%**
Jo Daviess Township	$49,219	8.6%	0.4%
Pilot Grove Township	$55,833	4.1%	8.0%
Verona Township	$58,750	4.4%	2.5%
Martin County	**$43,960**	**3.4%**	**9.0%**
Center Creek Township	$47,188	6.6%	5.3%
Fox Lake Township	$65,313	2.8%	11.5%
Fraser Township	$61,250	1.9%	2.7%
Manyaska Township	$60,000	5.2%	2.7%
Jay Township	$70,500	4.2%	5.7%
Rutland Township	$51,477	0.9%	7.5%
Jackson County	**$46,869**	**3.3%**	**9.1%**
Belmont Township	$70,000	4.9%	3.0%
Des Moines Township	$53,917	1.4%	3.4%
Hunter Township	$57,750	0.0%	3.3%
Wisconsin Township	$61,607	2.1%	0.8%
Minnesota	**$57,243**	**6.4%**	**10.6%**

Source: U.S. Census Bureau 2006-2010 American Community Survey 5-Year Estimates

In the State of Minnesota, the top three industries in terms of employment are "educational services, and health care and social assistance," "manufacturing," and "retail trade." In Martin County, the top three industries by employment are the same as the State. In Faribault and Jackson counties and in the townships

along Route A, "agriculture, forestry, fishing and hunting, and mining" is one of the top three industries instead of "retail trade" (U.S. Census Bureau 2010a).

(a) *Impacts and Mitigation*

Construction and operation of the proposed Project would not directly result in a change in the population size or demographic in the Study Area. The construction and operation of Route A is not anticipated to create or remove jobs in the Study Area or result in the permanent relocation of individuals to or from the area. Construction would occur over approximately one year with workers likely commuting instead of relocating to the area. The Project would, however, help to provide for the electrical needs of the local residents, businesses, and industries. The increased reliability of the electrical infrastructure in the area would provide for current needs and future growth.

Construction and operation of the line would not significantly affect employment or income in the Study Area. The construction work force would be small and temporary. Workers would likely come from outside the Study Area and would commute on a daily or weekly basis. The presence of additional workers and increased employment would result in a slight increase in retail sales in the Study Area due to purchases of lodging, food, fuel, construction materials (lumber, concrete, aggregate), and other merchandise. Any additional activity, however, would likely be insignificant and would be easily accommodated by current retail staffing. No additional permanent staff are expected for line operations and maintenance. Therefore, the transmission line is not expected to change population trends, economic indicators, or employment.

6.5.7 Cultural Values

The Study Area is rural in nature with an agriculture-based economy. Corn and soybean crop production, livestock operations, and associated industries drive the local economy. While manufacturing and service industries (restaurants, hotels, repair shops, convenience and retail stores) occur throughout the Study Area, these are largely located in the larger communities mostly outside the Study Area. Farming and protection of agriculture, the land, and the ability to continue to farm and support livelihoods through agriculture are strong values within the Study Area.

Numerous natural resources, including lakes, rivers, and WMAs, attract local and regional recreational users. These areas are also important to the identity of the area and provide opportunities for various recreational activities such as

fishing, hunting, and snowmobiling which are also part of the identity of area residents.

(a) *Impacts and Mitigation*

Cultural values are not expected to be impacted by Route A. The area is rural in nature with an agriculture-based economy and is anticipated to remain so after construction. Natural amenities, including lakes, rivers, and WMAs, attract local and regional recreational users. None of these aspects of the culture of the area are anticipated to be significantly impacted or changed as a result of the construction and operation of Route A.

6.5.8 Recreation

Recreational opportunities in the vicinity of Route A include hunting and trapping, wildlife viewing, fishing, canoeing and kayaking, and snowmobiling. Lakes are abundant, both on private and public lands. There are several State WMAs in the vicinity of Route A that provide outdoor recreational opportunities and wildlife habitat protection. WMAs are managed by the MnDNR and are open to the public for hunting and wildlife viewing (MnDNR 2012e). In Jackson County, the Route A application alignment passes approximately 0.4 mile from the Toe WMA and approximately one mile from the Bootleg Lake WMA. In Martin County, Route A passes approximately 0.5 mile from the Rooney Run WMA. The application alignment extends through the Fox Lake Game Refuge along Interstate 90 and is within 0.25 mile of a small section of the Krahmer WMA.

Approximately 3.5 miles of Route A would extend across the Fox Lake Game Refuge in Martin County adjacent to Interstate 90. State game refuges are managed by the MnDNR for the protection of waterfowl. Hunting is allowed in some of the refuges, although waterfowl hunting is prohibited. The Fox Lake Game Refuge is open to small game hunting, trapping, and deer and bear hunting by firearms and archery. Upon crossing back to the north side of Interstate 90, the Project, along the application alignment, is proposed to be co-located with a 69 kV transmission line through the Fox Lake Game Refuge for approximately 0.15 miles.

In addition to State WMAs and game refuges, there are also federal conservation lands in the Study Area, including WPAs. WPAs are public lands managed by the United States Fish and Wildlife Service ("USFWS") for the purpose of waterfowl habitat production. These areas are generally open to the public for

recreational activities such as hunting, trapping, wildlife viewing, and hiking. Route A crosses the Pilot Grove Lake WPA in Faribault County, which is managed by the USFWS Windom Wetland Management District. Route A follows the existing 161 kV transmission line through the Pilot Grove Lake WPA. Although the Boot Lake WPA is located within one mile of Route A, only the Pilot Grove Lake WPA is crossed by the Route A right-of-way.

There are designated snowmobile trails within the Study Area, which are groomed and maintained by local snowmobile club volunteers. The Route A application alignment crosses three snowmobile trail systems a total of five times, including the Cottonwood and Jackson County Trail in Jackson County (one crossing), the Prairieland Trail in Martin County (two crossings), and the Sno Rovers/Stateliners Trails in Faribault County (two crossings). All of these crossings for the Project are proposed to be located where the existing Lakefield to Border 161 kV Transmission Line crosses these trails, except in one location. Snowmobile trails are identified on the maps in **Appendix D**. The Route A application alignment crosses the Prairieland Trail southwest of Northrop, Minnesota in Martin County at a location not currently crossed by the existing 161 kV transmission line.

State-designated water trails provide canoeing, kayaking, boating, and fishing opportunities in the Study Area (**Appendix O**). Route A crosses the Des Moines River State Water Trail in Jackson County and the Blue Earth River State Water Trail in Faribault County. The application alignment in Faribault County would reduce transmission line crossings of the Blue Earth River from five to two because of the removal of a portion of the existing Lakefield to Border 161 kV Transmission Line near the Winnebago Junction Substation.

(a) *Impacts and Mitigation*

Recreational opportunities in the vicinity of Route A include hunting and trapping, wildlife viewing, fishing, canoeing and kayaking, and snowmobiling. Any effects the Project would have on these activities would typically be temporary in nature, such as increased construction noise that would detract from recreational activities. Construction noise and activity could also cause wildlife to temporarily relocate. Construction zones may be temporarily off-limits to those using the recreation areas due to safety concerns. Such closures and restrictions would be on a case-by-case basis and any impact to these types of activities by the Project would be short term, temporary and minimal. Following the completion of construction activities, wildlife would move back

into the area and any closed areas would be re-opened for access and use. The proposed Project is not anticipated to significantly impact recreational opportunities or activities during construction. Impacts to recreational activities are not anticipated due to the Project and no mitigation is necessary.

6.5.9 Public Services

Emergency services, hospitals, water distribution facilities, wastewater treatment plants, public schools, electric utilities, and parks are examples of public services and facilities in the Study Area. These public services and infrastructure assets are discussed in more detail below.

(a) *Police, Fire, and Ambulance Services*

Public services within the Study Area are provided by local law enforcement and emergency response agencies located in nearby communities. The Faribault, Martin, and Jackson county Sheriff's Offices and municipal police departments in nearby towns provide law enforcement in the Study Area. Fire services within the Study Area are provided by city and community fire departments, volunteer fire departments, rural fire departments, and fire protection districts. Various ambulance districts provide emergency medical response services in the Study Area.

(b) *Hospitals*

Major hospitals located within the Study Area include the United Hospital District located in Blue Earth (approximately three miles from the application alignment), the Mayo Clinic Health System located in Fairmont (approximately five miles from the application alignment), and the Sanford Jackson Medical Center in Jackson (approximately three miles from the application alignment). Other smaller medical centers include the Sacred Heart Mercy Health Care Center, the Prairie Rehab & Fitness Center, the Jackson Community Health Services, the Griffin Medical Clinic, southern Minnesota Surgical, Inc., and various dental offices, eye clinics, and chiropractors.

(c) *Water and Wastewater Services*

In rural areas, like those encountered in the Study Area, residences often utilize privately-owned septic systems and wells, although some residences may have access to rural water distribution facilities. More urbanized areas, like the cities

of Jackson and Trimont, and surrounding areas are serviced by the municipal public works.

The City of Blue Earth, a portion of which is within the Study Area, has the Blue Earth Light and Water company that provides water services to residents. The City also maintains a wastewater treatment facility. Fairmont has a public utilities department that provides water and wastewater treatment services to Fairmont residents as well as over 200 rural customers. Water departments, such as the Water Department of Sherburn, may obtain their water from underground wells. The City of Jackson also has a public water department.

Subsurface sewage treatment systems ("SSTS"), or septic systems, are in place throughout the Study Area to treat waste. These are regulated by Minnesota Statutes Sections 115.55 and 115.56 for technical standards, administrative considerations, and licensing and certification of SSTS professionals, product reviews and registrations, and the SSTS Advisory Committee. These laws and requirements are enforced by local units of government. The MPCA maintains tools on their website to license SSTS, find registered professionals, and technical information about the operation and maintenance of SSTS (MPCA 2012a). The Project is not anticipated to impact existing SSTS and ITC Midwest will ensure that no structures for the Project impact existing SSTS.

(d) *School Districts*

There are a number of school districts located in the Study Area. These include Jackson County Central School District, Blue Earth Area Schools, and the Martin County West School District. The Fairmont School District buildings and the Granada Huntley East Chain Elementary School are not located within the Study Area.

(e) *Electric Utilities*

Electric utilities are provided by a variety of suppliers throughout the Study Area. Blue Earth Light and Water, which is a division of the City of Blue Earth, provides electricity for its residents. Natural gas in this area is provided by CenterPoint Energy. In Jackson, electricity is purchased from Western Area Power Administration and Missouri River Energy Services. The City of Fairmont also provides steam heat to residents and electricity to over 200 rural residents. The electric cooperatives of Federated Rural Electric Association, South Central Electric Association, and BENCO Electric also provide services to rural customers in Jackson, Martin, and Faribault counties. In Sherburn, Alliant Energy

provides electricity while Minnesota Energy Resources provides natural gas to residents. The Alliant Energy Fox Lake Generating Station provides electricity in the Study Area through combustion of natural gas. ITC Midwest and Xcel Energy own and operate electricity transmission facilities throughout the Study Area. The Project will be constructed in a way that it will not impact electric distribution facilities.

Various wind generation facilities have been erected in the Study Area. Other wind generation facilities may be proposed for construction or begin construction in the Study Area after this application has been submitted to the Commission. The Project is not anticipated to impact, or conflict with, any of the existing wind farms or those under construction in the Study Area.

(f) *Other Public Services*

There are a wide variety of other public services provided in the Study Area. Public works and utilities departments throughout the communities in the Study Area assist with snow removal, street maintenance, stormwater management, maintenance of city buildings, streets, and sidewalks. These departments also help maintain sewers, parks, playgrounds, and landscaped areas in communities.

A variety of other facilities exist for public use throughout the Study Area. Local swimming pools, public libraries, ice rinks, fitness centers, assisted living centers, parks, recreation areas, and administrative offices exist throughout the Study Area. Local channels and telecommunication services are provided by cities or private companies. City services are available for residents as well. These services include administrative services, airport services, food-shelf facilities, planning and zoning department services, economic development organizations, and veteran service offices, among many others. The majority of these services and facilities are not directly located within the Study Area but are available to residents residing within the Study Area and nearby communities.

(g) *Impacts and Mitigation*

Public services and infrastructure in the Study Area are not anticipated to be impacted by the construction and operation of the Project. Any impacts would be temporary, such as temporary road closures during construction or slightly increased traffic near access roads. ITC Midwest will notify appropriate local emergency service providers of the Project and construction activities prior to beginning construction and coordinate any necessary traffic control requirements with appropriate road authorities.

The construction and operation of the Project along Route A will not cause significant impacts on public infrastructure. ITC Midwest will work with public utility providers to determine where these areas exist and the appropriate measures that should be implemented to ensure safety of the public and of the infrastructure. ITC Midwest will work with residents and utility providers to avoid direct or indirect impacts to these services.

6.5.10 Radio, Television, Cellular Phone, and GPS

(a) *Radio*

The Study Area for Route A receives a variety of AM and FM radio broadcasting stations. Only two FM radio stations are actually located within the Study Area: Minnesota Public Radio (K222BA and K270AQ) and KBEW. There are several other FM and AM stations headquartered in the surrounding counties that can be listened to in the Study Area but do not have studios or facilities within the Study Area.

(b) *Television*

There are over 60 channels broadcast in the general area around Route A. Residents in the Study Area can receive channels from Mason City, Fort Dodge, Sibley, and Sioux City, Iowa; Sioux Falls, South Dakota; and Austin, Fairmont, Jackson, Frost, Rochester, Windom, and Worthington, Minnesota.

(c) *Cellular Phone*

There are only two cellular phone towers located within the Study Area. One is owned by Midwest Wireless Communications, LLC, and is located north of Fox Lake. The other cellular phone tower in the Study Area is owned by New Cingular Wireless PCS, LLC. It is located northwest of Blue Earth in the eastern portion of the Study Area. There are several cellular phone service providers in the area: New Cingular Wireless PCS, LLC; Midwest Wireless Communications, LLC; Midwest Wireless Iowa, LLC; Alpha Wireless Communications Company; and USCOC of Greater Iowa, LLC.

Larger carriers' stores and services, such as Verizon Wireless, can be accessed in larger, neighboring communities outside the Study Area.

(d) *GPS*

Global Positioning System ("GPS") applications are becoming important components of daily life. Not only used for aviation and vehicle navigation, they are becoming more prevalent in surveying and agricultural activities and applications. GPS equipment relies on satellites and typically mobile receiver equipment to provide locational information useful for navigation between endpoints, as well as geographic orientation for farm and other equipment. It is anticipated that GPS equipment is widely used throughout the Study Area.

(e) *Impacts and Mitigation*

Route A is not anticipated to impact radio, television, cellular phones, or GPS units. Minor interference with AM radio may occur immediately under or adjacent to the application alignment of Route A, depending on the signal strength and direction. Any interference would be expected to cease outside the 200-foot right-of-way. Care was taken during the initial routing process to ensure that the route was an adequate distance away from any towers associated with these facilities to avoid any safety or quality problems that could be a concern.

6.5.11 Transportation

(a) *Roadways*

Primary roadways within the Study Area include Interstate 90, U.S. Highway 71, State Highway 4, and State Highway 15. Interstate 90 extends east to west through the Study Area, passing through Jackson, Martin, and Faribault counties. U.S. Highway 71 extends north to south through the Study Area, passing through the town of Jackson. State Highway 4 primarily extends north to south through the Study Area through western Martin County. State Highway 15 also extends north to south through the Study Area, passing through the town of Fairmont. Several paved county routes exist within the Study Area, along with numerous smaller paved and unpaved roads. As summarized in **Table 21** several of these highways are paralleled by the application alignment. Interstates, State Highways, and local roads are identified in **Appendix D**.

Table 21. Annual Average Daily Traffic ("AADT") on County, State and US Highways, Roads, and Interstates Crossed or Paralleled by Route A

Road	County	AADT	Traffic Count Year	Distance Paralleled (miles)*	Crossed or Paralleled by Existing 161 kV line
County Highway 17	Jackson	290	2008	-	Yes
County Highway 14	Jackson	620	2008	-	Yes
US Highway 71	Jackson	2,300	2010	-	Yes**
County Highway 23	Jackson	445	2008	-	Yes
County Road 85	Jackson	100	2008	-	Yes
County Highway 29	Jackson	385	2008	-	Yes
County Highway 7	Martin	130	2010	-	Yes
Interstate 90	Martin	9,000	2010	4	Yes***
State Highway 4	Martin	2,000	2010	-	No
County Road 132	Martin	135	2010	-	No
County Highway 27	Martin	1,950	2010	-	Yes
County Highway 33	Martin	160	2010	-	Yes
County Highway 39	Martin	1,550	2010	-	Yes
County Road 143	Martin	90	2010	-	No
State Highway 15	Martin	5,100	2010	1.25	No
County Highway 53	Martin	730	2010	-	Yes
County Highway 59	Martin	Not Available	Not Available	-	Yes
County Highway 1	Faribault	370	2011	-	Yes
County Highway 5	Faribault	95	2011	-	No
County Highway 8	Faribault	285	2011	-	Yes
Interstate 90	Faribault	9,000	2011	-	Yes
County Highway 16	Faribault	1,700	2011	-	Yes
County Highway 6	Faribault	60	2011	-	Yes
County Highway 4	Faribault	70	2011	-	Yes
County Highway 2	Faribault	200	2011	0.5	Yes
County Highway 9	Faribault	60	2011	1.5	Yes
County Road 102	Faribault	30	2011	-	Yes

Source: MnDOT AADT GIS Shapefile 1992-2011

* "-" entry in this column means that the roadway is crossed and not paralleled.

** Does not cross at existing 161 kV transmission line crossing

*** Crosses at existing Fox Lake – Watonwan Junction 69 kV crossing, not Lakefield to Border 161 kV line

In general, traffic volumes are relatively low given the rural nature of the Study Area. Interstate 90 supports the highest volume of traffic of the roadways within

the Study Area, although traffic volumes are still relatively low for an interstate highway. AADT along Interstate 90 ranges from 7,800 to 9,000 vehicles per day throughout the Study Area. Lower traffic volumes are observed near Jackson, increasing to higher traffic volumes near Blue Earth (MnDOT AADT GIS Shapefile 1992-2011). Interstate 90 and State Highway 15 have the highest traffic volumes of the roads crossed by Route A, followed by U.S. Highway 71 and State Highway 4. County Highways 27, 39, and 16 have higher traffic volumes compared to the remaining roads crossed by Route A.

Future highway projects near Route A include replacement of the U.S. Highway 71 bridge over the West Fork of the Des Moines River in Jackson, with work scheduled to begin in 2015 (MnDOT 2012a). Highway 38 in Martin County, between Highways 29 and 39, was recently graded and widened. The County plans to pave this road in 2013.

(b) *Railroads*

There are two active rail lines within the Study Area, including a Union Pacific ("UP") rail line and a Canadian Pacific ("CP") line. The Route A application alignment crosses the UP rail line near the city of Welcome and again west of Blue Earth. Route A crosses the CP near the town of Huntley.

(c) *Airports and Airstrips*

There are three airports within five miles of Route A, all of which are public use municipal airports. They include the Jackson Municipal Airport, the Fairmont Municipal Airport, and the Blue Earth Municipal Airport (**Appendix N**). Only the Jackson Municipal Airport is within the Study Area. On December 4, 2012, the FAA approved the most current ALP (**Appendix K** and **Appendix L**) for the Jackson Municipal Airport expansion, including a new and longer runway and upgraded instrumentation to accommodate additional types of aircraft, including small jets. FAA conditional approval applies to the planned layout of the expanded airport facilities and does not approve funding or construction of the airport. The FAA is initiating an EIS process for the Jackson Municipal Airport ALP, which includes runway length justification studies, required for funding and construction approval. The FAA estimates the process to complete the EIS and construct the new facilities to be a ten-year period (DePottey 2013) (**Appendix L**).

Two private grass landing strips were also identified within the Study Area. One is several miles north of Route A. The other landing strip is approximately 300

feet north of the existing 161 kV transmission line that would be rebuilt to accommodate Route A. This private grass strip is approximately 400 feet long and used for ultra-light and experimental aircraft capable of very short take-off and landing. In this area, Route A is proposed to be constructed along the existing 161 kV centerline. Locations and layouts of these private landing strips can be found in **Appendix N**.

Part 77 of the Federal Aviation Regulations ("FAR") contains guidelines for airspace navigational obstruction and the requirements for proper notification regarding projects that may present an obstruction to the operation and safety of aviation facilities. Part 77 establishes various imaginary protection surfaces and zones surrounding airports, specific to the type of airport based on runway length and surface and instrumentation, that specify height restrictions for facilities around aviation facilities. These restrictions are based on various slopes, extending upward and away from the runway or other facilities. As distance from the facility increases, the allowable height of a nearby object increases.

Additionally, the State of Minnesota has established its own regulations for potential obstructions to air navigation. These regulations are included in Minnesota Rules Chapter 8800. While similar to those of FAR Part 77, they also address potential land use compatibility, establishing Safety Zones which, depending on the zone, may restrict the types of structures that can be erected around an airport and the permitted land uses within the zone.

Beyond actual runway and airport facilities, a number of aviation navigational aids may be associated with airport facilities. These aids may be on airport property or located at various intervals and way-points around the country, providing orientation points for aircraft traveling about the country. Such aids include Very High Frequency Omnidirectional Radio Range ("VOR"), VOR Tactical Air Navigation Aid ("VORTAC"), and Automated Weather Observation Stations ("AWOS"). Distance setbacks to prevent interference with navigational aids are specified in FAA Order 6820.10. Setbacks specify overhead transmission line conductors should be more than 1,200 feet from a navigational aid to avoid interference. Metallic structures, such as steel transmission line structures, are required to be no taller than a plane extending outward from the ground location elevation of the navigational aid at an angle of 1.2 degrees. Such an angle would require a 130-foot structure, assuming ground elevation does not increase or decrease from that of the navigational aid location, to be over 6,200 feet away and a 150-foot structure to be over 7,100 feet away. The only navigational aid

identified in the Study Area is located at the Jackson Municipal Airport. The FAA has not indicated any navigational aids would be affected by the Project.

The existing Lakefield to Border 161 kV Transmission Line, which the application alignment for Route A follows, in large extent, is within 4,600 feet of the Jackson Municipal Airport. The existing line is constructed using H-frame structures approximately 70 feet in height from the ground. ITC Midwest proposes to construct the Project on steel pole structures approximately 130 to 150 feet in height. In response to this, ITC Midwest adjusted Route A and the application alignment further north, away from the airport. The Route A application alignment is approximately 7,250 feet from the end of the nearest runway.

Initial review by the FAA determined that 130-foot, low profile, structures at this location would not pose a hazard to airport operations, including the proposed runway expansion in the ALP. However, the FAA is amending an instrument approach procedure into runway 13 (the primary runway at the existing airport), which will lower the minimum decent altitude ("MDA") by about 120 feet. This adjustment affects using the existing 161 kV alignment and an adjustment approximately 0.5 mile north along the Route A application alignment. A maximum elevation (pole height plus ground elevation) of 1,550 feet mean sea level would apply to structures within the area of this approach procedure. The previous studies that were done at 130 feet above ground level are no longer valid, as the FAA did not take this amendment to the MDA into account when those studies were done. At this elevation, several structures along the approach to the runway for Route A would be required to be less than 125 feet above ground level, and for some, less than 110 feet above ground level to avoid a determination as a hazard to navigation. ITC Midwest determined low profile structures as short as 100 feet can be used for the Project to construct Route A to avoid any air navigation interference.

For future permitting, a Form 7460-1 Notice of Construction/Alteration would need to be filed to the FAA electronically for each structure. The FAA will conduct an aeronautical study for potential airspace impacts and issue a determination based on their study, including potential mitigation measures such as marking or lighting requirements. The results of future studies would be based on the conditions at the time of the study and the judgment of the FAA specialist and may not be the same as what they determined as part of the previously conducted studies.

The Fairmont and Blue Earth Airports are not within the Study Area and are over three miles away from the application alignment for Route A.

There are two private heliports within five miles of Route A, including the Jackson Medical Center Heliport in Jackson and the United Hospital District Heliport in Blue Earth, both of which are outside the Study Area (**Appendix N**).

Crop dusting can be an important part of agricultural activities in the Study Area and various fields crossed by Route A may be subject to aerial crop dusting activities. As most of Route A would be located along the same alignment as an existing line that has been in place for over 30 years, crop dusting operations have been developed to accommodate the presence of a transmission line.

Numerous distribution and transmission lines occur throughout the Study Area. The structures for the Project would be considerably greater in height than many of the electric transmission line structures in the Study Area, placing them higher above grade, but also making them more visible to aircraft. Numerous wind turbines also occur throughout the Study Area, which are considerably taller than the structures proposed for the Project. Most of the wind turbines in the Study Area exceed 200 feet in height and require safety lighting or marking.

(d) *Impacts and Mitigation*

Roadways

The construction along Route A is not expected to permanently impact transportation. The route crosses Interstate 90, Highway 71, Highway 4, and Highway 15 in addition to other county and township roads. It also extends along the south side of Interstate 90 for approximately 3.9 miles south of Fox Lake and along Highway 15 near Lake Charlotte. ITC Midwest primarily proposes to cross MnDOT rights-of-way at existing transmission line crossings and proposes to co-locate those existing lines with the Project. A Utility Permit must be obtained from MnDOT for any occupation of state highway right-of-way. Minn. R. 8810.3100-3600. MnDOT has issued an Accommodation Policy that provides requirements and guidelines for utilities seeking to install facilities in and along MnDOT rights-of-way. The application alignment and proposed crossings were developed to meet MnDOT guidelines for the crossing and paralleling of MnDOT rights-of-way. ITC Midwest will continue to work with MnDOT throughout the Route Permit process to ensure that the application alignment meets MnDOT guidelines.

The construction of the transmission line could minimally increase traffic along these and other roadways within the Study Area through the movement of construction vehicles and delivery of materials and equipment. This increase in traffic, however, would be temporary and normal conditions would return upon completion of construction activities. Line and construction maintenance at crossing locations could cause temporary delays if maintenance vehicles are present. Roads or lanes may be temporarily closed during the construction process to ensure safety of the construction crews and the traveling public. During construction of the line, the electrical conductors would be strung on support structures using a pulley system, or with a tensioner mounted on the back of a digger/derrick truck. At road crossings, roads or lands may be temporarily closed for safety purposes during the stringing of the electrical conductor between the support structures. These closures could range in duration from a few minutes to hours based on the width of the road and the complexity of the crossing.

These temporary closings are not expected to have any significant impacts on the transportation in the area because of the generally low level of traffic on most area roads. Once an aerial crossing is completed, the road would be reopened, and traffic flows and patterns would return to normal. ITC Midwest will coordinate the proposed transmission line construction with the MnDOT, counties, and townships to secure all the required permits and approvals for the road and highway crossings prior to construction. Appropriate traffic controls will be implemented for motorist and construction crew safety and to maintain safe traffic flow.

Railroads

For rail line crossings, ITC Midwest will obtain appropriate permits to cross rail lines from the appropriate rail line owner/operator (CP and UP). ITC Midwest will coordinate with the appropriate railroad personnel during construction to coordinate stringing of conductor over the rail line with the railroad for the safety of construction personnel and rail line operations.

Airports and Airstrips

The Fairmont Municipal Airport is located outside the Study Area, approximately five miles south of the Lakefield Junction to Huntley segment of the Route A anticipated alignment in Martin County. Blue Earth Municipal Airport is also not within the Study Area, but it is approximately three miles east

of the Huntley to Iowa segment of the Route A application alignment in Faribault County. Neither of these airports would be affected by Route A.

As previously discussed, Route A is proposed to be located approximately 0.5 mile north of the Lakefield to Border 161 kV Transmission Line current alignment on low profile 345 kV/161 kV double-circuit structures to avoid any air navigation concerns at the Jackson Municipal Airport. Under Part 77 of the FAA regulations, protection and notification zones have been developed for various types of aircraft facilities. These zones are designed for the protection of aircraft operations and the facilities upon which they depend. If required, ITC Midwest will file notifications for some structures north of the Jackson Municipal Airport to allow the FAA to incorporate the project into navigational charts and information. Route A is not anticipated to have any adverse impacts on airport operations. The only navigational aid identified in the vicinity of Route A is located at the airport itself. No impact to this navigational aid is anticipated due to Route A being over a mile away.

As the Project progresses and more detailed information is available on the design of the project, including specific structure locations and heights above ground, ITC Midwest will continue to coordinate with FAA, MnDOT, and the airport to address any Project-related concerns for aviation activities.

Most of Route A would be located along the same alignment as the existing Lakefield to Border 161 kV Transmission Line that has been in place for over 30 years. Any crop dusting operations servicing fields crossed by the existing line portions of Route A have been developed to accommodate the presence of a transmission line. Approximately 18 miles of Route A would be along new right-of-way. As a result, ITC Midwest will mail notice of the filing of the Route Permit Application to aerial applicators registered within twenty miles of Jackson, Worthington, Blue Earth, Fairmont, and Windom with the Minnesota Agricultural Aircraft Association. ITC Midwest will also inform the owners of the short, grass landing strip north of, and parallel to, the existing line of when construction will occur.

No impacts are expected from Route A to heliports operating from hospitals in Jackson and Blue Earth. ITC Midwest will coordinate with the FAA for appropriate notifications associated with project construction.

6.5.12 Electric and Magnetic Fields

Extensive research has been conducted over the past three decades to evaluate whether exposure to ELF-EFs ELF-MFs cause biological responses and health effects. Epidemiological and toxicological studies have not shown statistically significant associations or have only shown weak associations between ELF-MF exposure and health risks. Public health professionals have also investigated the possible impact of exposure to EFs and MFs upon human health for the past several decades. While the general consensus is that EFs pose no risk to humans, the question of whether exposure to MFs can cause biological responses or health effects continues to be debated.

In 2007, the World Health Organization ("WHO") concluded a review of the health implications of MFs. In this report, the WHO stated:

> Uncertainties in the hazard assessment [of epidemiological studies] include the role that control selection bias and exposure misclassification might have on the observed relationship between magnetic fields and childhood leukemia. In addition, virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status. (*Environmental Health Criteria Volume No. 238 on Extremely Low Frequency Fields* at 12, WHO (2007)).

WHO did not recommend specific levels as an exposure limit but provided: "The best source of guidance for both exposure levels and the principles of scientific review are international guidelines." *Id*. at pp. 12-13. The international guidelines referred to by WHO are the International Commission on Non-Ionizing Radiation Protection ("ICNIRP") and the Institute of Electrical and Electronic Engineers ("IEEE") exposure limit guidelines to protect against acute effects. *Id*. at 12. The ICNIRP-1998 continuous general public exposure guideline, the exposure limit published at the time of the WHO's review, is 833 mG and the IEEE continuous general public exposure guideline in 9,040 mG.

In 2010, ICNIRP revised its continuous general public exposure guideline by increasing it from 833 mG to 2,000 mG. The WHO has not provided any analysis of the ICNIRP-2010 continuous general public exposure guideline to date.

The Commission, based on a Minnesota Interagency Working Group report and the WHO findings, has found that "there is insufficient evidence to demonstrate a causal relationship between EMF exposure and any adverse human health effects." *In the Matter of the Application for a HVTL Route Permit for the Tower Transmission Line Project*, Docket No. ET2, E015/TL-06-1624, FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER ISSUING A ROUTE PERMIT TO MINNESOTA POWER AND GREAT RIVER ENERGY FOR THE TOWER TRANSMISSION LINE PROJECT AND ASSOCIATED FACILITIES at p. 23 (Aug. 1, 2007).

This finding was recently confirmed in the Brookings County – Hampton 345 kV Route Permit proceeding ("Brookings Project"). In the Brookings Project Route Permit proceeding, applicants and one of the intervening parties provided expert evidence and testimony on the potential impacts of EFs and MFs on human health. The administrative law judge in that proceeding evaluated written submissions and a day-and-half of testimony from these two expert witnesses. The administrative law judge concluded:

> there is no demonstrated impact on human health and safety that is not adequately addressed by the existing State standards for [EF or MF] exposure.

In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota, Docket No. ET2/TL-08-1474, ALJ FINDINGS OF FACT, CONCLUSIONS AND RECOMMENDATION at Finding 216 (Apr. 22, 2010 and amended Apr. 30, 2010). The Commission adopted this finding when it granted a Route Permit for the Brookings Project. *In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET-2/TL-08-1474, ORDER GRANTING ROUTE PERMIT at 12 (Sept. 14, 2010); *In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET2/TL-08-1474, FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER ISSUING AN HVTL ROUTE PERMIT TO GREAT RIVER ENERGY AND XCEL ENERGY FOR A 345 KV TRANSMISSION LINE FROM BROOKINGS COUNTY, SOUTH DAKOTA TO HAMPTON, MINNESOTA at 1 and 8 (Sept. 14, 2010).

(a) *Impacts and Mitigation*

No impacts to human health are anticipated as a result of the ELF-EFs and ELF-MFs from the Project. The Project will be designed to keep ELF-EFs below the

8 kV/m standard set by the Commission (**Section 3.4.1**). Additionally, ITC Midwest will design the Project using unlike phasing of conductors to reduce ELF-MFs from those that would be observed if like phasing of conductors were used for the Project.

6.6 LAND BASED ECONOMIES

6.6.1 Agriculture

Almost all of the land area in Faribault and Martin counties, and a large majority of the land in Jackson County, is agricultural (**Table 22**). By comparison, only about half of the land in Minnesota is of this type. Average farm sizes in all three counties are very similar and are generally larger than the average farm size in the State as a whole. Crop sales account for a larger percentage of the total market value of agricultural products compared to livestock sales in Faribault and Jackson counties. In Martin County, however, livestock sales account for a slightly larger percentage of the total market value compared to crop sales.

Table 22. Agriculture Statistics for the Counties Within the Study Area and the State as a Whole

Location	Number of Farms	Average Farm Size	Land in Farms	Crop Sales	Livestock Sales
Faribault County	952	477 acres	453,761 acres (99.5 percent of county)	$197 million (68 percent)	$93 million (32 percent)
Jackson County	969	413 acres	400,531 acres (89.3 percent of county)	$153 million (57 percent)	$114 million (43 percent)
Martin County	960	468 acres	449,655 acres (99.1 percent of county)	$185 million (46 percent)	$218 million (54 percent)
Minnesota	80,992	332 acres	27 million acres (52.9 percent of State)	$7 billion (53 percent)	$6 billion (47 percent)

Source: USDA 2007 Census of Agriculture

The top crops in terms of acreage in the Study Area counties include corn, soybeans, forage, vegetables, sweet corn, and wheat (USDA 2007). In the State of

Minnesota, corn, soybeans, wheat, and forage are among the top crops, in terms of acreage. The primary livestock items based on numbers in the Study Area counties include hogs and pigs, cattle, broilers and other meat-type chickens, and sheep (USDA 2007). In Martin County, turkeys and layer chickens are also among the top livestock items. In the State as a whole, the top livestock inventory items include turkeys, layers, broilers and other meat-type chickens, and hogs and pigs.

(a) *Impacts and Mitigation*

The construction, operation, and maintenance of Route A would be designed to minimize potential adverse impacts to agricultural areas. Agricultural land is predominant in the Study Area, however, and avoiding all impacts is not feasible. Potential impacts on agriculture from activities related to the construction of the Project include soil compaction and rutting, accelerated soil erosion, crop disturbance, disruption to normal agricultural activities, and the introduction of noxious weeds on the soil surface. Activities such as vegetation clearing, excavating, grading, topsoil segregation, and back-filling may also increase erosion potential by destabilizing the soil surface. For vegetation removal and maintenance across organic farms, ITC Midwest will avoid spraying any herbicides at least 50 feet from the posted organic crop ground. Prime farmlands could experience increased erosion or loss of production due to construction preventing areas being farmed or from crop damage.

Overall impacts to cropland would be dependent on the timing of construction at a particular location. It is anticipated that construction would occur year-round, with many structures being placed during the late fall to early spring, outside the farming season. Should construction activities occur in the winter, little impact on prime farmland would be expected. Temporary and permanent impacts anticipated for the Project if Route A is selected are summarized in **Table 23**.

Table 23. Impacts of Route A on Land Based Economies

Impacts of Route A	Total
Permanent Impacts	
Cropland in 200-foot Right-of-Way (acres)	1,545
Right-of-Way Percent Cropland	87
Route Length (miles)	73
Route (acres)	10,193
Right-of-Way (acres)	1,770
Prime Farmland	
Prime Farmland within Right-of-Way (acres)	566
Percent of Right-of-Way that Crosses Prime Farmland	32
Prime Farmland if Drained within Right-of-Way (acres)	909
Percent of Right-of-Way that Crosses Prime Farmland if Drained	52
Farmland of State Importance within Right of Way (acres)	169
Percent of Right-of-Way that Crosses Farmland of State Importance	9.5
Prime Farmland if Protected from Flooding within Right-of-Way (acres)	21
Percent of Right-of-Way that Crosses Prime Farmland if Protected from Flooding	1.2
Right-of-Way Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding (acres)	1,665
Right-of-Way Percent Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding	94
Forestry	
Commercial Forestry Operations in Route	0
Commercial Forestry Operations in Right-of-Way	0
Tourism	
Water Trails Crossed by Right-of-Way	2
Snowmobile Trails Crossed by Right-of-Way	3
Number of Snowmobile Trail Crossings by Right-of-Way	5
Mining	
Mines within Route	0
Mines within Right-of-Way	0

Source: MnDNR, MNDOT, ITC Midwest, NAIP

The right-of-way for Route A includes 1,545 acres of cropland. Right-of-way in cropland accounts for 87 percent of the total right-of-way for Route A. The majority of this land could continue to be farmed following, and potentially during, construction. Only a minor area of land required for placement of pole structures would be removed from agricultural production. New structures placed in agricultural fields would present obstacles to be farmed around. Of

note is that much of Route A would include the reconstruction of an existing H-frame (two pole) 161 kV line with a single pole structure line. Although a single pole structures would be much larger in diameter than one of the H-frame poles, it would occupy less space, providing additional lands for farming and reducing the obstacles presented by the H-frame structures. The existing H-frame structures are approximately 700 feet apart. The Project would use single pole structures which can be placed, on average, 900 feet apart, reducing the overall number of structures and providing additional land for farming and crop production.

Considerable areas of cropland along Route A contain subsurface drainage tile. These drainage tiles have been developed around the existing 161 kV transmission line. Movement of heavy equipment along the right-of-way over these systems, as well as boring foundations for new structure locations have the potential to damage drainage tile. Damage to drainage tile would prevent drying of the soil and lessen its ability to be farmed and overall productivity. ITC Midwest will coordinate with landowners during the design and construction planning phases to identify drainage tile and take measures to protect them. Any damage to these systems would be corrected or compensation would be provided so the landowner could make repairs.

Route A extends through the following farmland classifications: Prime Farmland, Prime Farmland if Drained, Farmland of State Importance, and Prime Farmland if Protected from Flooding (**Table 23**). Prime Farmland accounts for 31.8 percent of the 200-foot right-of-way, Prime Farmland if Drained accounts for 51.5 percent, Farmland of State Importance accounts for 9.5 percent, and Prime Farmland if Protected from Flooding accounts for 1.2 percent of the total 200-foot right-of-way.

In order to mitigate impacts to agricultural activities, the clearing or otherwise alteration or disturbance of cropland would be limited to only that necessary for construction and on-going safe operation of the line. ITC Midwest will notify landowners of the project construction schedule and work with land owners to restore disturbed soils and compensate for crop damage and lost production. An extensive network of county roads occurs along Route A and would generally be used to access the right-of-way and structure locations. When equipment is required to travel the right-of-way for access, equipment will be confined to regular pathways, limiting disturbance to a narrow band.

Crop dusting can be an important component of farming. Any crop dusting operations servicing fields crossed by the existing line portion of Route A have been developed to accommodate the presence of a transmission line. Minor areas of Route A do not make use of the existing 161 kV transmission line. Further, the new structures would be considerably taller and have different placement than the existing line. As a result, ITC Midwest will provide notice of the filing of the Route Permit Application to aerial applicators registered through the Minnesota Agricultural Aircraft Association within 20 miles of Jackson, Worthington, Blue Earth, Fairmont, and Windom.

6.6.2 Forestry

Route A extends through an area that is dominated by agricultural land with very minimal forestland. The majority of the forestry industry in Minnesota is concentrated within the northeastern part of the State, outside of the Study Area. Some wooded areas may be located on private lands throughout the Study Area and may be periodically cut for firewood or timber. However, no commercial forestry operations were identified within the Study Area.

(a) *Impacts and Mitigation*

Route A is not expected to result in any impact on the forestry industry as there is little forestland in the Study Area. Only approximately 23 acres of woodland are within the 200-foot right-of-way for the Route A application alignment, much of which has already been cleared as part of the existing 161 kV right-of-way.[5] No commercial forestry operations were identified within the Study Area.

6.6.3 Tourism

Tourism in the Study Area consists primarily of outdoor recreational opportunities, such as fishing and hunting. Numerous lakes, rivers, WMAs, and other hunting lands in the Study Area, as discussed in **Section 6.5.8**, support these activities. Many out-of-state hunters and fishermen visit Minnesota every year to take advantage of hunting and fishing seasons, and the communities within the Study Area, while not premier hunting and fishing destinations, likely receive some benefit financially from these sportsmen.

[5] The GAP data used to calculate the total value does not account for woodland already cleared for the existing Lakefield to Border 161 kV Transmission Line, which amounts to approximately 11 acres. The amount of clearing that would be needed for these areas is approximately 13 acres.

The Des Moines River and Blue Earth River State Water Trails that extend through the Study Area also attract recreationalists interested in canoeing, kayaking, boating, and camping. These recreationalists also spend money in the community and support local canoe and kayak trip outfitters.

(a) *Impacts and Mitigation*

Any effects construction of the Project along Route A would have on outdoor recreational tourist activities would typically be temporary in nature, such as increased construction noise that could detract from tourism activities. Construction noise and activity could also cause wildlife to temporarily relocate, which could temporarily impact activities like hunting.

Construction zones, including those necessary at crossings of the Des Moines and Blue Earth rivers, could be temporarily off-limits to those using the areas for recreation due to safety concerns. Following the completion of construction activities, wildlife would move back into the area and areas along the right-of-way would again be available for recreation.

No ongoing impacts to tourism in the Study Area are anticipated due to the presence of the Project and, therefore, no mitigation is necessary.

6.6.4 Mining

Mining does not comprise a major industry in the Study Area. Sand and gravel mining operations are found throughout the entire State, including Jackson, Martin, and Faribault counties. Sand and gravel are primarily mined for local use such as making concrete for highways, roads, bridges, and buildings. Gravel pits (active, depleted, or unexcavated deposits) leased or owned by MnDOT are scattered throughout the Study Area (MnDOT, 2012b). The locations of these gravel pits can be found in **Appendix D**. No active mining operations were identified along Route A. Bedrock and geological information for Jackson, Martin, and Faribault counties, including Minnesota resource areas is available in **Appendix M**.

(a) *Impacts and Mitigation*

The Project may create a need for additional sand and aggregate for concrete, backfill, and access drives and roadways. Some of this may come from local sources and while demand may increase, it would not require new facilities or expansion of current facilities beyond that already occurring. Route A is not

expected to create any impact on the mining industry and no mitigation is necessary.

6.7 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Background research on known cultural resources was conducted in July, 2012 in the Minnesota State Historic Preservation Office ("SHPO") Archaeology Inventory and in the Standing Structures Inventory in St. Paul. This initial investigation was based on the Study Area established for the Project, within which alternative routes would be developed and the preferred and alternate routes identified. In November 2012 and January 2013, the data were further analyzed based on specific routes retained for the analysis and additional research was conducted in public online records. Routes generally 1,000 feet wide were established to allow for route adjustments in the design. An additional 200-foot buffer on either side of the route was also analyzed to allow for additional adjustments that may occur during the Route Permit process and in consideration of cultural resources. Archaeological sites and historic structures or properties, and resources were included in the analysis.

There are 43 sites, structures, properties, or districts in Jackson County listed on the National Register of Historic Places ("NRHP"). There are 23 NRHP listed sites, structures, properties, or districts in Martin County. There are 13 NRHP listed sites, structures, properties, or districts in Faribault County. Historic properties, such as archaeological sites, are designated as location restricted, for reasons of preservation, protection, or privacy.

An archaeological district is crossed by a portion of the existing Lakefield to Border 161 kV Transmission Line proposed to be used for the application alignment in addition to a short section of the application alignment that would follow a new right-of-way. As defined by the National Park Service, "A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (U.S. Department of the Interior, National Park Service 2002). Minnesota laws protect resources in conjunction with federal laws. The Minnesota Field Archaeology Act (Minn. Stat. §§ 138.31-138.42) requires State agencies to submit development plans to the State Archaeologist, the Minnesota Historical Society, and the Minnesota Indian Affairs Council for review when there are known or suspected archaeological sites in the area (MnSHPO 2012).

"State site" or "State archaeological site" means a land or water area, owned or leased by, or subject to, the paramount right of the State, county, township, or

municipality, where there are objects or other evidence of archaeological interest. This term includes all aboriginal mounds and earthworks, ancient burial grounds, prehistoric ruins, historical remains, and other archaeological features on State land or on land subject to paramount rights of the State. Historical remains do not include bottles or ceramics manufactured after 1875.

Additionally, the Minnesota Historic Sites Act (Minn. Stat. §§ 138.661-138.669) established the State Historic Sites Network and the State Register of Historic Places. This Act requires that State agencies consult with the Minnesota Historical Society before undertaking or licensing projects that may affect properties on the network or on the State or National Registers of Historic Places. The Minnesota Historic District Acts (Minn. Stat. §§ 138.71-138.75) designates certain historic districts and enables local governing bodies to create commissions to provide architectural controls in these areas. No communities within the three counties crossed by Route A have achieved the status of Certified Local Government or have Heritage Preservation Commissions.

6.7.1 Archaeology

(a) *Lakefield Junction to Huntley*

Route A is generally centered on the existing Lakefield to Border 161 kV Transmission Line between the Lakefield Junction and Huntley substations. The application alignment crosses three NRHP archaeological resources and one archaeological district. Another listed NRHP site is within the 200-foot right-of-way. Two of the sites crossed by the application alignment are not along the existing Lakefield to Border 161 kV transmission line and would be new crossings. The four resources are listed on the NRHP, and are within the archaeological district. One site is also a cemetery/burial ground. The four resources are considered artifact scatters, or a scatter of various prehistoric artifacts such as lithics, pottery, and other materials. The resources are summarized in **Table 24**. The single NRHP site crossed by the existing Lakefield to Border 161 kV transmission line includes an archaeological artifact scatter with an associated cemetery site. The NRHP archaeological district is crossed for 1.7 miles by the application alignment. Of the 1.7 miles, 1.3 miles are part of the existing Lakefield to Border 161 kV Transmission Line centerline and 0.4 mile would be entirely new right-of-way. All of the new right-of-way would cross cropland. Avoidance by careful placement of the structures in this area through pedestrian surveys and cooperation with the SHPO will minimize any disturbance of artifacts.

Table 24. Archaeological Resources within the Lakefield Junction to Huntley Segment of Route A

Site Type	Number Within Route	Number Crossed By Right-of-Way	Eligible or Listed
Archaeological District	1	1	1
Lithic Scatter	0	0	0
Artifact Scatter	3	2	3
Artifact Scatter/ Cemetery	1	1	1
Total	5	4	5

Source: SHPO Archaeology Inventory and Standing Structures Inventory

(b) *Huntley to Iowa*

The Huntley to Iowa segment of Route A includes five archaeological resources, none of which are listed or eligible for listing on the NRHP. Of those resources, two are within the existing right-of-way. Four of the resources are lithic scatters, or the remains of tool-making, and one is considered an artifact scatter, or a scatter of various prehistoric artifacts such as lithics, pottery, and other materials. They are small and can be spanned by the Project along the application alignment. The resources along this segment of Route A are summarized in **Table 25**.

Table 25. Archaeological Resources within the Huntley to Iowa Segment of Route A

Site Type	Number Within Route	Number Crossed By Right-of-Way	Eligible or Listed
Archaeological District	0	0	0
Lithic Scatter	4	2	0
Artifact Scatter	1	0	0
Total	5	2	0

Source: SHPO Archaeology Inventory and Standing Structures Inventory

6.7.2 Architectural History

(a) *Lakefield Junction to Huntley*

Route A along the Lakefield Junction to Huntley segment of the Project does not include any historical architectural structures. There are six potential historic architectural structures located in the area of Huntley, Minnesota. All of these are

outside Route A. There is one historic cemetery crossed by Route A, the West Verona Cemetery. It is west of Huntley, Minnesota. The cemetery is 375 feet north of the Route A application alignment in this segment.

(b) *Huntley to Iowa*

The Huntley to Iowa portion of Route A abuts or includes two historic architectural resources. The resources are summarized in **Table 26**. There is one historic school approximately 200 feet east of the application alignment near the Iowa border. This unevaluated school is identified as District School #46 on the Minnesota Historical Properties Inventory Form. A review was conducted in 1979 by the Faribault County Historical Society. At that time, the building was in good condition and was used as a residence. The Inventory Form contains no other information pertaining to the date the school was constructed, historical uses, or local significance. There is a recorded bridge, Bridge Number L05249, over Judicial Ditch 7 within Route A along an unmaintained road. A Minnesota Historic Bridge Inventory was done in the 1990s. The bridge was built in 1914. This bridge is considered not eligible for the NRHP because longer span bridges better illustrating the engineering capabilities have been identified. The nearest historic cemetery is the Pilot Grove Cemetery, approximately 2,475 feet east of the application alignment in this segment. The earliest date recorded on an existing headstone in the cemetery is 1863 (Oldfather 2003). Cemeteries are typically not considered for the NRHP.

Table 26. Historic Architectural Resources within the Huntley to Iowa Segment of Route A

Resource Type	Number Within Route	Number Crossed By Right-of-Way	Eligible or Listed
Bridge	1	0	0
School	1	0	0
Total	2	0	0

Source: SHPO Archaeology Inventory and Standing Structures Inventory

6.7.3 Impacts and Mitigation

Reconstruction of existing lines and use of existing rights-of-way reduces impacts to cultural resources as compared with construction of a new transmission line. During construction, avoidance is the primary mitigation. Avoidance of resources, historic or prehistoric, may include minor adjustments to the project design and designation of environmentally sensitive areas to be left

undisturbed or spanned by the project. If cultural resources are discovered during construction, any construction activity would be halted in that location. The SHPO would be notified and appropriate measures would be implemented to protect any discovered resources. Currently no National Environmental Protection Act ("NEPA") or Section 106 trigger has been identified for the Project. Because of this, a pedestrian survey is not required for the length of Route A. As mentioned above, a pedestrian survey may be initiated for small portions of the Project along Route A to identify specific area boundaries. If, during construction, crews discover cultural resources, further survey work will be completed in cooperation with the Minnesota SHPO. Additionally, if any unmarked burials, human remains, or grave goods are discovered during construction, they will be reported to the State Archaeologist per Minnesota Statutes Section 307.08 and construction will cease in that area until adequate mitigation measures have been developed between ITC Midwest and the State Archaeologist.

6.8 NATURAL ENVIRONMENT

6.8.1 Air Quality

The air quality in Minnesota has greatly improved over the past few decades in response to the Clean Air Act ("CAA") and its amendments, lower emissions, and cleaner cars. The State has been in compliance with all national ambient air quality standards since 2002, and most toxic air pollutant concentrations have dropped below the levels considered a health concern. The main air quality issue in the State of Minnesota is the number of poor air quality days it experiences due to high levels of fine particles and ozone (MPCA 2012b).

The MPCA has nine air quality monitoring stations across the State that report the Air Quality Index ("AQI"), to residents in order to provide a simple tool for assessing general air quality throughout the State. These stations monitor air quality parameters like ozone ("O_3"), particulate matter ("PM"), carbon monoxide ("CO"), and sulfur dioxide ("SO_2"). The MPCA ranks air quality based off this monitoring into one of five levels of quality: good, moderate, unhealthy for sensitive groups ("USG"), unhealthy, or very unhealthy (MPCA 2003). The MPCA AQI breakpoints are summarized in **Table 27**.

Table 27. MPCA AQI Breakpoints

Category (and Color)	AQI Value	O_3 (ppm) 8-hour	CO (ppm) 8-hour	SO_2 (ppm) 24-hour	$PM_{2.5}$ (µg/m)
Good (Green)	0-50	0.000-0.059	0.0-4.4	0.000-0.034	0.0-15.4
Moderate (Yellow)	51-100	0.060 – 0.075	4.5-9.4	0.035 – 0.144	15.5-35.4
Unhealthy for Sensitive Groups (Orange)	101-150	0.076 – 0.095	9.5-12.4	0.145 – 0.224	35.5-55.4
Unhealthy (Red)	151-200	0.096 – 0.115	12.5-15.4	0.225 – 0.304	55.5–140.4
Very Unhealthy (Purple)	201-300	0.116 – 0.374	15.5-30.4	0.305 – 0.604	140.5 – 210.4

Source: MPCA 2003

The closest station to the Project is located in Marshall, Minnesota, which is located northwest of the Study Area. The station monitors for both ozone and fine particles. The AQI for Marshall for the past five years is provided in **Table 28**. AQI is calculated by using the highest hourly AQI value that day for all sites and measured pollutants at each location (MPCA 2003).

Table 28. Air Quality Index for Marshall, MN: 2007-2011

Year	AQI (days)		
	Good	*Moderate*	*Unhealthy for Sensitive Groups*
2011	306	50	0
2010	255	102	7
2009	274	79	3
2008	247	86	0
2007	285	76	2

Source: MPCA 2003

Air quality has been considered good for the majority of the past five years in Marshall. Since 2007, the largest number of moderate and USG days occurred in 2010.

(a) *Impacts and Mitigation*

Air emissions during construction would include emissions from construction equipment, primarily, including CO, nitrogen oxides ("NOx"), and PM. PM from fugitive dust generated from earth-disturbing activities associated with right-of-way clearing and construction is also anticipated. These emissions would be dependent upon weather conditions, the amount of equipment at any specific location, and the period of operation required for construction at that location. Any construction emissions would be similar to those of agricultural activities common in the Study Area and would only occur for short periods of time in localized areas.

During operation of the line, most air emissions would no longer occur. A small amount of ozone, however, is created due to corona from the operation of transmission lines (EPRI Transmission Line Reference Book 1982). The production rate of ozone depends on a number of operational parameters. The production rate of ozone due to corona discharges decreases with humidity and less significantly with temperature. The production rate decreases significantly as the conductor diameter increases and is greatly reduced for bundled conductors over single conductors. The production rate of ozone increases with applied voltage. Rain causes an increase in ozone production, but rain also accelerates the decay of ozone. Ozone production by high voltage transmission lines is not detectable during fair weather above ambient conditions. Ozone production under wet-weather conditions is detectable with special efforts, but is still considered insignificant. The emission of ozone from the operation of a transmission line of the voltages proposed for the Project is not anticipated to have a significant impact on the environment.

6.8.2 Primary Water Resources

The Study Area is part of the Minnesota River Watershed. Route A passes through three sub-watersheds of the Minnesota River Watershed: the Des Moines Headwaters Watershed, the East Fork Des Moines Watershed, and the Blue Earth Watershed. *See* MnDNR 2012f. The Minnesota, Des Moines Heaterwaters, East Fork Des Moines, and Blue Earth watersheds area all part of the Upper Mississippi – Region 7 water resource region, as defined by the U.S. Geological Survey ("USGS"). Route A crosses the Upper Mississippi water resource region and the aforementioned three sub-watersheds, which are denoted by 8-digit Hydrologic Unit Codes ("HUC") as assigned by USGS. **Table 29** contains a list of the three 8-digit HUC watersheds crossed by Route A.

Table 29. Watersheds (8-digit HUC) Crossed by Route A

Watershed Name	HUC (8-digit)	Crossing Length (miles)
Des Moines Headwaters	07100001	9.0
East Fork Des Moines	07100003	8.9
Blue Earth	07020009	54.7

Source: USGS 2012

Three primary surface water features in the Study Area are: the Des Moines River, the Blue Earth River, and the Chain of Lakes area. The Des Moines River extends north-south through eastern Jackson County on the western end of the Study Area. The Blue Earth River extends north-south in Faribault County on the eastern end of the Study Area. The Chain of Lakes area occurs along Center Creek Township, extending north-south through the center of Martin County in the Study Area. One of the larger lakes in this chain, Lake Charlotte, is crossed by an existing ITC Midwest 161 kV transmission line. Fox Lake, located in western Martin County but not part of the Chain of Lakes, is one of the largest lakes in the Study Area. It is the site of a power generation facility which uses lake water for cooling. The lake is crossed by an existing ITC Midwest 161 kV transmission line. Lakes throughout the Study Area, including Fox Lake and Lake Charlotte, have residential development surrounding them and provide recreational opportunities for residents and habitat for numerous fish and avian species.

(a) *Impacts and Mitigation*

Impacts to primary water resources, where anticipated along Route A, and applicable mitigation, are discussed in the sections that follow.

6.8.3 Floodplains

The Federal Emergency Management Agency ("FEMA") designates areas that are likely to experience flooding in a 100-year storm event. Approximately 44 acres of FEMA-designated 100-year floodplains occur within the Route A right-of-way and are associated with Center Creek and the Blue Earth River (FEMA 1981; FEMA 1982; FEMA 1988). Approximately 24 acres of floodplains are within the right-of-way of the existing transmission line. Floodplains, where the data is digitally available, are depicted on the maps provided in **Appendix O**.

(a) *Impacts and Mitigation*

Some structures may need to be placed within FEMA-designated 100-year floodplains. However, the placement of transmission line structures in floodplains are not anticipated to have an effect on flooding due to the *de minimis* size of individual transmission line structures.

6.8.4 Lakes, Rivers, Streams, and Ditches

According to Section 404 of the Clean Water Act ("CWA"), any discharge of dredged or fill materials into jurisdictional waters of the U.S. requires a permit from the USACE. Many of the rivers, streams, and lakes crossed by Route A are likely to be jurisdictional waters of the United States. Additionally, construction over, under, or through a federally-designated navigable water requires a permit from the USACE under Section 10 of the Rivers and Harbors Act. No federally-designated navigable waters are crossed by the Route A application alignment.

Some rivers, streams, and lakes in the State of Minnesota are designated as Public Waters (Minn. Stat. § 103G.005, Subdivision 15) and are regulated by the MnDNR. These waters are listed in the Public Waters Inventory ("PWI") and meet the criteria set forth in Minnesota Statute, Section 103G.005, Subdivision 15. A license from the MnDNR is required to cross PWI waters with an electric transmission line (Minn. Stat. § 84.415) and a permit from the MnDNR is required to alter the course, current or cross-section of any water listed in the PWI pursuant to the Minnesota Public Waters Work Permit Program. (Minn. Stat. § 103G.245, subd. 1(2).

A review was conducted of streams and rivers with perennial and intermittent classifications based on USGS 7.5 minute quadrangle maps and the USGS National Hydrography Dataset ("NHD") to assess the extent to which the proposed alignments cross waterways within the study area.

The Route A application alignment crosses 37 waterways 55 times (**Appendix D** and **Appendix O**). These crossings would be of 37 intermittent and perennial streams including numerous county and judicial ditches, Badger Creek, Blue Earth River, Center Creek, Des Moines River, East Fork Des Moines River, Lily Creek, Little Badger Creek, South Creek, and West Branch Blue Earth River. Of these streams, 17 are PWI waters and six are listed as impaired on the 2010 303(d) list (discussed further in **Section 6.8.5**). According to the NHD database, the 200-foot right-of-way crosses 40 streams and rivers, while Route A crosses 55

intermittent and perennial streams, including numerous county and judicial ditches.

The Route A application alignment crosses 17 individual PWI streams and rivers 34 times. No PWI lakes or PWI wetlands are crossed by Route A or the application alignment. Only five shallow lakes are within one mile of Route A and none would be crossed by the application alignment. **Table 30** provides a summary of waterway crossings for Route A.

Table 30. Impacts to PWI Waters and Shallow Lakes for Route A

Impacts of Route A	Total
Number of Stream and River Crossings by Application Alignment	55
Number of PWI Stream and River Crossings by Application Alignment	34
Number of PWI Lakes within Route (1,000 ft wide)	0
Number of PWI Wetlands within Route	0
Number of PWI Lakes within Right-of-Way	0
Number of PWI Wetlands within Right-of-Way	0
Number of PWI Waters over 1,000 ft Crossed by Application Alignment	0
Length (ft) of PWI Waters over 1,000 ft that are Crossed by the Right-of-Way	0
Number of Shallow Lakes within Route	0
Number of Shallow Lakes within one mile of Route	5

Streams and rivers that are crossed by the application alignment and are designated as PWI are summarized below in **Table 31**.

Table 31. Minnesota Designated PWI Streams and Rivers Crossed by the Route A Application Alignment

Waterbody Name	Number of Crossings
Badger Creek	7
Blue Earth River	2
County Ditch No. 1	1
County Ditch No. 72	4
Center Creek	4
County Ditch No. 60	1
Des Moines River	3
East Fork Des Moines River	1
Judicial Ditch No. 3	1
Judicial Ditch No. 7	1
Judicial Ditch No. 32	1
Lily Creek	3
Little Badger Creek	1
South Creek	1
Unnamed Stream	2
West Branch Blue Earth River	1

Source: MnDNR

The review of lakes along Route A was conducted from MnDNR lake data and NHD waterbody data. The MnDNR data were derived directly from medium-scale lake polygons originally based on National Wetland Inventory ("NWI") polygons and MnDOT basemap lake delineations. Additionally, no PWI lakes are crossed by Route A, the application alignment, or its right-of-way, but aerial photography indicates portions of a few ponds/lakes are crossed by Route A, including the Pilot Grove Lakebed.

(a) *Impacts and Mitigation*

ITC Midwest will work with the MnDNR to ensure all proper licenses and approvals are obtained for PWI crossings by the Project. Through the license approval process, ITC Midwest and the MnDNR will determine the appropriate mitigation measures for PWI crossings. Other mitigation measures for the crossing of streams, rivers, and ditches, as no lakes are proposed to be crossed by Route A, are discussed in **Section 6.8.5(a)**. These resources would be spanned where feasible. An NPDES permit from the MPCA will be obtained by ITC

Midwest for construction of the Project. ITC Midwest will also develop a SWPPP that complies with MPCA rules and guidelines. All waterways crossed would be maintained for proper drainage through the use of temporary culverts or other temporary crossing devices, according to BMPs and permit requirements. If tree removal is required along waterways, trees would be cut so that the root system is not disturbed to retain bank stability. Sediment barriers, if deemed necessary, would be used along waterways and slopes during construction to protect streamways from soil erosion and waterways from sedimentation. Additionally, if new access roads for vehicles and equipment are required, access roads would be selected to avoid disturbance to stream banks. No permanent impacts to surface water resources are anticipated.

6.8.5 Water Quality

Section 303(d) of the CWA requires states to publish, every two years, a list of streams and lakes that are not meeting their designated uses because of excess pollutants (impaired waters). The list, known as the 303(d) list, is based on violations of water quality standards. The majority of impairments to surface waters in the Study Area are caused by agricultural sources (fecal coliform, dissolved oxygen, turbidity, excess nutrients/eutrophication). The MPCA has jurisdiction over determining 303(d) waters in the State of Minnesota. **Table 32** contains a list of impaired waters crossed by Route A, based on the 2010 MPCA 303(d) list, along with the causes of impairment.

Table 32. Impaired Waters Crossed by Route A

Waterbody Name	Cause(s) of Impairments
Blue Earth River	Fish Index of Biotic Integrity, Turbidity
Center Creek	Ammonia, Fish Index of Biotic Integrity, Turbidity
Des Moines River	Dissolved oxygen, Ammonia
East Fork Des Moines River	Dissolved oxygen, Turbidity
Lily Creek	Turbidity
Judicial Ditch No. 3	Dissolved oxygen

Source: MPCA 2010

Section 401 of the CWA grants state agencies the authority to require projects that discharge to jurisdictional waters, to obtain a Water Quality Certification and comply with State and federal water quality regulations. The MPCA is granted the authority to implement Section 401 regulations.

Certain surface waters are designated as trout streams or lakes by the State of Minnesota, according to Minnesota Statutes Section 6264.0050. No designated trout streams or lakes are crossed by Route A or the application alignment.

(a) *Impacts and Mitigation*

Route A could potentially impact water quality during the right-of-way construction of the proposed transmission line. Rivers, streams, and ditches, crossed by Route A are narrow enough to be spanned with normal spacing of the structures so that all structures can be placed outside of these features. Short-term, minor, Project-related water quality impacts may occur during the construction of the proposed Project even though mitigation measures will be implemented to prevent sedimentation. These impacts would be associated with the soils from areas disturbed during construction being washed by stormwater into adjacent waters during rainstorm events. Increased turbidity and localized sedimentation of the stream bottom may occur from the runoff. If any of these events occur, however, these impacts would be temporary and would not significantly alter water quality conditions due to the minimal soil disturbance that is expected to occur in any one location during construction of the Project. Agriculture has the greatest impact on water quality in the area. The increased sediment load in the water caused by construction would be negligible compared to existing agriculture activities in the area. The construction and maintenance of the transmission line is not expected to disturb any subsurface waters.

Mitigation measures would be implemented to prevent or minimize surface water impacts. For construction of the Project, ITC Midwest will apply for an NPDES permit from the MPCA and will develop a SWPPP that will identify best management practices ("BMPs") to be deployed during construction to minimize erosion and sedimentation impacts to surface waters. Erosion and sedimentation abatement measures, for example, would be employed to decrease impacts to the hydrology of the Study Area. No fueling or maintenance of vehicles or application of herbicides would occur within 100 feet of streams, ditches, and waterways to protect against introduction of these materials into surface or groundwater systems. Materials such as fuels, lubricants, paints, and solvents required for construction would be stored away from surface water resources according to appropriate regulatory standards. Any spills or leaks would be cleaned up immediately and leaking equipment removed from the area for proper maintenance.

All waterways crossed by the Project would be maintained for proper drainage through the use of culverts or other crossing devices, according to BMPs and permit requirements. If tree removal is required along waterways, they would be cut so that the root system is not disturbed to retain bank stability. Sediment barriers, if deemed necessary, would be used along waterways and slopes during construction to protect from soil erosion and sedimentation. Additionally, if new access roads for vehicles and equipment are required, access roads would be selected to avoid disturbance to stream banks.

6.8.6 Groundwater Resources

The State of Minnesota is divided into six groundwater provinces according to the MnDNR. The majority of Route A would cross the Western Province, which is characterized by clayed glacial drift overlying Cretaceous and Precambrian bedrock. Glacial drift and Cretaceous bedrock contain limited extents of sand and sandstone aquifers, respectively. Groundwater within fractured and weathered Precambrian bedrock is often used locally as a water source. The remainder of the eastern portion of Route A crosses the South-Central Province, which is characterized by thick clayey glacial drift with limited extents of sand aquifers overlying Paleozoic sandstone, limestone, and dolostone aquifers (MnDNR 2001).

(a) *Impacts and Mitigation*

The County Well Index, managed by the Minnesota Department of Health, is an electronic database that contains basic groundwater well information for over 340,000 wells drilled in Minnesota (MDH 2007). According to the database, seven groundwater wells are located within the 200-foot right-of-way. Three of these wells are in the right-of-way of the existing Lakefield to Border 161 kV Transmission Line, leaving four newly-affected groundwater wells. Route A crosses 12 wells. Additionally, the Huntley Well Corporation, a Wellhead Protection Area as defined by the Wellhead Protection Rule, is partially within Route A (Minn. R. 4720.5100 through 4720.5590).

Wells in the area range from 75 feet to over 150 feet deep. Structure foundations will generally range from 25 feet to 30 feet in depth. All foundation materials would be non-hazardous materials. ITC Midwest does not anticipate any impacts to groundwater resources during construction or operation of the Project as groundwater resources in the Study Area are at depths greater than proposed foundation depths. If shallow depths to groundwater resources are identified

during geotechnical investigations, specialty structures requiring wider, but shallower, excavation for foundations may be used.

6.8.7 Wetlands

In the State of Minnesota, wetlands are protected by local, State, and federal law. Two wetland regulatory regimes exist at the state level in Minnesota. Any wetland listed in the PWI is protected by the Minnesota Public Waters Work Permit Program pursuant to Minnesota Statutes Section 103G.245, subd. 1(2). A public waters work permit must be obtained from the MnDNR for work affecting the course, current, or cross-section of public waters, including public waters wetlands. Moreover, a license from the MnDNR is required to cross PWI waters with an electric transmission line. Minn. Stat. § 84.415. Most other wetlands not listed in the PWI are regulated under the Wetland Conservation Act of 1991, as amended (the "WCA"). *See* Minn. Stat. § 103G.005, Subd. 19 and § 103G.222, subd. 1(a). The WCA is administered by the Minnesota Board of Water and Soil Resources ("BWSR") and implemented by local government units. Generally, a local government unit determination (*i.e.*, permit) is required by the WCA for an impact that drains or fills a wetland, wholly or partially. Minn. Stat. § 103G.222, subd. 1(a). Wetlands are also federally protected under Section 404 of the CWA. A wetland permit from the United States Army Corps of Engineers ("USACE") is required when discharging dredged or fill material into jurisdictional waters of the United States, including wetlands. A permit and/or notification may also be required by the local watershed district depending upon the location, size and type of impact.

The USACE and State of Minnesota jointly define wetlands as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Generally, all three indicators, wetland vegetation, hydric soil, and wetland hydrology, must be present for an area to meet the definition of a wetland.

NWI maps, produced by USFWS, are based on aerial photographs and NRCS soil surveys. These maps are the best available source of wetland data prior to completing field-verified wetland and waterbody surveys. Using NWI maps, numerous wetlands were identified within the Study Area. According to the NWI maps, there are freshwater emergent wetlands, freshwater forested wetlands, freshwater shrub wetlands, freshwater ponds, lakes, and riverine systems located throughout the Study Area. While many of these wetlands occur

on private property, others are located within the WMAs and WPAs managed by State and federal agencies (**Appendix D** and **Appendix O**).

Of the total 1,770 acres of right-of-way that will be needed for Route A, only approximately 19 acres of NWI delineated wetlands occur within the Route A right-of-way (**Table 33**). Of these 19 acres, approximately 14 acres are already crossed by the existing transmission line. Forested NWI wetlands in the right-of-way amount to approximately 4.3 acres, of which approximately 2.3 acres have already been cleared as part of the existing 161 kV right-of-way. A total of 11 forested NWI wetlands are crossed by Route A.

Only one NWI wetland over 1,000 feet wide (*i.e.* the maximum span distance for the structures proposed for the Project) is crossed by the application alignment of Route A. As this crossing is over 1,200 feet, one pole may need to be placed in this wetland, which is shown as a palustrine emergent ("PEM") wetland by NWI. However, based on aerial photography and site investigation this wetland appears to regularly be farmed. This wetland is currently crossed by the existing 161 kV line and contains one H-frame structure. This existing structure would be removed and a new single pole structure would be installed, although not likely at the same location. ITC Midwest will coordinate with the appropriate federal, State, and local agencies for acquisition of all necessary permits or approvals to cross wetlands.

Table 33. Impacts of Route A on Wetlands

Impacts	Total
Right-of-Way Acres	1,770
Total Wetlands within the 200-foot right-of-way (acres)	19
Number of Wetlands within Route	55
Percent of the 200-foot Right-of-Way that Crosses Wetlands	0.78
Forested Wetlands in 200-foot Right-of-Way (acres)	4.3
Number of Forested Wetlands Within Route	11
Percent of the 200-foot Right-of-Way that Crosses Forested Wetlands	0.13
Number of Wetlands Over 1,000 ft Crossed by Application Alignment	1
Lengths (ft) of Wetlands Over 1,000 ft that are Crossed by Right-of-Way	1,214
Number of Poles in Wetlands	1
Permanent Wetland Impacts (acres)	< 0.1

Source: MnDNR, MnDOT, ITC Midwest, NAIP

Table 34 includes a summary of more detailed data pertaining to NWI wetlands crossed by Route A. **Table 35** summarizes NWI wetlands crossed by the application alignment.

There are no PWI wetlands crossed by Route A or crossed by the alignment.

Table 34. NWI Wetlands Crossed by Route A

NWI Wetland Type	Total Wetlands in Route	Acreage in Route
PEM	40	142
Palustrine Forested ("PFO")	11	36
Palustrine Unconsolidated Bottom ("PUB")	1	0.2
Riverine	3	16
Total	55	194.2

Table 35. NWI Wetlands Crossed by Route A Right-of-Way

NWI Wetland Type	Total Wetlands in Right-of-Way	Acreage in Right-of-Way
PEM	12	9.4
PFO	5	4.3**
PUB	1	0.2
Riverine	3	5.1
Total	21	19.0*

*Approximately 14 acres of this total is already within the right-of-way of the existing transmission line which the Route A application alignment would follow for much of its length.
*Approximately 2.3 acres of this total has already been cleared within the right-of-way of the existing transmission line which the Route A application alignment would follow for much of its length.

MnDNR data were reviewed for known occurrences of State-protected calcareous fens. No records of calcareous fens exist along Route A. In addition, land ownership and management data were reviewed for lands managed as natural wetland areas under the control of the USFWS. Route A does span a portion of the Pilot Grove Lake WPA. No U.S. Department of Agriculture ("USDA") Wetland Reserve Program ("WRP") lands are located within Route A.

(a) *Impacts and Mitigation*

Wetlands located in the 200-foot right-of-way would be spanned and placement of structures within wetlands would be largely avoided. One structure, however, may need to be located in a farmed wetland location. Where it is not possible to span a wetland, ITC Midwest identified several mitigation strategies to minimize impacts to wetlands including:

- Scheduling construction during frozen conditions;
- Use of construction mats when construction during frozen conditions is not feasible;
- Use of all-terrain construction equipment that is designed to minimize soil impact in damp areas;
- Use of the shortest route to the pole location in the wetland; and
- Assembling structures in upland areas, when feasible, before they are brought to the site for installation.

Wetlands impacted by construction will be restored as required by the USACE and WCA. Vegetation maintenance requirements under transmission lines prohibit trees for establishing. Existing trees must be removed throughout the right-of-way that are determined by ITC Midwest to pose a hazard to transmission line operation, including those in forested wetlands. The USACE may require wetland mitigation for conversion of forested wetlands to nonforested wetlands. Any required mitigation would be determined through consultation with USACE. ITC Midwest will obtain all appropriate permits and approvals from the USACE, MnDNR, local government unit(s), and watershed districts (when necessary) for any actions determined to occur in wetlands.

6.8.8 Flora

Route A is located in the Prairie Parkland Province, as defined by the MnDNR and the U.S. Forest Service's Ecological Classification System, specifically the Coteau Moraines and Minnesota River Prairie subsections. The eastern portion of Route A is located in the Minnesota River Prairie Subsection. The pre-settlement vegetation in this land area was primarily tallgrass prairie with silver maple (*Acer saccharinum*), elm (*Ulmus* spp.), cottonwood (*Populus* spp.), and willow (*Salix* spp.) forests located along the Minnesota River and other streams.

Presently, this land area is predominately used for agriculture, primarily corn. Remnant tallgrass prairie stands are rare but several occur along current or abandoned rail lines (MnDNR 2012a).

The western portion of Route A is located in the Coteau Moraines Subsection, which was almost entirely covered with tallgrass prairie prior to human settlement. Wet prairies covered a smaller percentage of the landscape, specifically restricted to narrow stream margins. Forest areas were also restricted to ravines along a few streams, such as the Redwood River. Presently, the majority of the land area is used for agriculture (MnDNR 2012d).

According to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Version 2.0), common prairie vegetation found in the Study Area include big bluestem, switchgrass (*Panicum virgatum*), and indiangrass. Common overstory vegetation found along streams include hickories (*Carya* spp.), maples (*Acer* spp.), and American elm (*Ulmus americana*) (USACE 2010).

Wet prairies in the Study Area are typically dominated by perennial, native grasses including prairie cordgrass (*Spartina pectinata*), Canada bluejoint grass (*Calamagrostis canadensis*), and big bluestem. Sedges, such as woolly sedge (*Carex pellita*), are commonly present (USACE 2010).

The MnDNR RIM critical habitat match program provides funds and incentives to private landowners and groups to encourage the maintenance or enhancement of threatened or endangered populations of native plant, fish, and wildlife species. Priority is also given to the protection or enhancement of native ecological communities (MnDNR 2012g). Route A contains portions of eight land parcels participating in the RIM program. The application alignment crosses two land parcels participating in the RIM program. One of these parcels could be spanned while the other would contain a single structure.

(a) *Lakefield Junction to Huntley*

The general flora description provided in the previous section for Route A would be applicable to the proposed Lakefield Junction to Huntley segment. The application alignment crosses Des Moines 3, Verona 15, and Verona 17 MCBS sites. Des Moines 3 would be spanned by the Route A application alignment. Verona 15 and Verona 17 would contain two and one structures, respectively. Two other MCBS sites are within the 200-foot right-of-way, Black Bridge Road North and Des Moines Woods West. Four land parcels participating in the RIM

program are crossed by Route A. Only three are within the 200-foot right-of-way and none are crossed by the application alignment.

(b) *Huntley to Iowa Border*

The general flora description provided in the previous section for Route A would be applicable to the proposed Huntley to Iowa segment. Route A and the application alignment cross the Pilot Grove Lake WPA, which is also designated as an MCBS. Up to three poles may need to be placed in the Pilot Grove Lake WPA, which currently contains six H-frame structures. Three parcels participating in the RIM program are crossed by Route A. Three sites are within the 200-foot right-of-way and two are crossed by the application alignment. Only one RIM parcel could not be spanned.

(c) *Impacts and Mitigation*

While grassland and cropland areas providing wildlife habitat would be disturbed during construction, this disturbance would be temporary during project construction. Disturbance to these areas would also be minimized by confining equipment to narrow paths along the right-of-way. ITC Midwest will coordinate with the MnDNR on the locations of potential and known remnant prairie communities and develop a plan to span these areas and avoid surface disturbance to them.

Further, additional measures would be developed with the MnDNR to avoid migration of invasive species into any identified remnant prairie components prior to right-of-way clearing. ITC Midwest intends to limit vehicle traffic to the extent practical to roads and pathways along the right-of-way.

6.8.9 Fauna

Those resident and migratory wildlife species found in agricultural landscapes, prairie remnants, wetlands, and riverine habitats are commonly found in the Study Area. These species include large and small mammals, songbirds, waterfowl, raptors, fish, reptiles, mussels, and insects. These species use the Study Area for forage, shelter, breeding, or as a stopover during migration. Common mammals for these habitats expected to occur along Route A include raccoon (*Procyon lotor*), river otter (*Lontra canadensis*), fox squirrel (*Sciurus niger*), striped skunk (*Mephitis mephitis*), white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), badger (*Taxidea taxus*), and eastern cottontail rabbit (*Sylvilagus floridanus*). Common birds include the eastern

bluebird (*Sialia sialis*), red-tailed hawk (*Buteo jamaicensis*), barn owl (*Tyto alba*) and waterfowl and game birds such as blue-winged teal (*Anas discors*), wood duck (*Aix sponsa*), ring-necked pheasant (*Phasianus colchicus*), and wild turkey (*Meleagris gallopavo*) (MnDNR 2012h).

The Migratory Bird Treaty Act of 1918 (16 USC 703-712) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. Additionally, the Bald and Golden Eagle Protection Act (16 USC 668-668d) specifically prohibits the taking or possession of and commerce in bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), either alive or dead, or any part, nest, or egg of these eagles. Bald eagles are known to nest in the Study Area vicinity. Neither the MnDNR nor the USFWS have records of any eagle nests in the Study Area and none were observed during field investigations in the Study Area or along the alternative routes.

The Study Area also includes several Grassland Bird Conservation Areas ("GBCA"). GBCAs are priority areas for grassland protection and enhancement that are thought to provide suitable habitat for many or all priority grassland bird species in tall grass prairie. These GBCAs consist of a "core" and a "matrix". The GBCA core is at least 95 percent grassland (or compatible wetland types), at least 50 meters from trees and other incompatible habitats, and can also include up to 30 percent wetland habitat. The matrix of the GBCA is a surrounding one mile-wide area around the core. This area ranges in land cover types but is at least 20 percent grassland. The categories for the Types of GBCA are:

- Type 1 – at least 640 acres of grassland at least one mile wide. Matrix and core are at least 40 percent grassland
- Type 2 – at least 160 acres of grassland at least 0.5 mile wide. Matrix and core are at least 30 percent grassland
- Type 3 – at least 55 acres of grassland at least 0.25 mile wide. Matrix and core are at least 20 percent grassland

All GBCAs in the Study Area are categorized as Type 3. The GBCA matrices crossed by Route A are identified in **Appendix C**.

Route A crosses several areas of high-quality wildlife habitat that occur naturally or are being managed, such as the USFWS Pilot Grove Lake WPA and the Fox Lake Game Refuge. Other such areas, including the MnDNR Four Corners

WMA, and the Rooney Run WMA are within one mile of Route A. These sites are discussed in more detail in **Section 6.9.2**.

(a) *Impacts and Mitigation*

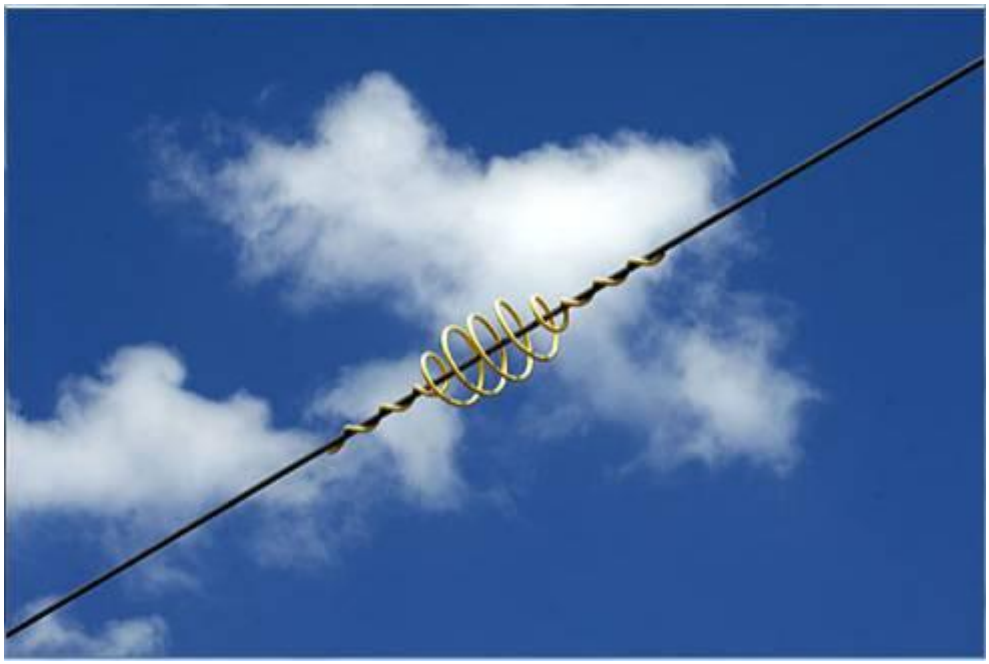
The construction, operation, and maintenance of the application alignment would be designed to minimize potential adverse impacts to all wildlife resources, especially threatened and endangered plant and animal species, although no impacts to listed species are anticipated. The primary impact would be loss of habitat.

Only approximately 23 acres of woodland habitat (based on Gap Analysis Program ("GAP") data) would be permanently lost as a result of construction along Route A. Much of this area has already been cleared for the existing Lakefield to Border 161 kV Transmission Line and only approximately 13.1 acres of additional woodland habitat would need to be cleared.

There are eight GBCAs in the Study Area. Route A (application alignment, right-of-way and route width) passes through the Toe WMA, Boot Lake WPA, and Bootleg WMA GBCA matrices. Route A also passes through the GBCA matrix northwest of Sherburn. Route A does not pass through any of the core GBCA lands in this area. Route A also does not cross any lakes in an attempt to minimize the likelihood of avian interactions with transmission lines. GBCA matrices are identified in **Appendix C**.

During active construction, wildlife would likely be displaced to other areas to seek shelter from construction activities and workers. When workers and equipment are not present and following construction, previous wildlife use patterns would be restored. Because most of the land to be crossed by the Project is agricultural, wildlife is likely to return to these areas after construction is complete as vegetation traditionally associated with agricultural activities will be allowed within the Project right-of-way. ITC Midwest will coordinate with MnDNR and USFWS to identify any wildlife migration pathways, particularly those of waterfowl crossed by the application alignment of Route A and to identify areas where the line should be marked to avoid aviation interactions. ITC Midwest will likely use a device similar to that shown in **Figure 33** for marking the shield wires for the Project in certain locations identified through coordination meetings with the MnDNR and USFWS.

Figure 33. Bird Flight Diverter Example



At the time of this Application, ITC Midwest has not requested input from these agencies on specific locations where marking should occur, but intends to mark the transmission line shield wires at open water crossing. ITC Midwest will work with the MnDNR to identify other areas where marking should occur in known flyways and will review a final marking plan with the MnDNR prior to starting construction of the Project.

6.9 RARE AND UNIQUE NATURAL RESOURCES

6.9.1 Threatened and Endangered Species

Federally- and State-listed threatened or endangered species are protected under Section 7 of the Endangered Species Act and the Minnesota Endangered Species Statute (Minn. Stat. § 84.0895), respectively. According to a letter response from the USFWS, dated August 6, 2012, prairie bush clover is the only federally-protected species found in the Study Area, specifically Jackson and Martin counties. This species is classified as threatened, and available data indicates records of the prairie bush clover in native prairie habitats. There have been no recorded sightings of the prairie bush clover along Route A (MnDNR 2012I). No federally-protected species are known to occur within Faribault County, Minnesota (USFWS 2012).

In its Natural Heritage Information System ("NHIS") the MnDNR has several categories for classifying protected species in the State. Endangered ("END") species are species showing the highest level of concern. These species are near extinction in all or a significant portion of the species' range in Minnesota. Threatened ("THR") species are those species that are likely to become endangered in the State throughout its range or a significant portion of its range. Species can also be classified as a species of special concern ("SPC"), which means the species is not listed as threatened or endangered, but is uncommon in Minnesota, or it has unique or very specific habitat requirements. These species are monitored because of their rarity in the State (MnDNR 2013).[6]

There are several State-listed species recorded within the three counties included in the Study Area. There are also several State-listed species recorded within the Study Area. These species are summarized by county in **Table 36**, **Table 37**, and **Table 38**.

[6] On December 10, 2012, the MnDNR proposed amendments to Minnesota Rules Chapter 6134 to alter the designation of certain species in Minnesota. The lists and discussions contained herein refer only to the designations identified in the adopted rules and not those proposed by the MnDNR.

Table 36. State- and Federally-Listed Species: Jackson County

Common Name	Scientific Name	Occurs in Study Area?	Status	
			State	Federal
A Jumping Spider	*Marpissa grata*	—	SPC	—
American Ginseng	*Panax quinquefolius*	—	SPC	—
Bald Eagle	*Haliaeetus leucocephalus*	—	SPC	—
Black Sandshell	*Ligumia recta*	Yes	SPC	—
Common Gallinule	*Gallinula galeata*	—	SPC	—
Fescue Sedge	*Carex festucacea*	—	THR	—
Forster's Tern	*Sterna forsteri*	—	SPC	—
Franklin's Gull	*Leucophaeus pipixcan*	—	SPC	—
Hair-like Beak-rush	*Rhynchospora capillacea*	—	THR	—
Henslow's Sparrow	*Ammodramus henslowii*	Yes	END	—
Iowa Skipper	*Atrytone arogos iowa*	Yes	SPC	—
King Rail	*Rallus elegans*	—	END	—
Loggerhead Shrike	*Lanius ludovicianus*	Yes	THR	—
Monkeyface	*Quadrula metanevra*	—	THR	—
Mucket	*Actinonaias ligamentina*	Yes	THR	—
Ottoe Skipper	*Hesperia ottoe*	—	THR	—
Powesheik Skipper	*Oarisma Poweshiek*	—	SPC	—
Prairie Bush Clover	*Lespedeza leptostachya*	Yes	THR	THR
Rattlesnake-master	*Eryngium yuccifolium*	—	SPC	—
Regal Fritillary	*Speyeria idalia*	Yes	SPC	—
Round Pigtoe	*Pleurobema sintoxia*	Yes	THR	—
Small White Lady's-slipper	*Cypripedium candidum*	—	SPC	—
Snow Trillium	*Trillium nivale*	—	SPC	—
Spike	*Elliptio dilatata*	Yes	SPC	—
Sullivant's Milkweed	*Asclepias sullivantii*	—	THR	—
Trumpeter Swan	*Cygnus buccinators*	—	THR	—
Whorled Nut-rush	*Scleria verticillata*	—	THR	—
Wilson's Phalarope	*Phalaropus tricolor*	—	THR	—

Source: MnDNR

Table 37. State- and Federally-Listed Species: Martin County

Common Name	Scientific Name	Occurs in Study Area?	Status	
			State	Federal
American White Pelican	*Pelecanus erythrorhynchos*	Yes	SPC	
Blanding's Turtle	*Emydoidea blandingii*	—	THR	—
Burrowing Owl	*Athene cunicularia*	Yes	END	—
Eared False Foxglove	*Agalinis auriculata*	Yes	END	—
King Rail	*Rallus elegans*	Yes	END	—
Prairie Bush Clover	*Lespedeza leptostachya*	Yes	THR	THR
Rattlesnake-master	*Eryngium yuccifolium*	Yes	SPC	—
Regal Fritillary	*Speyeria idalia*	—	SPC	—
Round Pigtoe	*Pleurobema sintoxia*	Yes	THR	—
Small White Lady's-slipper	*Cypripedium candidum*	Yes	SPC	—
Sullivant's Milkweed	*Asclepias sullivantii*	Yes	THR	—
Tuberous Indian-plantain	*Arnoglossum plantagineum*	Yes	THR	—

Source: MnDNR

Table 38. State- and Federally-Listed Species: Faribault County

Common Name	Scientific Name	Occurs in Study Area?	Status	
			State	Federal
Bald Eagle	*Haliaeetus leucocephalus*	Yes	SPC	–
Black Sandshell	*Ligumia recta*	Yes	SPC	–
Creek Heelsplitter	*Lasmigona compressa*	Yes	SPC	–
Fluted-shell	*Lasmigona costata*	Yes	SPC	–
Iowa Skipper	*Atrytone arogos iowa*	–	SPC	–
Mucket	*Actinonaias ligamentina*	Yes	THR	–
Rattlesnake-master	*Eryngium yuccifolium*	–	SPC	–
Regal Fritillary	*Speyeria idalia*	–	SPC	–
Round Pigtoe	*Pleurobema sintoxia*	Yes	THR	–
Small White Lady's-slipper	*Cypripedium candidum*	Yes	SPC	–
Sullivant's Milkweed	*Asclepias sullivantii*	–	THR	–
Trumpeter Swan	*Cygnus buccinators*	–	THR	–
Tuberous Indian-plantain	*Arnoglossum plantagineum*	–	THR	–
White Wild Indigo	*Baptisia lactea var. lactea*	–	SPC	–

Source: MnDNR

There are multiple rare animal aggregations and native plant communities in Jackson, Faribault, and Martin counties. These communities do not have a State, federal, or global status designation, but are still considered rare or otherwise imperiled according to the MnDNR. These assemblages can be found in **Table 39**. The assemblages are grouped into two categories: zoological assemblages and ecological assemblages. Zoological assemblages are communities made up of animal species. Ecological assemblages are communities that are comprised of plant species.

Table 39. Ecological and Animal Assemblages in Jackson, Martin, and Faribault Counties

Name	Type of Assemblage	County of Occurrence	Found in Study Area?
Colonial Waterbird Nesting Site	Zoological	Faribault	Yes
Dry Sand - Gravel Prairie (Southern)	Ecological	Faribault	—
Mesic Prairie (Southern)	Ecological	Faribault	—
Native Plant Community, Undetermined Class	Ecological	Faribault	Yes
Wet Prairie (Southern)	Ecological	Faribault	—
Calcareous Fen (Southwestern)	Ecological	Jackson	—
Colonial Waterbird Nesting Site	Zoological	Jackson	—
Dry Hill Prairie (Southern)	Ecological	Jackson	Yes
Mesic Prairie (Southern)	Ecological	Jackson	Yes
Native Plant Community, Undetermined Class	Ecological	Jackson	Yes
Southern Seepage Meadow/Carr	Ecological	Jackson	—
Wet Prairie (Southern)	Ecological	Jackson	—
Wet Seepage Prairie (Southern)	Ecological	Jackson	Yes
Calcareous Fen (Southeastern)	Ecological	Martin	—
Colonial Waterbird Nesting Site	Zoological	Martin	Yes
Dry Hill Prairie (Southern)	Ecological	Martin	Yes
Mesic Prairie (Southern)	Ecological	Jackson, Martin	Yes
Wet Prairie (Southern)	Ecological	Martin	Yes

Source: MnDNR

(a) *Impacts and Mitigation*

ITC Midwest does not foresee any impacts to the prairie bush clover or its habitat in the construction of the application alignment. ITC Midwest will coordinate with MnDNR and USFWS, as appropriate, to identify locations for prairie bush clover and other rare and unique natural resources along the application alignment of Route A.[7]

[7] On December 10, 2012, the MnDNR proposed amendments to Minnesota Rules Chapter 6134 to alter the designation of certain species in Minnesota. The lists and discussions contained herein refer only to the designations identified in the adopted rules and not those proposed by the MnDNR.

One remnant prairie type is known to exist along the application alignment, which can likely be spanned. ITC Midwest will coordinate with the MnDNR to ensure proper measures are in place to avoid any impacts to the identified remnant prairie type.

No threatened or endangered species have been recorded along the Route A 200-foot right-of-way. ITC Midwest will coordinate with MnDNR and other appropriate natural resource agencies to identify rare and unique resources along Route A and concerning any recommendations to minimize, mitigate, or avoid impacts to protected species.

6.9.2 Natural Resource Sites

ITC Midwest reviewed the Study Area and routes for various natural resource sites including MCBS sites, WMAs, Scientific and Natural Areas ("SNAs"), State parks, and WPAs. MCBS sites are identified by MnDNR through the collection and interpretation of baseline data on the distribution and ecology of rare plants, rare animals, native plant communities, and functional landscapes. WMAs have been established since 1951 and are managed by the MnDNR toward protecting and enhancing wildlife habitats and providing citizens with opportunities for hunting, fishing, and wildlife watching. SNAs are managed by the MnDNR and are open to the public for nature observation, and education, and other activities that do not disturb the natural conditions. WPAs, managed by the USFWS, provide areas for the preservation of wetlands and grasslands critical to waterfowl and other wildlife. The MCBS identifies certain land areas based on their biodiversity significance. These areas are assigned an outstanding, high, moderate, or below ranking based on the context and ecological function of the landscape, the presence of rare species populations, and the quality and rarity of native plant communities (MnDNR 2012j). Numerous MCBS sites have been recorded within the Study Area. These are primarily areas of remnant prairie occurring along rail lines or other areas not subject to agricultural activities, colonial bird nesting areas, and observations of species of interest such as loggerhead shrike (*Lanius ludovicianus*), upland sandpiper (*Bartramia longicauda*), and Henslow's sparrow (*Ammodramus henslowi*).

Route A crosses six MCBS sites (**Appendix D**). Only four are crossed by the application alignment: Des Moines 3, Pilot Grove Lake WPA, and Verona 15, and Verona 17. These four sites are crossed by the existing Lakefield to Border 161 kV Transmission Line. All, with the exception of Verona 17, have been given moderate biodiversity significance rankings. Verona 17 has been given a

minimum biodiversity significance ranking. The Pilot Grove Lake WPA is crossed by Route A along the existing 161 kV right-of-way. These MCBS sites could all likely be spanned during construction of the Project, except for the Pilot Grove Lake WPA, which currently contains six 161 kV structures. The MCBS sites are summarized in **Table 40.**

Table 40. MCBS Sites Crossed by Route A

Site Name	Crossed by Application Alignment	Crossed by Route A	Biodiversity Significance Ranking	Crossed by Existing Lakefield Junction to Border
Black Bridge Road North	—	Yes	Moderate	No
Des Moines 3	Yes	Yes	Moderate	Yes
Des Moines Woods West	—	Yes	Moderate	No
Pilot Grove Lake WPA	Yes	Yes	Moderate	Yes
Verona 15	Yes	Yes	Moderate	Yes
Verona 17	Yes	Yes	Below	Yes

Source: MnDNR

Route A does not cross any WMAs, SNAs, State Parks. A summary of environmental sites is provided in **Table 41**.

Table 41. Summary of Environmental Sites for Route A

Environmental Site Type	Total
Number of MCBS Biodiversity Sites Crossed by Route	6
Number of WMAs in Route A	0
Number of WMAs within one mile of Route A	6
Number of WMAs within Right-of-Way	0
WMA Temporary Impacts (acres)	0
Lengths (ft) of WMAs over 1,000 ft that are Within Right-of-Way	0
Number of Poles in WMAs	0
Number of SNAs within one mile of Route	0
Number of WPAs in Route A	1
Number of WPAs within one mile of Route	2
Number of WPAs within Right-of-Way	1
Number of State Parks within one mile of Route	0
USFWS WRPs within one mile Route	1
State-listed Species Observations within Study Area	35
Number of Observations of T & E Species within Route	0
Number of Observations of T & E Species within Right-of-Way	0
Number of Observations of T & E Species within Alignment	0
Number of Observations of T & E Species within one mile of Route	22
Number of T & E Species within one mile of Route	18

Source: MnDNR, MNDOT, ITC Midwest, NAIP

(a) *Impacts and Mitigation*

During alternative route development, MCBS and other data were reviewed and considered. When possible, alternative routes were developed to avoid MCBS and other important resources within the Study Area. If such resources could not be completely avoided, route alternatives were aligned to minimize the area of these resources crossed or potentially affected. MCBS sites that could not be avoided could generally be spanned, avoiding direct disturbance to habitats within these sites. For the MCBS site (Pilot Grove Lake WPA) that cannot be spanned, ITC Midwest will coordinate with MnDNR and USFWS to develop measures to minimize or mitigate impacts to MCBS resources. Such measures could include seasonal restrictions on construction activity, protection during construction, or special site restoration following construction. Overall, no adverse impacts to rare or unique resources, such as loss of habitat or disturbance, are anticipated. ITC Midwest will coordinate with the MnDNR, USFWS, and any other appropriate resource agencies to secure all required

permits or approvals for construction-related activities through any natural resource sites.

Pilot Grove Lake WPA is currently crossed by a 161 kV transmission line that would be rebuilt as a double-circuit 345 kV/161 kV line as part of Route A. The new line would be confined to the existing right-of-way for the 161 kV line, resulting in no additional WPA lands incorporated into transmission line right-of-way. The WPA is managed as non-woodland vegetation and wetland for waterfowl breeding habitat. The current vegetation and its management would remain the same following Project construction. Some disturbance to wildlife would likely occur during construction, depending on the timing and season. Following construction, disturbed areas would be restored to pre-construction conditions and no additional impacts to the area would be expected.

7.0 ENVIRONMENTAL INFORMATION: ASSOCIATED FACILITIES FOR ROUTE A AND ROUTE B AND CONNECTOR SEGMENTS

The Project includes construction of various associated facilities that are necessary for the operation of the Project. This section describes the environmental setting of the existing Lakefield Junction Substation that requires expansion, the existing Winnebago Junction Substation which would be decommissioned, the new Huntley Substation which would replace the Winnebago Junction Substation, and the area to be traversed by the reconfiguration of the 161 kV lines that currently terminate at Winnebago Junction Substation but would be relocated to connect with the new Huntley Substation.

ITC Midwest developed several connector segments along the Project, as discussed in **Section 5.4**. Three connector segments discussed in **Section 5.4** are locations where Route A and Route B share a location. Environmental information on the five other connector segments (two near Jackson Municipal Airport, one near Fox Lake, and two near the Pilot Grove Lake WPA) is provided in this chapter. Detailed maps of the connector segments are available in **Appendix D**. Detailed information on the impacts associated with the connector segments is available in **Appendix H**.

ITC Midwest reviewed environmental information in its analysis of the Study Area and compared the existing environmental conditions with the Project impacts associated with each segment of the Project. Detailed figures of the associated facilities are provided in **Appendix F**. Detailed information on the impacts associated with the 161 kV associated facilities is available in **Appendix H**. The following summarizes the existing conditions surrounding the associated facilities, potential project-related impacts associated with them, and appropriate mitigation measures to minimize these impacts.

7.1 LAKEFIELD JUNCTION SUBSTATION

The existing Lakefield Junction Substation will need to be expanded to accommodate this Project. ITC Midwest intends to acquire approximately three acres, which it believes is a sufficient size to accommodate the necessary additional substation equipment for the Project and to provide a buffer between neighboring landowners.

7.1.1 Description of Environmental Setting

The Lakefield Junction Substation is located in Jackson County, Section 3 of Hunter Township. It is within the Western Corn Belt Plains ecoregion of Minnesota as defined by the USGS. This ecoregion is typically flat with gently rolling topography, with an average elevation of 1,500 feet above sea level, and averages 24 to 36 inches of precipitation annually. Agricultural land accounts for the vast majority of this ecoregion, with typical crops including corn, soybeans, wheat, and alfalfa. The USGS National Land Cover Database ("NLCD") lists two land cover types (Developed, Medium Intensity and Cultivated Crops) for the area around Lakefield Junction Substation. The substation is surrounded on all sides, with the exception of the access driveway, by cropland.

The Lakefield Junction Substation area is dominated by Canisteo, Clarion, Crippin, and Nicollet soil units (**Appendix M**). These soil units are typically considered to be loamy or a clay loam, are typically used for agricultural purposes, are moderately well drained to poorly drained, and are considered prime farmland according to the NRCS.

The Lakefield Junction Substation area lies within the Lower Mississippi River Basin watershed. The nearest perennial waterway is the Des Moines River, approximately five miles east of the Lakefield Junction Substation. There are various unnamed tributaries/drainages in addition to three nearby lakes (Boot, Heron, and Clear). The Des Moines River and all three lakes are listed as MnDNR PWIs.

Commonly associated agricultural vegetation of southern Minnesota includes corn, soybean, alfalfa, and winter wheat. Typical prairie vegetation of southern Minnesota includes big bluestem, little bluestem, indiangrass, sideoats grama, prairie june-grass, and sun sedge.

According to the MnDNR's NHIS, no federally- or State-listed threatened or endangered species are known to occur within two miles of the Lakefield Junction Substation expansion area (MnDNR 2012i). The nearest sighting of a State-listed species occurred over two miles away (Henslow's sparrow). In addition, no State-listed species of concern are known to occur within the Lakefield Junction Substation study area. According to USFWS, one federally-listed threatened species, prairie bush-clover may occur within Jackson County but it has not been recorded within two miles of the substation. The Lakefield Junction Substation is approximately 1.5 miles west of the Toe WMA, an area

containing a complex of wetlands and upland areas where upland sandpiper have been recorded. Based on NWI maps, no wetlands occur in the Lakefield Junction Substation area. The nearest wetland (a freshwater emergent wetland approximately 0.2 acres in size) is located approximately 0.5 mile southwest of the Lakefield Junction Substation expansion area (**Appendix D**, **Appendix F**, and **Appendix O**).

Although generally a rural agricultural area, the Lakefield Junction Substation lies on the western edge of a commercial wind farm. It is bounded by 820th Street to the north, 460th Avenue to the east, 810th Street to the south, and 480th Street to the east. All of these county roads, primarily gravel surface around the substation, contain numerous rural residences, farmsteads, and agriculture-related facilities such as barns, shops, and grain bins. Numerous existing transmission lines connect with the Lakefield Substation, including 345 kV, 161 kV and 69 kV lines. These include the existing 161 kV Fox Lake – Lakefield Junction line segment of the Lakefield to Border 161 kV Transmission Line under consideration for double-circuiting with the proposed new 345 kV line for Route A.

7.1.2 Human Settlement

The human settlement specific to Jackson County discussed in **Section 6.5** would generally be applicable to the proposed Lakefield Junction Substation expansion. There are a number of structures within 0.5 mile of the expansion area, with the closest structures approximately 780 feet northwest of the Lakefield Junction Substation. The structures within 0.5 mile are identified in **Table 42. Appendix F** shows residences near the Lakefield Junction Substation.

Table 42. Structures Located within 0.5 Mile of the Lakefield Junction Substation

Structure	Approximate Proximity to Lakefield Junction Substation
Outbuilding	780 feet from NW corner
Outbuilding	780 feet from NW corner
Outbuilding	890 feet from NW corner
Outbuilding	950 feet from NW corner
House	980 feet from NW corner
Wind Turbine	1,030 feet from Expanded SE corner
Outbuilding	1,160 feet from SW corner
Outbuilding	1,400 feet from NW corner
Outbuilding	1,400 feet from NW corner
House	1,420 feet from Expanded NE corner
House	1,440 feet from NW corner
Outbuilding	1,440 feet from NW corner
Outbuilding	1,500 feet from NW corner
Outbuilding	1,530 feet from Expanded NE corner
Outbuilding	1,570 feet from NW corner
Outbuilding	1,910 feet from Expanded NE corner
Wind Turbine	1,920 feet from Expanded NE corner
Wind Turbine	1,940 feet from SW corner
Outbuilding	2,000 feet from NW corner
Outbuilding	2,050 feet from Expanded NE corner
Outbuilding	2,070 feet from Expanded NE corner
Outbuilding	2,070 feet from NW corner
Outbuilding	2,110 feet from NW corner
House	2,140 feet from Expanded NE corner
Grain Bins	2,180 feet from Expanded NE corner
Wind Turbine	2,220 feet from Expanded NE
Wind Turbine	2,230 feet from SW corner
Grain Bins	2,240 feet from SW corner
Outbuilding	2,260 feet from SW corner
Outbuilding	2,290 feet from SW corner
Wind Turbine	2,400 feet from NW corner
House	2,460 feet from SW corner

7.1.3 Substation Noise

Substations generate noise due to a phenomenon known as magnetostriction. Magnetostriction is simply the magnetization and return to normal of the metal inside a transformer under an alternating voltage and current. This process causes expansion and contraction of the metal, which leads to vibrations that are perceived as audible noise. Transformers also generally have cooling fans or pumps to keep the units at the proper operating temperature. The cooling equipment generates noise in addition to the magnetostriction. Most of the other equipment at a substation is either silent, or generates minimal noise in comparison to the transformers.

The Project will connect to the existing Lakefield Junction Substation. This substation currently contains transformers and other electrical equipment. A new 345 kV bay, using one position, and a future bay position to allow for three future connections will be installed as part of the Project. No additional transformers will be added at the Lakefield Substation as part of the proposed substation expansion. No changes in noise levels around the substation will occur. Residences in the vicinity of the substation, the closest of which is located 980 feet from the northeast corner of the expanded Lakefield Junction Substation, would not experience any changes in noise levels from the operation of the expanded substation.

7.1.4 Land Based Economies

The land based economies specific to Jackson County discussed in **Section 6.6** would generally be applicable to the proposed Lakefield Junction Substation expansion.

7.1.5 Archaeological and Historic Resources

Background research on known cultural resources in the Study Area was conducted in July 2012 in the SHPO Archaeology Inventory and the Standing Structures Inventory in St. Paul, Minnesota. This initial investigation was based on the Study Area for the Project, within which alternative routes would be developed. In January 2013, the data were further analyzed based on specific routes retained for further analysis and additional research was conducted in public online records. A buffer of three miles was investigated at the Lakefield Junction Substation. Archaeological sites and historic properties and resources were included in this analysis.

There are 43 NRHP listed sites, structures, properties, or districts in Jackson County. Historic properties of various types may be designated as location-restricted, for reasons of preservation, protection, or privacy.

The Lakefield Junction Substation is an existing substation located approximately one mile east of the City of Lakefield in Jackson County, Minnesota. No historic architectural structures are recorded within the three-mile buffer previously identified around the substation site. Immanuel Cemetery, a cultural resource, is located approximately 2.25 miles northwest of the Lakefield Junction Substation. There are also no cultural resources recorded within 1,000 feet of the Lakefield Junction Substation. One recorded archaeological site is located on the boundary of the three-mile buffer. A summary of Archaeological Resources is available in **Table 43**.

Table 43. Archaeological Resources Near the Lakefield Junction Substation

Site Type	Within 3-mile Buffer	Within 1,000 feet	Eligible or Listed
Lithic Scatter	1	0	0
Total	1	0	0

Source: SHPO Archaeology Inventory and Standing Structures Inventory

7.1.6 Natural Environment

As defined by the USGS, the Lakefield Junction Substation is located in the Upper Mississippi – Region 7 water resource region and the Des Moines Headwaters (HUC 07100001) watershed.

No FEMA-designated 100-year floodplains, intermittent or perennial streams (including PWI waters and 303(d)-listed waters), navigable waters, trout streams, PWI and non-PWI lakes, State-protected calcareous fens, or NWI and PWI wetlands are located within the proposed Lakefield Junction Substation expansion area. Additionally, the expansion area is not located on any USDA WRP or USFWS WPA lands.

Of the groundwater provinces in the State of Minnesota, the Lakefield Junction Substation and proposed expansion area is located in the Western Province. According to the County Well Index, managed by the Minnesota Department of Health, no groundwater wells or wellhead protection areas are located in the

proposed substation expansion area. Details regarding the Western Province and the County Well Index were previously provided in **Section 6.8.6**.

(a) *Flora*

The general flora description previously provided in **Section 6.8.8** would be applicable to the proposed Lakefield Junction Substation expansion area. Based on aerial photography and USGS land cover data, the land parcel to be used for the expansion area is currently used for crop production. The substation site is not located on any MCBS or RIM lands.

(b) *Fauna*

The general fauna description previously provided in **Section 6.8.9** would be applicable to the proposed Lakefield Junction Substation expansion area. This area is not located on any USFWS- or MnDNR-protected game refuge, WPAs, or WMA lands.

7.1.7 Rare and Unique Natural Resources

The protected species discussed in **Section 6.9** would be applicable to the proposed Lakefield Junction Substation expansion. No federally- or State-listed threatened or endangered species are known to occur within two miles of the Lakefield Junction Substation. The nearest sighting of a State-listed species was recorded over two miles away (Henslow's Sparrow, endangered).

7.1.8 Impacts and Mitigation

The primary impact from expansion of the Lakefield Junction Substation would be the conversion of three acres of cropland to substation. The expanded substation area that would be graveled and contain equipment and the additional area fenced around the substation. As the area is generally flat and contains no established drainages, wetlands, or floodplains, erosion during site preparation and grading is not anticipated. Following site grading and placement of gravel, soil disturbance and exposure would generally cease, minimizing any potential for erosion. No tree clearing would be required for substation expansion and no residences or other structures would be affected. The larger substation would slightly alter the viewshed of the area but not significantly as the viewshed is currently dominated by numerous transmission lines, communications towers and wind turbines.

During construction of a new substation, avoidance is the primary form of mitigation and is often developed during the Project planning process. Avoidance of resources, historic or prehistoric, may include minor adjustments to the Project design. Certain areas may also be identified as environmentally sensitive areas to be left undisturbed by the Project. At this time, no mitigation measures are anticipated to be required for the expansion of the Lakefield Junction Substation related to wetlands, rare and unique natural resources, or architectural, archaeological, historic, or cultural resources. Construction of the Lakefield Junction Substation expansion would not proceed until a SWPPP was developed and an NPDES permit was obtained from the MPCA. In the event that cultural resources would be discovered during construction, activity on the site would be halted and the SHPO and its State Archaeologist would be notified. Appropriate measures would be implemented to protect any discovered resources before construction would proceed at the site. If any unmarked burials, human remains, or grave good are discovered during expansion of the Lakefield Junction Substation, the State Archaeologist would be notified before any further construction activities would be allowed to proceed on the site.

7.2 HUNTLEY SUBSTATION

ITC Midwest proposes to construct a new substation approximately 1.3 miles south of its existing Winnebago Junction Substation to accommodate the necessary facilities for the Project. Although an expansion of the Winnebago Junction Substation was initially contemplated for the Project, after completing further engineering and land use analysis, ITC Midwest determined that expansion at this location was not feasible. The existing Winnebago Junction Substation is constrained due to its proximity to the Blue Earth River and US Highway 169. In response to these constraints, ITC Midwest concluded that a new site would be necessary to accommodate the additional 345 kV equipment for the proposed Project. Additionally, the new Huntley Substation would be constructed to accommodate 161 kV and 69 kV facilities from the Winnebago Junction Substation for the local electrical system in the area. In December 2012, ITC Midwest purchased a parcel of approximately 40 acres that it proposes to use for the Huntley Substation.

7.2.1 Description of Environmental Setting

The proposed Huntley Substation is located in Faribault County, Section 14 of Verona Township. This area is situated within the Western Corn Belt Plains ecoregion of Minnesota as defined by the USGS. This ecoregion is typically flat

with gently rolling topography, with an average elevation of 1,500 feet above sea level, and averages 24 to 36 inches of precipitation annually. Agricultural land accounts for the vast majority of this ecoregion, with typical crops including corn, soybeans, wheat, and alfalfa. The USGS NLCD lists two land cover types (Developed, Medium Intensity and Cultivated Crops) for the proposed Huntley Substation area. The site of the proposed Huntley Substation is currently a cropfield. The existing Lakefield to Border 161 kV Transmission Line extends along the substation site, un-maintained portions of 160th Street bound the south side of the substation, and a dirt and sand operation is located to the east. The terrain slopes away from the site to the west and north, with riparian woodland and the Blue Earth River located to the east. Cropland and Blue Earth River floodplain occur to the north.

The proposed Huntley Substation area is dominated by Shorewood and Minnetonka soil units (**Appendix M**). These soils units are typically considered to be a silty clay loam, are typically used for agricultural purposes, are moderately well drained to poorly drained, and are considered prime farmland according to the NRCS.

The proposed Huntley Substation lies within the Minnesota River Basin watershed. The nearest perennial waterways are the Blue Earth River and South Creek, approximately 260 feet southeast and 0.5 mile south respectively, of the proposed Huntley Substation. Both the Blue Earth River and South Creek are listed as PWIs.

Commonly associated agricultural vegetation of southern Minnesota includes corn, soybean, alfalfa, and winter wheat. Typical prairie vegetation of southern Minnesota includes big bluestem, little bluestem, indiangrass, sideoats grama, prairie june-grass, and sun sedge.

According to the MnDNR's NHIS, no federally- or State-listed threatened or endangered species are known to occur within one mile of the proposed Huntley Substation (MnDNR 2012i). In addition, no State-listed species of concern are known to occur within the proposed Huntley Substation site. The nearest State-listed species occurs within two miles of the proposed Huntley Substation site. NHIS lists two State-listed threatened species, round pigtoe (*Pleurobema sintoxia*) and mucket (*Actinonaias ligamentina*) mussels and three State-listed mussel species of concern, fluted-shell (*Lasmigona costata*), creek heelsplitter (*Lasmigona compressa*), and black sandshell (*Ligumia recta*) are known to occur between one and two miles from the substation. No federally protected species are noted as

potentially occurring in Faribault County according to USFWS. Based on NWI maps, no wetlands occur at the proposed Huntley Substation site. Most wetlands in the area are associated with the nearby streams and rivers. The nearest wetland is located approximately 200 feet southeast of the Huntley Substation site. It is associated with the Blue Earth River and is classified as a PFO wetland.

The location of the proposed Huntley Substation near the meandering Blue Earth River and associated floodplain make this area more inaccessible than other areas in the region as a result of few roads and limited bridges over the river. Most of the lands in the vicinity of the substation are farmed with wooded riparian areas adjacent to the river and creek. Only three residences and a hunting cabin occur within 0.5 mile of the substation site, with two of the residences located on the opposite side of the Blue Earth River.

7.2.2 Human Settlement

The human settlement information specific to Faribault County discussed in **Section 6.5** would generally be applicable to the proposed Huntley Substation.

There are a number of structures located within 0.5 mile of the Huntley Substation site. These structures are summarized in **Table 44**. The distances listed in the table were measured from the parcel boundary as no design layout for the substation is yet available. It is likely, therefore, that the structures will be located a greater distance from the substation as only nine acres of the 40-acre parcel will be used for the Huntley Substation. **Appendix F** shows residences near the Huntley Substation site.

Table 44. Structures Located Within 0.5 Mile of the Huntley Substation

Structure	Approximate Proximity to Huntley Substation Site
Hunting Cabin	460 feet from SW corner
Outbuilding	1,560 feet from SE corner
House	1,650 feet from SE corner
House	2,080 feet from NW corner
Outbuilding	2,160 feet from NW corner
Outbuilding	2,190 feet from NW corner
Outbuilding	2,240 feet from SE corner
Outbuilding	2,330 feet from SE corner
House	2,420 feet from SE corner
Outbuilding	2,610 feet from SW corner

*Several of these structures are also included in the discussion in **Section 7.3.5** regarding interconnections between Winnebago Junction Substation and the new Huntley Substation

7.2.3 Substation Noise

The construction of the Project will require one new transformer to be installed at the new Huntley Substation. The new transformer and associated equipment would create a new noise source for the surrounding area. To estimate these new noise levels, acoustical modeling was performed using case data and methodology prescribed in ISO 9613-2, Attenuation of sound during propagation outdoors – Part 2: General method of calculation (ISO 1996).

For the Project, ITC Midwest proposes to install a 345 kV/161 kV transformer with a rating of 450 megavolt-ampere ("MVA"). The sound pressure profile for the transformer was calculated using the equations from the Electric Power Plan Environmental Noise Guide such that the transformer would, conservatively, emit a sound pressure level of 86 dBA per the methodology listed in IEEE C57.12.90-1999, Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers (EEI 1984). The expected sound power profile created and modeled for the transformer is shown below in **Table 45**. Transformer noise calculations are generally conservative, often producing numbers higher than actual noise conditions. It is likely that the normal operation of the transformer at the Huntley Substation will result in noise levels lower than those in calculations.

Although two 161 kV/69 kV transformers will also be installed at the Huntley Substation, the 345 kV/161 kV transformer would be the dominant noise source at the substation. Noise generated by the 161 kV/69 kV transformers was considered, but calculations would not result in increased noise levels above those generated by the 345 kV/161 kV transformer.

Table 45. Expected Transformer Sound Profile

Source	Maximum Transformer Rating (MVA)	Transformer Sound Power Level (Lw) at Octave Band Frequency (Hz) (dB)									Overall Sound Level (dBA)
		31.5	63	125	250	500	1000	2000	4000	8000	
Transformer	450	103.2	109.2	111.2	106.2	106.2	100.2	95.2	90.2	83.2	106.6

Noise levels were modeled for the closest residences and also for the nearest structure, a hunting cabin. The modeled sound pressure levels for each receptor are shown in **Table 46** along with the applicable MPCA nighttime noise limits, which are the most restrictive. The distances provided are from the boundaries of the 40-acre Huntley Substation site because ITC Midwest has not determined where the nine-acre fenced area will be located on the parcel. Distances between the receivers and the transformer will likely be greater than those estimated because the transformer will be situated within the nine-acre fenced substation that will be placed on the 40-acre parcel.

Table 46. Expected Sound Levels Assuming Maximum Transformer Noise Output at Huntley Substation

Receiver	NAC	Sound Pressure Level (dBA)	Limit L_{50}/L_{10} (dBA)
Hunting cabin at 460 feet	3	51.1	75/80
Residence at 1,650 feet	1	34.7	50/55
Residence at 2,080 feet	1	34.5	50/55
Residence at 2,420 feet	1	34.2	50/55

The model-predicted sound levels are L_{eq} (1-hour equivalent) values. Due to the nature of transformer noise, the L_{eq} value is equivalent to the L_{50} and L_{10} sound levels since the sound from a transformer is constant and does not change with time. The noise levels emitted from the operation of the transformer at the Huntley Substation are predicted not to exceed the MPCA Noise Limits for

applicable NACs. At the time of this Application, the transformer for the Huntley Substation has not been ordered, so all calculations have been performed based on the MVA rating. When ITC Midwest orders transformers for this substation, ITC Midwest will require that the transformers be tested for audible noise at the factory to ensure that actual audible noise will be within the MPCA standards.

7.2.4 Land Based Economies

The land based economies specific to Faribault County discussed in **Section 6.6** would generally be applicable to the proposed Huntley Substation site. A portion of the site is agricultural and a portion was formerly used for mining activities. After construction of the Huntley Substation is complete, if the owned site is approved, ITC Midwest intends to lease out the unfenced area for farming activities.

7.2.5 Archaeological and Historic Resources

Background research on known cultural resources in the area of the Huntley Substation was conducted in July 2012 in the SHPO Archaeology Inventory and in the Standing Structures Inventory in St. Paul, Minnesota. A buffer of three miles was investigated around the Huntley Substation site. Archaeological sites and historic structures or properties were included in the analysis.

There are 13 NRHP-listed sites, structures, properties, or districts in Faribault County. Historic properties of various types may be designated as location-restricted, for reasons of preservation, protection, or privacy.

An archaeological district is located over one mile from the Huntley Substation. The whole district lies within three miles of the proposed Huntley Substation site. The discussion related to regulations by State and federal agencies provided in **Section 6.7** are generally applicable to the proposed Huntley Substation site.

The proposed Huntley Substation is to be constructed in Faribault County, approximately 2.8 miles south of Winnebago, Minnesota. There are 41 archaeological resources within three miles of the proposed substation. These are summarized in **Table 47**. No known archaeological or historic resources are known to exist at the Huntley Substation site.

Table 47. Archaeological Resources Within Three Miles of the Huntley Substation Site

Site Type	Within 3-mile Buffer	Within 1,000 feet	Eligible or Listed
NRHP District	1	0	1
Artifact Scatter	22	1	8
Artifact Scatter & Cemetery	1	0	1
Lithic Scatter	14	1	0
Single Artifact	1	0	0
Type-no data	1	0	0
Historic Data - Mill	1	0	0
Total	41	2	10

Source: SHPO Archaeology Inventory and Standing Structures Inventory

Three historic architectural resources are located within the three-mile buffer around the proposed Huntley Substation Site: two bridges and a school. The unevaluated historic school is located approximately 0.8 mile northeast of the Huntley Substation site. A review was conducted in 1979 by the Winnebago Historical Society. At that time, the building was in good condition and was used as a residence. The Inventory Form contains no other information pertaining to the date the school was constructed, historical uses, or local significance.

There are two bridges within three miles of the Huntley Substation: Bridge Number 4752, on County Highway 10, approximately two miles to the northwest of the Huntley Substation Site; and Bridge Number L5293 on Township Road 92, approximately 0.8 mile to the southeast of the Huntley Substation Site. A review of Bridge No. 4752 was conducted in 1979 by the Winnebago Historical Society. At that time, the bridge was in good condition and was in use. However, the bridge has not been evaluated for NRHP. This bridge was constructed in 1923. The Minnesota Historic Properties Inventory Form contains no other information pertaining to the construction, architecture, or significance of this bridge.

Bridge No. L5293 was reviewed by the Faribault County Historical Society in 1979. It was in good/fair condition and was in use at that time. However, the bridge has not been evaluated for NRHP. In 1978, the MnDOT assessed the bridge for a variety of conditions. This assessment indicated that the steel H-truss bridge, with a 90 foot span, was constructed in 1900. The timber deck was

assessed to be 94 percent sound at that time. These forms contain no other information pertaining to the significance of this bridge.

A summary of the historic architectural resources in this area are provided in **Table 48**.

Table 48. Historic Architectural Resources Within Three Miles of the Huntley Substation Site

Resource Type	Within 3-mile Buffer	Within 1,000 feet	Eligible or Listed
Bridge	2	0	0
School	1	0	0
Total	3	0	0

Source: SHPO Archaeology Inventory and Standing Structures Inventory

7.2.6 Natural Environment

As defined by the USGS, the proposed Huntley Substation is located in the Upper Mississippi – Region 7 water resource region and the Blue Earth (HUC 07020009) watershed.

No intermittent or perennial streams (including PWI waters and 303(d)-listed waters), navigable waters, trout streams, PWI and non-PWI lakes, State-protected calcareous fens, or NWI and PWI wetlands are located on the proposed Huntley Substation site (**Appendix D** and **Appendix F**). Although the Huntley Substation Site does not lie within the Blue Earth River 100-year floodplain (**Appendix F**), the northwest corner of the site does border the 100-year floodplain of the Blue Earth River. Additionally, the proposed site is not located on any USDA Wetland Reserve Program or WPA lands.

The proposed Huntley Substation is located in the South-Central groundwater province. According to the County Well Index, no groundwater wells or wellhead protection areas are located on the substation site. Details regarding the South-Central Province and the County Well Index were previously provided in **Section 6.8.6**.

(a) *Flora*

The general flora description previously provided in **Section 6.8.8** would be applicable to the proposed Huntley Substation. Based on aerial photography,

USGS land cover data, and site investigation, the land parcel to be used for the substation is currently used for crop production. ITC Midwest intends to rent out the site for continued crop production until the Project is constructed. The substation site is not located on any MCBS lands; however, the northwest corner of the site does border a RIM land parcel.

(b) *Fauna*

The general fauna description previously provided in **Section 6.8.9** would be applicable to the proposed Huntley Substation site. This area is not located on any USFWS- or MnDNR-protected game refuges, WPAs, or WMA lands.

7.2.7 Rare and Unique Natural Resources

The proposed Huntley Substation would be located entirely in Faribault County which is not known to contain any federally-listed threatened or endangered species. According to the MnDNR's NHIS, no federally- or State-listed threatened or endangered species or State-listed species of special concern are known to occur within one mile of the proposed Huntley Substation site.

7.2.8 Impacts and Mitigation

The impacts and mitigation measures discussed in **Section 7.1.8** for the Lakefield Junction Substation expansion would generally be the same as those for the new Huntley Substation. The primary impact from substation construction would be the conversion of cropland to substation property. A total of approximately nine acres would be taken out of agricultural production, including the new substation area that would be graded and covered with rock and would contain equipment within the area fenced around the substation. ITC Midwest intends to allow the remaining tillable acres of the parcel to be farmed after construction of the Project is completed. As the area is generally flat and contains no established drainages, wetlands, or floodplains, erosion during site preparation and grading is not anticipated. BMPs will be implemented to ensure there is no runoff from the site. Following site grading and placement of gravel, soil disturbance and exposure would generally cease, minimizing any potential for erosion. No tree clearing on the site would be required.

The new substation would slightly alter the viewshed of the area but not significantly as the viewshed currently contains transmission lines and is a considerable distance from any residences, all of which are screened by

vegetation from a view of the substation. Some improvements to 160th Street, which accesses the substation, may be necessary. The street generally ends at the substation location where it is a minimum maintenance road. It does not access any residences but would likely need to be improved to accommodate heavy truck traffic and delivery of equipment. ITC Midwest will work with the township to obtain permissions necessary to upgrade 160th St.

During construction of a new substation, avoidance is the primary form of mitigation and is often developed during the Project planning process. Avoidance of resources, historic or prehistoric, may include minor adjustments to the Project design. Certain areas may also be identified as environmentally sensitive areas to be left undisturbed by the Project. At this time, no mitigation measures are anticipated to be required for the construction of the Huntley Substation related to wetlands, rare and unique natural resources, or architectural, archaeological, historic, or cultural resources. Construction of the Huntley Substation would not proceed until a SWPPP was developed and an NPDES permit was obtained from the MPCA. In the event that cultural resources would be discovered during construction, activity on the site would be halted and the SHPO and its State Archaeologist would be notified. Appropriate measures would be implemented to protect any discovered resources before construction would proceed at the site. If any unmarked burials, human remains, or grave good are discovered during construction of the Huntley Substation, the State Archaeologist would be notified before any further construction activities would be allowed to proceed on the site.

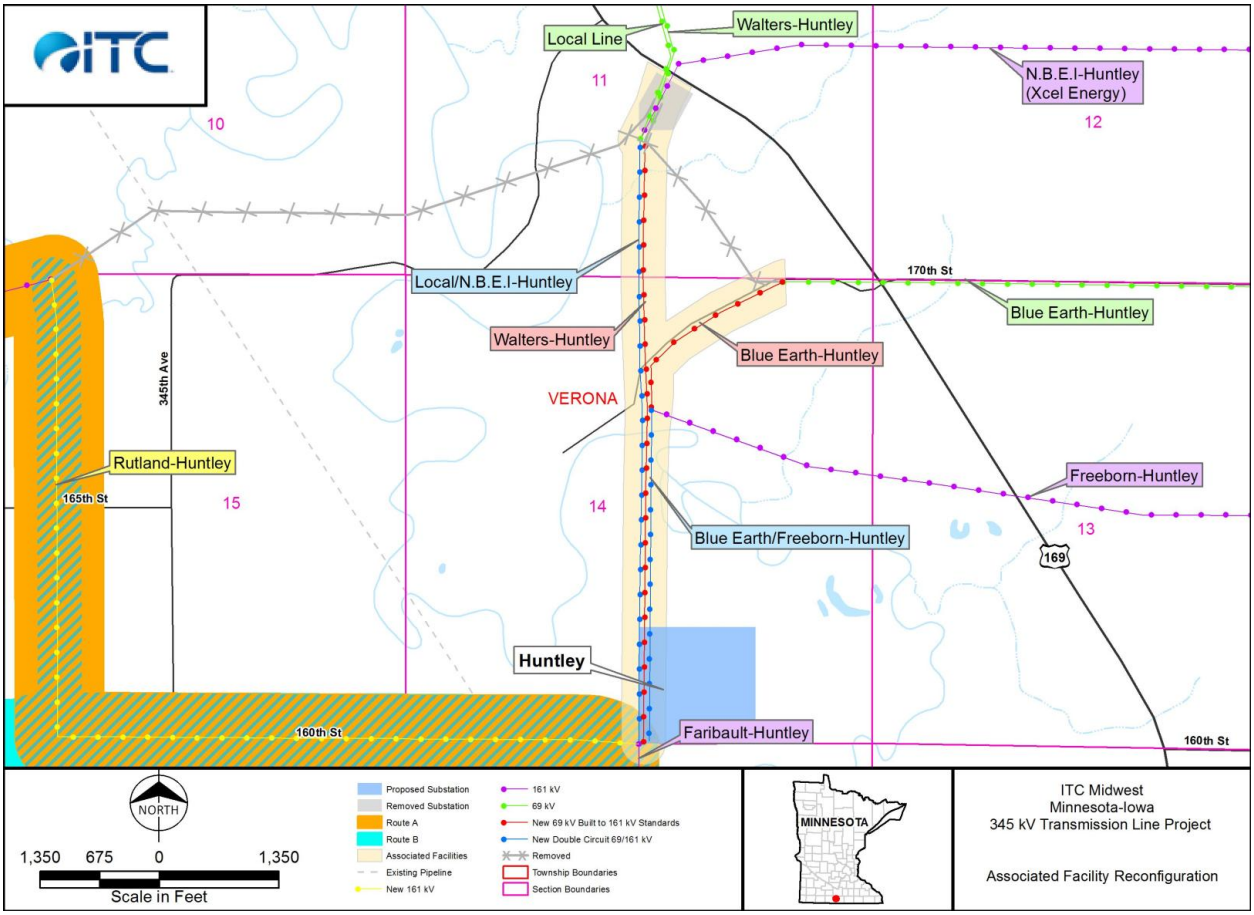
7.3 161 kV INTERCONNECTIONS AT HUNTLEY SUBSTATION

ITC Midwest proposes to reconfigure the terminations of the 161 kV and 69 kV transmission lines at the Winnebago Junction Substation to the Huntley Substation. The Winnebago Junction Substation is due for major upgrades, including a new transformer because of the age of the existing equipment. As a result of this requirement for major re-construction and limited space to expand the Winnebago Junction Substation to accommodate the new 345 kV equipment, ITC Midwest determined it would be appropriate to effectively move the Winnebago Junction Substation equipment to the Huntley Substation, rather than having two substations only 1.3 miles apart.

The new Huntley Substation would be constructed as a 345/161/69 kV substation and the Winnebago Junction Substation decommissioned. The 161 kV and 69 kV systems would still need to be maintained. These lines would be

reconfigured to terminate into the Huntley Substation, rather than the Winnebago Junction Substation (**Figure 34**). The portions of the Blue Earth and Walters 69 kV lines that need to be reconfigured for this new termination point are proposed to be constructed to 161 kV standards but operated at 69 kV, as indicated on the map.

Figure 34. Proposed Reconfiguration of Transmission Lines Near the Huntley Substation



Lines approaching the Winnebago Junction Substation from the south would end at the Huntley Substation. Lines connecting to Winnebago Junction Substation from the north would extend south, primarily along the existing rights-of-way no longer needed by the lines originating from the south that would terminate at the Huntley Substation. Several existing lines would be co-located to reduce the need for additional right-of-way.

This change to the overall system in this area would require that the 161 kV and 69 kV transmission lines that currently terminate at the Winnebago Junction

Substation would need to be reconfigured to terminate at the Huntley Substation. Detailed figures showing the reconfiguration of the existing lines are provided in **Appendix F**.

Along 170th Street, a right-of-way of 150 feet would be needed for the Blue Earth line. South of 170th Street to the Huntley Substation, the right-of-way currently occupied by the Faribault – Winnebago Junction 161 kV line would be expanded to 350 feet for the parallel construction of the Local/N.B.E.I., Walters, and Blue Earth/Freeborn lines. North of 170th Street, the existing right-of-way would be expanded to 200 feet for the parallel construction of the Local/N.B.E.I. and Walters lines.

7.3.1 Description of Environmental Setting

The Huntley Substation site is wholly in the Minnesota River Prairie Subsection, where loamy ground moraine is the dominant landform and the topography is level to gently rolling. The area is heavily influenced by the presence of the Blue Earth River which meanders south through Faribault County. While much of this area is farmed, wooded riparian corridors occur along the river and its larger tributaries and in adjacent floodplain areas. Rural residences and farmsteads are scattered throughout the area with residences generally concentrated along U.S. Highway 169.

7.3.2 Human Settlement

The human settlement information specific to Faribault County discussed in **Section 6.5** and further for the Huntley Substation in **Section 7.2.2** would generally be applicable to the 161 kV interconnections at the Huntley Substation. Numerous cultural resources sites are known from the area between and around the Winnebago Junction and Huntley substations. However, none of these sites are crossed by any of the existing lines or the reconfiguration required for the project. **Appendix F** shows the residences near these associated facilities.

The structures located near the reconfigured lines are summarized in **Table 49**.

Table 49. Structures Located Within 0.5 Mile of the Reconfigured Transmission Lines Between the Winnebago Junction and Huntley Substations

Structure	Approximate Proximity to Lines*
House	320 feet from line
Hunting Cabin	460 feet from line
House	920 feet from line
Outbuilding	920 feet from line
Outbuilding	920 feet from line
Outbuilding	940 feet from line
Outbuilding	970 feet from line
Outbuilding	1,090 feet from line
Hog Barn	1,470 feet from line
Hog Barn	1,520 feet from line
Hog Barn	1,540 feet from line
Outbuilding	1,540 feet from line
Outbuilding	1,550 feet from line
Outbuilding	1,620 feet from line
House	1,660 feet from line
House	2,290 feet from line

*Several of these structures are also included in the discussion in **Section 7.2.5** related to the new Huntley Substation site

7.3.3 161 kV Associated Facilities Noise

The area proposed for the reconfiguration of the 161 kV associated facilities is currently used by 161 kV transmission lines, with the exception of the 2.25-mile segments of Route A and Route B where Rutland – Winnebago Junction is proposed to be co-located with the 345 kV transmission facilities. The calculated maximum noise levels for the 161 kV associated facilities are summarized in **Section 6.5.4.**

7.3.4 Land Based Economies

The land based economies information specific to Faribault County discussed in **Section 6.6** and for the Huntley Substation in **Section 7.2.4** would generally be applicable to the 161 kV interconnections at the Huntley Substation.

7.3.5 Archaeological and Historic Resources

Background research on known cultural resources in the area of the Huntley Substation was conducted in July 2012 in the SHPO Archaeology Inventory and in the Standing Structures Inventory in St. Paul, Minnesota. A buffer of three miles was investigated for the Huntley Substation site. Archaeological sites and historic structures or properties were included in the analysis. The data were further analyzed in January 2013 based on specific routes and additional research was conducted in public online records.

There is one archaeological site located within 1,000 feet of the proposed associated facility transmission lines shown on **Figure 34**. No cultural resources are recorded within 200 feet of any of the routes in the interconnection area. No historic cemeteries are recorded within one mile of the routes in the interconnection area. Archaeological and historic resources within 2,000 feet of the routes are summarized in **Table 50**.

Table 50. Archaeological and Historic Resources Within 2,000 Feet of the Routes for the 161 kV Associated Facilities

Site Type	Within 1,000 feet	Within 2,000 feet	Eligible or Listed
Archaeological District	0	0	0
Lithic Scatter	0	0	0
Artifact Scatter	1	0	0
Total	1	0	0

Source: SHPO Archaeology Inventory and Standing Structures Inventory

7.3.6 Natural Environment

As defined by the USGS, those transmission lines affected by the proposed Winnebago Junction Substation reconfiguration are located in the Upper Mississippi – Region 7 water resource region and the Blue Earth (HUC 07020009) watershed.

Of the 161 kV transmission lines to be reconfigured as part of the Project, only the Rutland – Winnebago Junction line crosses any NWI wetlands (**Appendix F**). This line currently crosses three PEM wetlands. After reconfiguration is complete, no NWI wetlands are anticipated to be crossed by any of the 161 kV

associated facilities. No PWI wetlands are currently crossed and none would be crossed after reconfiguration of the 161 kV associated facilities.

The proposed reconfiguration would not result in any crossings of PWI lakes and wetlands, navigable waters, trout streams, or State-protected calcareous fens. Additionally, the proposed transmission line reconfiguration into Huntley Substation would not create any new crossings of any USDA Wetland Reserve Program lands, USFWS WPAs, or MnDNR WMAs.

Those transmission lines affected by the Winnebago Junction Substation reconfiguration are located in the South-Central groundwater province. According to the County Well Index, no groundwater wells or wellhead protection areas would be affected by the reconfiguration. Details regarding the South-Central Province and the County Well Index were previously provided in **Section 6.8.6**.

(a) *Flora*

The general flora description previously provided in **Section 6.8.8** and in **Section 7.2.6** would be applicable to the area currently crossed by the transmission lines terminating at the Winnebago Junction Substation. Reconfiguration of the existing lines is anticipated to require only minimal additional woodland clearing as most of the right-of-way is either already cleared for the existing 161 kV transmission lines or cropland. Potential impacts during construction may include disruption to farming activities and crop damage. Construction would occur primarily along existing right-of-ways.

(b) *Fauna*

The general fauna description previously provided in **Section 6.8.9** and for the Huntley Substation in **Section 7.2.6** would be applicable to the area currently crossed by the transmission lines terminating at the Winnebago Junction Substation. The rerouting of these transmission lines from the Winnebago Junction Substation to the Huntley Substation would not eliminate any existing crossings or cause any new crossings of any USFWS- or MnDNR-protected game refuges, WPAs, or WMA lands.

7.3.7 Rare and Unique Natural Resources

The protected species discussed in **Section 6.9** and **Section 7.2.7** would be applicable to the proposed Winnebago Junction Substation reconfiguration. No

rare or unique natural resources are known to occur between the Winnebago Junction and Huntley substations. No federally-listed species occur within Faribault County. The nearest known occurrence of a State-listed species was over 900 feet to the southwest of the Winnebago Junction Substation in the Blue Earth River. Black sandshell (special concern), mucket (threatened), fluted-shell (special concern), round pigtoe (threatened), and creek heelsplitter (special concern) have been reported in this portion of the river.

7.3.8 Impacts and Mitigation

The impacts and mitigation measures discussed in **Chapter 6** for the environmental setting, human settlement, land-based economies, archaeological and historic resources, natural environment, and rare and unique natural resources would be applicable to the proposed 161 kV line reconfigurations. Portions of the existing Lakefield to Border 161 kV Transmission Line would be removed from several existing water crossings. The primary impact from reconfiguration of the existing lines would be any ground disturbance associated with equipment accessing the lines along the existing rights-of-way, minimal additional clearing that may be required, and as a result of pole structure removal and replacement. Soil disturbance would be minimal. Erosion control measures will be developed in the Project SWPPP and would be implemented as appropriate to protect the Blue Earth River and other nearby streams and drainages. Minimal additional right-of-way clearing is anticipated. Where structures are placed in cropland, they would create a minor obstacle for farming operations. Area wildlife would experience temporary disturbance due to construction activity and human presence. Following completion of line reconfiguration, the Winnebago Junction Substation would be decommissioned and additional area around the site returned to a more natural state, although transmission lines would still traverse the site.

Substation and transmission line noise are not anticipated to exceed MPCA noise limits for applicable NAC. Further analysis of transmission line noise is provided in **Section 6.5.4**.

The area of the 161 kV associated facility reconfiguration routes is located approximately one mile from an archaeological district where there are numerous archaeological sites. While no known sites are crossed by any of the existing lines or proposed reconfiguration, construction would be stopped at the location of any inadvertent archaeological site discovered during construction. ITC Midwest will consult with the Minnesota SHPO office to determine the

nature and extent of the find and implement an appropriate plan to address the resources encountered.

7.4 CONNECTOR SEGMENTS

ITC Midwest developed several connector segments along the Project, as discussed in **Section** 5.4. These connector segments were developed to provide strategic routing opportunities if the Commission determined that portions of Route A and Route B should be used or if certain environmental features or areas of development should be avoided by the Project. Five connector segments cross land not crossed by either Route A or Route B. These five connector segments are as follows: two near Jackson Municipal Airport, one near Fox Lake, and two near the Pilot Grove Lake WPA. Detailed maps of the connector segments are available in **Appendix D**. Detailed information on the impacts associated with the connector segments is available in **Appendix H**.

7.4.1 Jackson Municipal Airport – West

The connector segment to the west of the Jackson Municipal Airport ("JMA-W") is approximately four miles east of the Lakefield Junction Substation in Section 5 of Des Moines Township. JMA-W is approximately 0.5 mile in length and follows field lines for half of its length. There are no homes within 1,000 feet of JMA-W. Two types of farmland classification are crossed by the connector segment: Prime Farmland if Drained and Farmland of State Importance. Approximately 10 acres of the JMA-W right-of-way is cropland and two acres of the right-of-way is grassland. No wetlands, streams, rivers, or lakes are crossed by this connector segment. One WMA is within one mile of JMA-W (Bootleg Lake WMA), but no environmental sites are crossed by JMA-W. No archaeological or historic sites are crossed by the connector segment. Additional details on the JMA-W connector segment are provided in **Appendix H**.

7.4.2 Jackson Municipal Airport – East

The connector segment to the east of the Jackson Municipal Airport ("JMA-E") is located in Sections 32 and 33 of Enterprise Township and Sections 4 and 5 of Wisconsin Township. JMA-E is approximately 1.5 miles in length and follows 570th Avenue for its entire length. There are no homes within 1,000 feet of JMA-E. Two types of farmland classification are crossed by the connector segment: Prime Farmland and Prime Farmland if Drained. Approximately 22 acres of the JMA-E right-of-way is cropland and 15 acres of the right-of-way is grassland. No other

land cover types are within the right-of-way. No wetlands, streams, rivers, or lakes are crossed by this connector segment. One WMA is within one mile of JMA-E (Arzt WMA), but no environmental sites are crossed by JMA-E. No archaeological or historic sites are crossed by the connector segment. Additional details on the JMA-E connector segment are provided in **Appendix H**.

7.4.3 Fox Lake – West

The connector segment to the west of Fox Lake ("FL-W") is located in Section 1 of Jay Township and Section 36 of Elm Creek Township. FL-W is approximately 1.5 miles in length and follows an existing 69 kV transmission line and abandoned rail bed. There are no homes within 1,000 feet of FL-W. Three types of farmland classification are crossed by the connector segment: Prime Farmland, Prime Farmland if Drained, and Farmland of State Importance. Approximately 22 acres of the FL-W right-of-way is cropland and 15 acres of the right-of-way is grassland. No other land cover types are within the right-of-way. One wetland (PEM) is within the connector segment but it is not within the right-of-way. FL-W crosses two streams, Judicial Ditch No. 37 and Lily Creek, but does not cross any lakes. The existing 69 kV transmission line and FL-W cross one MCBS site: Elm Creek 36. Three WMAs are within one mile of FL-W (Four Corners WMA, Fox Lake WMA, and Caron WMA), but no WPAs, WMAs, SNAs, or State parks are crossed by FL-W. No archaeological or historic sites are crossed by the connector segment. Additional details on the FL-W connector segment are provided in **Appendix H**.

7.4.4 Pilot Grove Lake WPA – North

The connector segment to the north of the Pilot Grove Lake WPA ("PG-N") is located in Sections 1 and 2 of Pilot Grove Township. PG-N is approximately one mile in length and follows a field line for its entire length. There are no homes within 1,000 feet of PG-N. Two types of farmland classification are crossed by the connector segment: Prime Farmland and Prime Farmland if Drained. Approximately 23 acres of the PG-N right-of-way is cropland and one acre of the right-of-way is grassland. No other land cover types are within the right-of-way. One wetland (PEM) is within the connector segment, but it is not within the right-of-way. No streams, rivers, or lakes are crossed by PG-N. One WPA is within one mile of PG-N, but no environmental sites are crossed by PG-N. Three archaeological sites and two historic sites are within one mile of the connector segment and only two of the archaeological sites are crossed by PG-N. These two

sites are not listed on the NRHP. Additional details on the PG-N connector segment are provided in **Appendix H**.

7.4.5 Pilot Grove Lake WPA – South

The connector segment to the south of the Pilot Grove Lake WPA ("PG-S") is located in Sections 11 and 12 of Pilot Grove Township. PG-S is approximately one mile in length and follows a field line for approximately half its length. There are no homes within 1,000 feet of PG-S. Three types of farmland classification are crossed by the connector segment: Prime Farmland, Prime Farmland if Drained, and Farmland of State Importance. Approximately 24 acres of the PG-S right-of-way is cropland. No other land cover types are within the right-of-way. No wetlands, streams, rivers, or lakes are crossed by PG-S. One WPA is within one mile of PG-S, but no environmental sites are crossed by PG-S. Three archaeological sites and two historic sites are within one mile of the connector segment, but none are crossed by the connector segment. Additional details on the PG-S connector segment are provided in **Appendix H**.

7.4.6 Impacts and Mitigation

No impacts to human settlement, public health and safety, public services, land use, floodplains, groundwater resources, land-based economies, rare and unique natural resources, or historic resources are anticipated so no mitigative measures are required. The connector segments cross agricultural fields and landowners will be compensated for crop damage or soil compaction, if it occurs. Where a connector segment crosses a stream, river, or other waterway, appropriate measures discussed in **Section 6.8.4(a)** and **Section 6.8.5(a)** would be used. Where FL-W crosses an MCBS site, ITC Midwest will coordinate with the MnDNR to minimize impacts and confine the centerline to the centerline of the existing 69 kV transmission line. If FL-W were selected for the Project, ITC Midwest will coordinate with the MnDNR and the USFWS to ensure that transmission lines are marked in this area to minimize the risk of avian interactions with the lines. Where PG-N crosses two archaeological sites, pedestrian surveys will be performed to identify the boundaries of the resource sites, and ITC Midwest will work with SHPO to identify appropriate avoidance or mitigation measures in the design and placement of structures.

8.0 ENVIRONMENTAL INFORMATION: ROUTE B

8.1 DESCRIPTION OF ENVIRONMENTAL SETTING

Route B extends from the Lakefield Junction Substation in Section 3 of Hunter Township, Jackson County, to the proposed Huntley Substation in Section 14, Verona Township, Faribault County. Route B then extends south to the Iowa border, with the Minnesota portion of the line ending in Section 36, Pilot Grove Township and Section 31, Elmore Township, Faribault County. Route B would cross generally the same area crossed by Route A, except along a different alignment for most of its length. However, Route B would typically be less than two miles away from Route A. As a result, Route B has generally the same environmental setting as Route A. A detailed description of this environmental setting is provided in **Section 6.1**.

The application alignment for Route B is shown on detailed maps in **Appendix D**. Unlike Route A, Route B would include double-circuiting with an electric transmission line for only approximately 1.25 miles. Route B follows all new transmission alignment, typically following roads, property lines, or field lines but would be double-circuited with the realigned 161 kV Rutland to Winnebago Junction Line along 160th Street to connect this line to the new Huntley Substation. Where Route B follows roadways, the application alignment is proposed to be located approximately ten feet off the edge of the road right-of-way. Minor portions of Route B in the Chain of Lakes area, south of Lake Charlotte, follow the same alignment as Route A. Otherwise, Route B follows a different alignment than Route A.

Route B would introduce a new 345 kV transmission line into an area where no high voltage transmission line previously existed and would require establishing a new 200-foot right-of-way. The route is approximately 73 miles in length, encompassing approximately 10,093 acres.[8] Approximately 56 miles would be between Lakefield Junction and Huntley and 17 miles from Huntley to Iowa. Approximately 1,768 acres of right-of-way would be required for the Project along Route B.

[8] Although slightly longer than Route A, Route B includes one mile only 500 feet wide and, besides the area near the lower border, is otherwise only 1,000 feet wide, so its overall acreage is less than that for Route A.

8.2 LAND COVER

The construction, operation, and maintenance of Route B would be designed to minimize potential adverse impacts to all land cover types. **Table 51** summarizes the land cover and land use considerations for the Project.

Table 51. Land Cover Along Route B

Impacts of Route B	Total
Route Length (miles)	73.4
200-foot Right-of-Way (acres)	1,768
Land Cover	
Cropland in Right-of-Way (acres)	1,465
200-foot Right-of-Way Percent Cropland	83
Aquatic Environments in 200-foot Right-of-Way (acres)	3.9
Grassland in 200-foot Right-of-Way (acres)	286
Lowland Deciduous Forest in 200-foot Right-of-Way (acres)	6.4
Upland Deciduous Forest in 200-foot Right-of-Way (acres)	0
Shrubland in 200-foot Right-of-Way (acres)	0
Upland Conifer Forest in 200-foot Right-of-Way (acres)	0
Upland Deciduous Forest in Right-of-Way (acres)	5.7
Non-Vegetated Right-of-Way (acres)	0

Source: MnDNR, MNDOT, ITC Midwest, NAIP, NWI

The primary land cover in the Study Area is agriculture. Approximately 1,465 acres of cropland would be within the project right-of-way. Several other land cover types comprise the remaining 302 acres of right-of-way that may be impacted by Route B. As summarized in **Table 51**, these include grassland/pasture areas, aquatic environments, lowland deciduous forests, and upland deciduous forested areas, with grassland pasture areas comprising the majority of non-cropland land cover. Of the 302 non-cropland acres of right-of-way, approximately 286 acres is grassland/pasture. The right-of-way would include approximately 6.4 acres of lowland deciduous forest and 5.7 acres of upland deciduous forest. A total of approximately 1215 acres of woodland would need to be cleared for the right-of-way of Route B. Route B would have approximately four acres of aquatic environment within the right-of-way and would not contain any shrubland, upland conifer forest, or non-vegetated areas (**Appendix D** and **Appendix M**).

8.2.1 Impacts and Mitigation

In order to mitigate any undue impacts to land cover, the clearing or otherwise alteration of land cover would be limited to only that necessary for safe operation of the line. Four areas of remnant prairie are within the Route B 200-foot right-of-way. ITC Midwest will coordinate with MnDNR to take measures to avoid disturbance to these areas, many of which can likely be spanned during construction.

Additional measures would be developed with the MnDNR to avoid migration of invasive species into any identified remnant prairie components prior to right-of-way clearing. Any disturbed areas would be restored. ITC Midwest will limit vehicle traffic to the extent practical to roads and pathways along the right-of-way.

There are 17 CRP parcels crossed by Route B. Only 11 of these parcels are within the right-of-way of Route B. There are 11 CREP land parcels within Route B. The right-of-way of Route B includes portions of six CREP parcels. All of these parcels are part of the RIM program.

In agricultural areas, ITC Midwest will inform landowners of construction. Depending on the timing of construction, some crop damage may occur. ITC Midwest will restore disturbed cropland and compensate landowners if crop loses occur.

8.3 SOILS

The soils associated with Route B are similar to those discussed in **Section 6.3** (**Appendix M**). The farmland classifications crossed by Route B are summarized in **Table 52**.

Table 52. Farmland Classifications Crossed by Route B

Farmland Classification	Total
Right-of-Way Acres	1,768
Prime Farmland within the 200-foot Right-of-Way (acres)	578
Percent of Right-of-Way that Crosses Prime Farmland	33
Prime Farmland if Drained within Right-of-Way (acres)	946
Percent of Right-of-Way that Crosses Prime Farmland if Drained	54
Farmland of State Importance within Right-of-Way (acres)	149
Percent of Right-of-Way that Crosses Farmland of State Importance	8.4
Prime Farmland if Protected from Flooding within Right-of-Way (acres)	30
Percent of Right-of-Way that Crosses Prime Farmland if Protected from Flooding	1.7
Right-of-Way Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding (acres)	1,704
Right of Way Percent Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding	96

8.3.1 Impacts and Mitigation

The potential impacts and mitigation methods for Route B are similar to those provided for Route A in **Section 6.3.1**.

8.4 LINEAR FEATURE SHARING

Sharing of linear features reduces the amount of disturbance to the surrounding environment, thus reducing overall impacts of a transmission line and mitigating unnecessary environmental disturbances. Route B shares a total of 53 miles of its route with existing linear features, which is 72 percent of the route. Roads account for 35 miles of this total, while the route follows 0.2 mile of existing transmission lines (although it would be double-circuited with an additional 1.25 miles of 161 kV line along new alignment). Field lines are shared for 53 miles. Approximately 20 miles of the Route B application alignment would not share an existing right-of-way or follow a linear feature.

Table 53. Linear Feature Sharing for Route B

Linear Feature Sharing – Type	Total
Length Along Existing Transmission Alignment	0.2
-and also along roads (miles)	0.2
-and also along field lines (miles)*	0.2
Length Not Along Existing Transmission Alignment	72
-but along roads (miles)	35
-but along field lines (miles)	53
No Linear Feature Sharing (miles)	20
Total Linear Feature Sharing (miles)	53
Total Linear Feature Sharing (percent)	72

Source: MNDOT, Energy Velocity, ITC Midwest, Burns & McDonnell
*Field lines also include roads that are along the edge of the field.

8.4.1 Impacts and Mitigation

Opportunities for co-location have been identified and to the greatest extent practicable no impacts to existing linear features are anticipated. Realignment of a small portion of the Lakefield to Border 161 kV Transmission Line into the new Huntley Substation would result in co-location of the new 345 kV line and relocated 161 kV line for approximately 1.25 miles.

8.5 HUMAN SETTLEMENT

8.5.1 Public Health and Safety

Route B extends through the same counties and general area as Route A. Public health and safety characteristics would be essentially the same as those discussed in detail for Route A in **Section 6.5.1**. Police, fire, and ambulance services are provided by the larger communities in the area and the counties. Both volunteer and staffed fire protection services are available to serve the communities and rural fire protection districts. Hospitals are available in Blue Earth, Fairmont, and Jackson.

Route B would be over two miles from the Jackson and Blue Earth airports and over four miles from the Fairmont airport (**Appendix N**). Only one private landing strip is known within approximately one mile of Route B, a short grass strip located north of the existing Lakefield to Border 161 kV Transmission Line that would be rebuilt as part of Route A. Route B is south of this existing line.

(a) *Impacts and Mitigation*

Route B impacts to public health and safety would be generally the same for Route B as those discussed for Route A in **Section 6.5.1**. Route B would likely require slightly less traffic control, and therefore less law enforcement, due to Route B having one crossing of Interstate 90 instead of three proposed for Route A. Route B is not anticipated to impact any ARMER towers or communications between these towers.

8.5.2 Commercial, Industrial, Residential Land Use

Route B extends through the same counties as Route A, through an area that is predominantly agricultural. Commercial, industrial, and residential land uses in the vicinity of Route B are primarily concentrated in the nearby towns. Regulatory land use, zoning, and development considerations for Route B would be the same as described for Route A. Route B is compatible with the current zoning designations through which it extends in Jackson, Martin and Faribault counties. Detailed information about the commercial industrial and residential land use can be found in **Section 6.5.2**.

(a) *Impacts and Mitigation*

Routes were initially identified that maximized distance from residences and minimized the total number of residences in proximity to the application alignments to the extent feasible. In addition, existing linear features were followed to the extent feasible to minimize the amount of new right-of-way required and creation of new linear features in the area, thereby limiting new impacts to property owners. Using existing linear features minimizes impacts to agricultural land, forestland, and wetlands by reducing the amount of new right-of-way required. Landowners would be compensated for all easements obtained.

The Study Area is relatively rural, with little commercial or industrial development. Impacts and mitigation to commercial, industrial, and residential land use for Route B would be similar to that of Route A provided in **Section 6.5.2.**

8.5.3 Displacement

Numerous structures and facilities, including residences, are located within by Route B. There are 38 residences within Route B. A total of 33 homes are within 500 feet of the application alignment of Route B. However, based on the currently

proposed alignment of Route B, no residences or other structures would be within the 200-foot right-of-way for the project. No displacement of any structures is anticipated. **Appendix D** shows the application alignment and residences within 500 feet of the application alignment. Residences within 500 feet of the application alignment are summarized in **Table 54**.

Table 54. Proximity of Residences to Route B Application Alignment

Proximity (Feet)	Lakefield Junction to Huntley	Huntley to Iowa
Residences 0-75	0	0
Residences 75-150	2	0
Residences 150-300	14	2
Residences 300-500	13	2
Total Residences	29	4
Density (homes/mile)	0.5	0.2

(a) *Impacts and Mitigation*

Based on the Route B application alignment, no displacements of any residential structures are anticipated.

8.5.4 Noise

As Route B extends through the same general landscape as Route A, the general noise conditions along Route B are essentially the same as described for Route A. Detailed information about noise in the Study Area can be found in **Section 6.5.4** and **Table 17**.

(a) *Impacts and Mitigation*

Noise generated from the construction and operation of Route B would be similar to that described for Route A in **Section 6.5.4**. Many of the sensitive noise receptors along Route B would not have previously been exposed to noise from transmission lines.

Thirty-three sensitive noise receptors (all residences) would be located within 500 feet of Route B. These receptors would only potentially be exposed to increased construction noise when construction was occurring along those sections of line in proximity to them.

Noise generated from the operation of Route B is expected to be negligible. The primary source of noise as a result of operation of the transmission line would be the corona effect. Corona noise would be irregular and dependent on atmospheric conditions. As shown in **Table 17,** noise levels at sensitive noise receptors resulting from the operation of the Project along Route B would be below MPCA NAC noise limits.

8.5.5 Aesthetics

As Route B generally extends through the same landscape as Route A, the existing aesthetic conditions along Route B are very similar to Route A. Detailed information about the aesthetics of the Study Area can be found in **Section 6.5.5**. Unlike Route A where much of the route would include the rebuilding of an existing 161 kV transmission line as a taller, double-circuit structure, Route B would use all new right-of-way. Route B would introduce a new transmission line feature into the visual landscape where one previously did not exist. The new transmission line would not be an unusual visual feature as other transmission and distribution lines are found throughout the Study Area and in the vicinity of Route B.

(a) *Impacts and Mitigation*

Construction and operation of Route B would introduce a new visual feature into the landscape. Route B would alter the viewshed throughout the Study Area. The structures for Route B would be taller than most of the electric line structures in the Study Area but would be similar in appearance to various steel monopole structures present in the area. They would be considerably shorter than the wind turbines throughout the area and would not create a new type of feature to the landscape as transmission and distribution lines are prevalent within the visual landscape of the area. Where feasible, structures would be placed to take advantage of existing natural screening to reduce the view of the line from nearby residences and roadways and avoid placement in front of residences.

8.5.6 Socioeconomics

Socioeconomic conditions are described and analyzed at the State and county levels. Route B passes through the same counties as Route A and generally within two miles of Route A. As a result, the existing socioeconomic conditions along Route B are very similar to those along Route A. Route B extends through a

few different townships than Route A, and one fewer, resulting in the total population of townships along Route B (3,028 residents[9]) being slightly less than along Route A (3,249 residents) (U.S. Census Bureau 2010b). County level socioeconomic conditions are discussed in detail in **Section 6.5.6**.

As with Route A, the majority of the population (98.5 percent) is white in the townships along Route B. The percentage of the population of townships that is minority is identical for both routes (1.9 percent). For the population along Route B, 0.1 percent is black or African American, 0.3 percent is Asian, 1.1 percent is some other race, and 1.1 percent is Hispanic.[10]

Median household incomes in the townships along Route B are almost identical to those along Route A, ranging from $47,188 to $70,000 (**Table 20**) (U.S. Census Bureau 2010a). The unemployment rate for the population along Route B (3.7 percent) is similar to that along Route A (3.5 percent). The poverty rate is slightly higher for the population along Route B (4.8 percent) compared to Route A (4.4 percent). As with Route A, the top three industries in terms of employment include "educational services, and health care and social assistance," "agriculture, forestry, fishing and hunting, and mining," and "manufacturing" (U.S. Census Bureau 2010a).

(a) *Impacts and Mitigation*

The construction and operation of Route B is not anticipated to create or remove jobs in the Study Area or result in the relocation of individuals. Therefore, the transmission line is not expected to change population trends, economic indicators, or employment, as discussed for Route A, **Section 6.5.6(a)**.

8.5.7 Cultural Values

Cultural values associated with Route B are similar to those described above for Route A. More information about cultural values for the Study Area can be found in **Section 6.5.7**.

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[9] Includes Jo Daviess, Pilot Grove, and Verona Townships in Faribault County; Belmont, Des Moines, Enterprise, and Hunter Townships in Jackson County, and Center Creek, Elm Creek, Fox Lake, Fraser, and Rutland Townships in Martin County

[10] Total minority is calculated by adding the populations for all non-white races and the population for white-Hispanic.

(a) *Impacts and Mitigation*

Cultural values are not expected to be impacted by Route B and proposed mitigation is similar to that provided for Route A in **Section 6.5.7(a)**. The Study Area is rural in nature with an agriculture-based economy and would remain so after Project construction. Natural amenities, including lakes, rivers, and WMAs, attract local and regional recreational users. None of these aspects of the culture of the area would be significantly impacted or changed.

8.5.8 Recreation

Recreational opportunities in the vicinity of Route B are similar to those for Route A and include hunting, wildlife viewing, fishing and other watersports, and snowmobiling. Portions of three WMAs are within the 200-foot right-of-way for Route B. Route B crosses portions of the Toe WMA in Jackson County, the Caron WMA in Martin County, and the Four Corners WMA in Martin County. Route B is located along the northern edge of Fox Lake Game Refuge, adjacent to the south side of 140th Street for approximately three miles. Route B is located adjacent to one USFWS WPA, Boot Lake WPA in Jackson County. Boot Lake WPA is managed by the USFWS Windom Wetland Management District.

Route B crosses the same snowmobile trails as Route A, although the crossings are in slightly different locations. Route B would also parallel the Prairieland Trail for approximately 4,000 feet. This section of the Prairieland Trail uses 150th Street in Martin County, which is followed by Route B in this area.

Route B crosses the Des Moines River State Water Trail but does not cross the Blue Earth River State Water Trail. The crossing for Route B of the Des Moines River is not an established crossing of an existing transmission line, like that of Route A. More detailed discussion of recreation in the Study Area is included in **Section 6.2.8**.

(a) *Impacts and Mitigation*

Recreational opportunities in the vicinity of Route B include hunting and trapping, wildlife viewing, fishing, canoeing and kayaking, and snowmobiling. Any effects the Project would have on these activities would typically be temporary in nature, such as increased construction noise that would detract from recreational activities. Construction noise and activity could also cause wildlife to temporarily move out of the area. Construction zones may be temporarily off-limits to those using the recreation areas due to safety concerns.

However, such closures and restrictions would be on a case-by-case basis and any impact to these types of activities by the project transmission line would be short term, temporary and minimal. Following the completion of construction activities, wildlife would move back into the area and any closed areas would be re-opened for access and use. As the majority of the Study Area is agricultural and few recreational areas are actually crossed by Route B, the proposed project would not significantly impact recreational opportunities or activities.

8.5.9 Public Services

Public services within the vicinity of Route B are provided by the same agencies as discussed for Route A in **Section 6.5.9**. These include county sheriff's offices, municipal police departments, fire departments, ambulance districts, hospitals, schools, and other public facilities.

(a) *Impacts and Mitigation*

Public services within the Route B vicinity are provided by local law enforcement and emergency response agencies located in nearby communities, public school districts, local hospitals, and others. Impacts and mitigation for these services along Route B would be similar to those provided for Route A in **Section 6.5.9(g)**. There are police forces, fire departments, emergency response teams, and hospitals. These facilities would not be significantly impacted by the construction and operation of the transmission line as discussed previously for Public Health and Safety. Any impacts would be temporary, such as temporary road closures during construction or slightly increased traffic near access roads. ITC Midwest will notify appropriate local emergency service providers of the project and construction activities prior to beginning construction and coordinate any necessary traffic control requirements with appropriate road authorities.

8.5.10 Radio, Television, Cellular Phone and GPS

Radio, television, cellular phone services, and GPS services within the vicinity of Route B are provided by the same companies as discussed for Route A in **Section 6.5.10**. These include Minnesota Public Radio (K222BA and K270AQ), KBEW, approximately 60 television channels that are broadcast in the general area, Midwest Wireless Communications, LLC, and New Cingular Wireless PCS, LLC. GPS equipment is anticipated to be a widely used along Route B within the Study Area.

(a) *Impacts and Mitigation*

Impacts and mitigation would be similar to those provided for Route A in **Section 6.5.10(e)**.

8.5.11 Transportation

As with Route A, the primary roadways within the vicinity of Route B include Interstate 90, U.S. Highway 71, State Highway 4, and State Highway 15. Route B crosses many of the same roads as Route A, and traffic volumes are generally the same. **Table 55** shows AADT volumes on the major roads crossed or paralleled by Route B. **Section 6.5.11** contains further discussion of transportation in the Study Area.

Table 55. AADT on County, State, and US Highways, Roads, and Interstates Crossed or Paralleled by Route B

Road	County	AADT	Traffic Count Year	Distance Paralleled*
County Hwy 17	Jackson	290	2008	-
County Hwy 14	Jackson	620	2008	1
County Hwy 19	Jackson	140	2008	-
County Hwy 16	Jackson	185-245	2008	5
US Highway 71	Jackson	2300	2010	-
County Hwy 23	Jackson	445	2008	-
County Road 85	Jackson	100	2008	0.25
County Hwy 29	Jackson	385	2008	0.75
County Road 103	Martin	55	2010	-
County Hwy 7	Martin	130	2010	-
County Road 132	Martin	50	2010	1.25
State Hwy 4	Martin	2,000	2010	-
County Hwy 32	Martin	135	2010	3.5
County Road 132	Martin	130	2010	2.5
County Hwy 27	Martin	1,950	2010	1.5
County Hwy 33	Martin	160	2010	-
County Hwy 39	Martin	1,550	2010	-
County Road 143	Martin	90	2010	-
State Hwy 15	Martin	5,100	2010	-
County Hwy 53	Martin	730	2010	-
County Road 134	Martin	35	2010	2
County Hwy 59	Martin	Not Available	Not Available	-
County Hwy 1	Faribault	370	2011	-
County Hwy 5	Faribault	95	2011	-
County Hwy 8	Faribault	285	2011	-
Interstate 90	Faribault	9,000	2011	-
County Hwy 16	Faribault	1,700	2011	-
County Hwy 6	Faribault	540	2011	-
County Hwy 4	Faribault	70	2011	-
County Hwy 2	Faribault	260	2011	-
County Hwy 9	Faribault	60	2011	-

Source: MnDOT AADT GIS Shapefile 1992-2011

* "-" entry in this column indicates the roadway is crossed and not paralleled.

Route B crosses the same UP and CP rail lines as Route A, although the crossings are in slightly different locations. Route B crosses the UP rail line near the city of Welcome and again west of Blue Earth. Route B crosses the CP northeast of the town of Granada. The same three airports and two heliports that are within five miles of Route A are also within five miles of Route B, including the Jackson Municipal Airport, Fairmont Municipal Airport, Blue Earth Municipal Airport, Jackson Medical Center Heliport in Jackson, and United Hospital District Heliport in Blue Earth (**Appendix N**).

(a) *Impacts and Mitigation*

The construction of Route B is not expected to permanently impact transportation within the Study Area. The route crosses Highway 71, Highway 4, Interstate 90, and Highway 15. The construction of the transmission line could minimally increase traffic along these and other area roads through the movement of construction vehicles and delivery of materials and equipment along Route B. However, this increase in traffic would be temporary and normal conditions would return upon completion of the construction activities, as discussed in **Section 6.5.11(d)**. Construction and line maintenance at crossing locations could cause temporary delays if equipment and vehicles are present. Roads or lanes may be temporarily closed during the construction process. These closures could range in duration from a few minutes to hours based on the width of the road and the complexity of the crossing. ITC Midwest will coordinate the proposed transmission line construction with the MnDOT, counties, and townships to secure all the required permits and approvals where right-of-way sharing of roads and highways requires approval prior to construction.

No impacts to airports or landing strips are expected for Route B. Route B would be a sufficient distance from the Jackson Municipal Airport, Fairmont Municipal Airport, and Blue Earth Municipal Airport, as well as heliports operating from hospitals in Jackson and Blue Earth. ITC Midwest will coordinate with the FAA for appropriate notifications associated with project construction. ITC Midwest will mail notice of the filing of the Route Permit Application to aerial applicators registered within twenty miles of Jackson, Worthington, Blue Earth, Fairmont, and Windom with the Minnesota Agricultural Aircraft Association.

ITC Midwest will obtain appropriate permits to cross rail lines from the appropriate rail line owner/operator. ITC Midwest will coordinate with the appropriate railroad personnel during construction to coordinate stringing of

conductor over the rail line with the railroad for the safety of construction personnel and rail line operations.

8.5.12 Electric and Magnetic Fields

The discussion of ELF-EF and ELF-MF in Section **6.5.12** for Route A applies to Route B.

(a) *Impacts and Mitigation*

No impacts to human health from ELF-EF or ELF-MF are anticipated. The detailed discussion in **Section 6.5.12(a)** applies to Route B.

8.6 LAND-BASED ECONOMIES

8.6.1 Agriculture

Agriculture considerations associated with Route B would be similar to those described for Route A in **Section 6.6.1**.

(a) *Impacts and Mitigation*

The right-of-way for Route B would include approximately 1,465 acres of cropland. The majority of this land could continue to be farmed following, and potentially during, construction. Only a minor area of land required for placement of pole structures would be removed from agricultural production. New structures placed in agricultural fields would present obstacles to be farmed around. However, Route B is generally located along roads and field edges, minimizing obstruction to agricultural equipment.

Route B extends through the following farmland classifications: Prime Farmland, Prime Farmland if Drained, Farmland of State Importance, and Prime Farmland if Protected from Flooding. The acreages for each of these classification types can be found in **Table 56**. Approximately 96 percent of the right-of-way is located in one of these four farmland classifications: Prime Farmland (32 percent), Prime Farmland if Drained (54 percent), Farmland of State Importance (8 percent), and Prime Farmland if Protected from Flooding (2 percent). A summary of impacts on Land Based Economies is provided in **Table 56**.

A detailed discussion of the nature of project-related impacts and potential measures to minimize impacts to agricultural lands and activities is provided in **Section 6.6.1(a)**.

Table 56. Impacts of Route B on Land Based Economies

Impacts of Route B	Total
Permanent Impacts	
Cropland in 200-foot Right-of-Way (acres)	1,465
Right-of-Way Percent Cropland	83
Route Length (miles)	73
Route (acres)	10,093
Right-of-Way (acres)	1,768
Prime Farmland	
Prime Farmland within Right-of-Way (acres)	578
Percent of 200-foot Right-of-Way that Crosses Prime Farmland	33
Prime Farmland if Drained within Right-of-Way (acres)	946
Percent of Right-of-Way that Crosses Prime Farmland if Drained	54
Farmland of State Importance within Right-of-Way (acres)	149
Percent of Right-of-Way that Crosses Farmland of State Importance	8.4
Prime Farmland if Protected from Flooding within Right-of-Way (acres)	30
Percent of Right-of-Way that Crosses Prime Farmland if Protected from Flooding	1.7
Right-of-Way Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding (acres)	1,704
Right-of-Way Percent Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding	96
Forestry	
Commercial Forestry Operations in Route	0
Commercial Forestry Operations in Right-of-Way	0
Tourism	
Water Trails Crossed by Right-of-Way	1
Snowmobile Trails Crossed by Right-of-Way	3
Number of Snowmobile Crossings by Right-of-Way	5
Mining	
Mining Operations in Route	0
Mining Operations in Right-of-Way	0

Source: MnDNR, MNDOT, ITC Midwest, NAIP

8.6.2 Forestry

As with Route A, forestry is not a significant industry in the Study Area, and no commercial forestry operations were identified along Route B.

(a) *Impacts and Mitigation*

Route B extends through an area that is dominated by agricultural land with very minimal forestland. No commercial forestry operations were identified within the Study Area. The 200-foot right-of-way for Route B would require 12.1 acres of woodland clearing, in addition to approximately 1.6 acres of forested wetland. No impacts to commercial forestry operations are anticipated.

8.6.3 Tourism

Tourism in the vicinity of Route B primarily includes outdoor recreational opportunities, which are similar to those described for Route A in **Section 6.6.3**.

(a) *Impacts and Mitigation*

Temporary impacts to tourism for Route B are similar to that discussed for Route A in **Section 6.6.3(a)**. No ongoing impacts to tourism are anticipated due to the Project and no mitigation is necessary.

8.6.4 Mining

The primary mining considerations associated with Route B include MnDOT gravel pits that are present throughout the Study Area. As with Route A, no active mining operations were identified along Route B. Locations of MnDOT gravel pits within the Study Area can be found in **Appendix D**. Bedrock resources in Minnesota are available in **Appendix M**.

(a) *Impacts and Mitigation*

Mining does not comprise a major industry in the Study Area counties, and no active mining operations were identified within the Study Area. Local sand and gravel pits may be used for Project construction materials but no expansion of existing facilities or new operations would result from the Project. Route B is not expected to create any impact on the mining industry and no mitigation is necessary.

8.7 ARCHAEOLOGICAL AND HISTORIC RESOURCES

As discussed in **Section 6.7**, background research was conducted in July 2012 in the SHPO Archaeology Inventory and in the Standing Structures Inventory in St. Paul, Minnesota. Archaeological sites and historic structures, properties, and resources were included in the analysis.

There are 13 NRHP-listed sites, structures, properties, or districts in Faribault County. There are 43 NRHP-listed sites, structures, properties, or districts in Jackson County. There are 23 NRHP-listed sites, structures, properties, or districts in Martin County. Historic properties of various types may be designated as location restricted, for reasons of preservation, protection, or privacy.

An archaeological district is crossed by a 0.4 mile portion of the Route B application alignment in the area of the 161 kV Rutland – Winnebago Junction line reroute to the Huntley Substation. This portion of the line would require new right-of-way through the archaeological district.

8.7.1 Archaeology

(a) *Lakefield Junction to Huntley*

Three archaeological resource artifact scatters are crossed by Route B between the Lakefield Junction Substation and proposed Huntley Substation, summarized in **Table 57**. Two of those resources are NRHP listed and crossed by the application alignment that includes the realignment of the existing 161 kV Rutland – Winnebago Junction transmission line through approximately 0.4 mile of and archaeological district. The third resource is not within the 200-foot right-of-way or the Route B application alignment and is not NRHP listed.

Table 57. Archaeological Resources within the Lakefield Junction to Huntley Segment of Route B

Site Type	Within Route	Crossed by Right-of-Way	Eligible or Listed
Artifact Scatter	3	2	2
Historic Documentation	0	0	0
Total	3	2	2

Source: SHPO Archaeology Inventory and Standing Structures Inventory

(b) *Huntley to Iowa*

The Huntley to Iowa section of Route B includes three archaeological resources. Of those resources, one site, a historic documentation, is crossed by the application alignment of Route B. This area, located immediately east of the Pilot Grove Lakebed and WPA, is formerly the location of a grove of native timber. The grove is documented through historic resources as a landmark and camp

ground for immigrant travelers (Upham 1920). The resources along the Huntley to Iowa portion of Route B are summarized in **Table 58**.

Table 58. Archaeological Resources within the Huntley to Iowa Segment of Route B

Site Type	Within Route	Crossed by Right-of-Way	Eligible or Listed
Artifact Scatter	2	0	0
Historic Documentation	1	1	0
Total	3	1	0

Source: SHPO Archaeology Inventory and Standing Structures Inventory

8.7.2 Architectural History

(a) *Lakefield Junction to Huntley*

Route B between the Lakefield Junction Substation and the proposed Huntley Substation does not include any historic architectural resources. The nearest historic cemetery is Emmanuel Cemetery, approximately 2,500 feet west of the application alignment of Route B.

(b) *Huntley to Iowa*

Route B between the proposed Huntley Substation and the Iowa border includes one historic architectural resource, the Krenke Log House. The Krenke Log House is one mile east[11] of the proposed alignment of Route B, just north of the Iowa State line. The nearest historic cemetery is Pilot Grove Cemetery, approximately 2,560 feet west of the proposed alignment of Route B. These resources are summarized in **Table 59**.

[11] At this location, the Route corridor is 1.25 miles wide to provide for flexibility connecting to the Iowa portion of this line.

Table 59. Historic Architectural Resources within the Huntley to Iowa Segment of Route B

Resource Type	Number Crossed by Route	Number Crossed by Right-of-Way	Eligible or Listed
Log House	1	0	0
Total	1	0	0

Source: SHPO Archaeology Inventory and Standing Structures Inventory

8.7.3 Impacts and Mitigation

Construction of a new alignment typically creates more disturbances to the cultural environment than reconstruction of an existing line. During construction, avoidance is the primary mitigation measure taken and is part of the routing process. Avoidance of resources, historic or prehistoric, may include minor adjustments to the project design and designation of environmentally sensitive areas to be left undisturbed or spanned by the Project. All of the new right-of-way through the identified archaeological district would cross cropland. Avoidance by careful placement of the structures in this area through identification of resources through pedestrian surveys and cooperation with the SHPO will minimize any disturbance of artifacts.

In the event that cultural resources would be discovered during construction, activity on the site would be halted and the SHPO and its State Archaeologist would be notified. Appropriate measures would be implemented to protect any discovered resources before construction would proceed at the site. If any unmarked burials, human remains, or grave goods are discovered during construction of the Project along Route B, the State Archaeologist would be notified before any further construction activities would be allowed to proceed on the site.

8.8 NATURAL ENVIRONMENT

8.8.1 Air Quality

The Route A and Route B have the same general setting. A detailed description of air quality in the Study Area is provided in **Section 6.8.1.**

(a) *Impacts and Mitigation*

No impacts to air quality are anticipated due to the operation of the Project, as discussed for Route A in **Section 6.8.1(a)**. Temporary impacts to air quality are expected to occur because of construction vehicle emissions and fugitive dust associated with right-of-way clearing, construction, and traffic on area roads. ITC Midwest and its crews would implement appropriate dust control measures and properly maintain equipment. Any ozone generated from the operation of the Project would be insignificant.

8.8.2 Primary Water Resources

As defined by the USGS, Route B crosses the Upper Mississippi – Region 7 water resource region. Primary water resources for the Study Area are discussed in detail in **Section 6.8.2**. Within this region, several smaller watersheds, denoted by 8-digit HUC, are crossed by Route B. **Table 60** contains a list of all 8-digit HUC watersheds crossed by Route B.

Table 60. Watersheds (8-digit HUC) Crossed by Route B

Watershed Name	HUC (8-digit)	Crossing Length (miles)
Des Moines Headwaters	07100001	8.7
East Fork Des Moines	07100003	7.6
Blue Earth	07020009	56.9

(a) *Impacts and Mitigation*

Impacts to primary water resources, where anticipated along Route B, and applicable mitigation, are discussed in the sections that follow.

8.8.3 Floodplains

FEMA designates areas that are likely to experience flooding in a 100-year storm event. Approximately 8.8 acres of FEMA-designated 100-year floodplains occur within the Route B right-of-way (FEMA 1981, FEMA 1982, FEMA 1988). Floodplains, where data is digitally available, are depicted on the detailed maps provided in **Appendix O**.

(a) *Impacts and Mitigation*

Some structures may need to be placed within FEMA-designated 100-year floodplains. However, the placement of transmission line structures in floodplains are not anticipated to have an effect on flooding due to the *de minimis* size of individual transmission line structures.

8.8.4 Lakes, Rivers, Streams, and Ditches

According to the NHD database, the Route B application alignment would have 36 crossings of 32 different rivers, streams, and canals/drainage ditches, including 12 intermittent and eight perennial watercourses. Some would be crossed at multiple locations. None of these water bodies are federally-designated navigable waters or State-designated trout waters (Office of the Revisor of Statutes 2011). Streams and rivers crossed by Route B are shown on the detailed maps provided in **Appendix O**.

The Route B application alignment crosses 17 PWI streams. The 200-foot right-of-way for Route B contains 40 streams or rivers, 21 of which are listed as PWI watercourses. Route B crosses 49 streams or rivers and 23 are listed as PWI watercourses. The application alignment of Route B does not cross any PWI lakes or PWI shallow lakes. Route B crosses one PWI wetland. One shallow lake is crossed by Route B, and only seven shallow lakes are located within one mile of Route B. These PWI and shallow lake impacts are summarized in **Table 61**.

Table 61. Impacts to PWI Waters and Shallow Lakes for Route B

Impacts of Route B	Total
Number of Stream and River Crossings by Application Alignment	36
Number of PWI Stream and River Crossings by Application Alignment	21
Number of PWI Lakes within Route (1,000 ft wide)	0
Number of PWI Lakes within Right-of-Way	0
Number of PWI Wetlands within Right-of-Way	0
Number of PWI Wetlands within Route Corridor	1
Number of PWI Waters over 1,000 ft Crossed by Application Alignment	0
Length (ft) of PWI Waters over 1,000 ft Crossed by the Right-of-Way	0
Number of Shallow Lakes within Route	1
Number of Shallow Lakes within one mile of Route	7

Source: MnDNR, MNDOT, ITC Midwest, NAIP, NWI

Seventeen streams and rivers that are listed as PWI watercourses are each crossed by the alignment of Route B once, with the exception of Judicial Ditch 7

(4 crossings) and County Ditch 72 (2 crossings). Streams and rivers listed in the PWI and crossed by the Route B application alignment are summarized below in **Table 62**.

Table 62. Minnesota Designated PWI Streams and Rivers Crossed by Route B Application Alignment

Waterbody Name	Number of Crossings
Badger Creek	1
Center Creek	1
South Creek	1
Elm Creek, South Fork	1
Blue Earth River, West Branch	1
Des Moines River	1
Des Moines River, East Fork	1
Judicial Ditch 7	4
Judicial Ditch 3	1
Judicial Ditch 25	1
Unnamed Streams (five total streams)	5
County Ditch 60	1
County Ditch 72	2

Source: PWI

A review of lakes within Route B was conducted from MnDNR lake data and NHD water body data. According to these datasets, Route B crosses one shallow lake. Additionally, no PWI lakes are within Route B, but review of aerial photography indicates portions of two additional ponds are within the route.

(a) *Impacts and Mitigation*

Mitigation measures that would be employed to protect surface waters, PWI, and shallow lakes will be similar to those discussed in **Section 6.8.4(a)**. These resources would be spanned where feasible. All waterways crossed would be maintained for proper drainage through the use of culverts or other crossing devices, according to BMPs and permit requirements. If tree removal is required along waterways, trees would be cut so that the root system is not disturbed to retain bank stability. Sediment barriers, if deemed necessary, would be used along waterways and slopes during construction to protect stream ways from soil erosion and waterways from sedimentation. Additionally, if new access

roads for vehicles and equipment are required, access roads would be selected to avoid disturbance to stream banks. No permanent impacts to surface water resources are anticipated.

8.8.5 Water Quality

Table 63 contains a list of impaired waters crossed by the Route B application alignment, based on the 2010 MPCA 303(d) list, along with the causes of impairment.

Table 63. Impaired Waters Crossed by Route B

Waterbody Name	Cause(s) of Impairments
Des Moines River	Dissolved oxygen, Ammonia
East Fork Des Moines River	Dissolved oxygen, Turbidity
Judicial Ditch No. 3	Dissolved oxygen
Center Creek	Ammonia, Fish Index of Biotic Integrity ("FIBI"), Turbidity

Source: MPCA 2010

Details regarding the 303(d) list and Section 401 of the CWA were previously provided in **Section 6.8.5.**

(a) *Impacts and Mitigation*

Impacts and mitigation for the construction of the Project along Route B are similar to those provided for Route A in **Section 6.8.5(a)**.

8.8.6 Groundwater Resources

Of the six groundwater provinces in the State of Minnesota, the majority of Route B crosses the Western Province. The remainder of the eastern portion of Route B would cross the South-Central Province. Details regarding these provinces were previously provided in **Section 6.8.6**.

According to the County Well Index, managed by the Minnesota Department of Health, two groundwater wells are located within Route B. The Route B application alignment does not cross any wellhead protection areas.

(a) *Impacts and Mitigation*

No impacts to groundwater resources are anticipated. Details regarding impacts and mitigation to groundwater resources along Route B are similar to those discussed for Route A in **Section 6.8.6(a)**.

8.8.7 Wetlands

NWI data were used to determine the number and types of wetlands and estimate the percentage of wetland acreage occurring within Route B.

Of the total 1,768 acres of right-of-way, only 7.7 acres of wetlands would occur within the required right-of-way for Route B. A total of 18 wetlands would be crossed by the Route B application alignment, including two forested wetlands accounting for 1.6 acres (**Appendix D** and **Appendix O**). All wetlands crossed by Route B are small and could be spanned. No structures are anticipated to be placed in wetlands for Route B. **Table 64** summarizes the wetland impacts associated with Route B.

Table 64. Impacts of Route B on Wetlands

Impacts of Route B	Total
Right-of-Way Acres	1,768
Total Wetlands within the 200-foot Right-of-Way (acres)	7.7
Number of Wetlands within Route	72
Percent of the 200-foot Right-of-Way that Crosses Wetlands	0.1
Forested Wetlands in 200-foot Right-of-Way (Acres)	1.6
Number of Forested Wetlands Within Route	5
Percent of the 200-foot Right-of-Way that Crosses Forested Wetlands	0.1
Number of Wetlands Over 1,000 ft Crossed by Application Alignment	0
Lengths (ft) of Wetlands Over 1,000 ft that are Crossed by Right-of-Way	0
Number of Poles in Wetlands	0
Temporary Wetland Impacts (acres)	0

Source: MnDNR, MNDOT, ITC Midwest, NAIP, NWI

Table 65 includes a summary of data pertaining to NWI wetlands surrounding Route B. The right-of-way for Route B would contain 18 NWI wetlands, including PEM, PFO, palustrine scrub-shrub ("PSS"), and PUB, incorporating 7.7 acres of wetland into the transmission line right-of-way. All of these wetland crossings would be new crossings. Route B contains part of a 5.5-acre PWI wetland. According to the USGS topographic map, this wetland is associated with Elm Creek and is located in a gravel pit.

Further details regarding PWI wetlands, federally jurisdictional wetlands, and NWI wetlands were previously discussed in **Section 6.8.7**. **Table 66** provides a summary of NWI wetlands that would be within the 200-foot right-of-way. There are no PWI wetlands crossed by Route B or the application alignment.

Table 65. NWI Wetlands Crossed by Route B

NWI Wetland Type	Total Wetlands in Route	Acreage in Route B
PEM	53	55.0
PFO	5	10.3
PSS	2	3.2
PUB	10	14.9
Riverine	2	4.1
Total	72	87.54

Source: USFWS NWI

Table 66. NWI Wetlands Crossed by Route B Right-of-Way

NWI Wetland Type	Total Wetlands in Right-of-Way	Acreage in Right-of-Way
PEM	12	3.2
PFO	2	1.6
PSS	1	0.01
PUB	2	1.5
Riverine	1	0.9
Total	18	7.72

Source: USFWS NWI

MnDNR data were reviewed for known occurrences of State-protected calcareous fens. No records of calcareous fens exist along Route B. In addition, land ownership and management data were reviewed for lands managed as natural wetland areas under the control of the USFWS. Route B crosses a portion of the Boot Lake WPA, however, the Route B right-of-way would not be within the WPA. No USDA WRP lands are crossed by Route B.

(a) *Impacts and Mitigation*

Mitigation measures for minimizing impacts to wetlands along Route B would be similar to those discussed for Route A in **Section 6.8.7(a)**. All wetlands crossed by the Route B application alignment are small and could easily be spanned.

Because Route B crosses no wetlands wider than 1,000 feet, no structures are anticipated to be placed in wetlands. Clearing of forested wetlands would be the only permanent impact anticipated to wetlands. ITC Midwest will obtain all permits and approvals from the USACE, MnDNR, and local government unit as necessary for any actions to occur in wetlands.

8.8.8 Flora

The general flora description provided in **Section 6.8.8** for Route A would also be applicable to Route B.

Route B crosses portions of 14 MCBS sites, with only one site having a below minimum biodiversity significance ranking, and 15 RIM land parcels.

(a) *Lakefield Junction to Huntley*

The general flora description provided in **Section 6.8.8** would be applicable to the proposed Route B Lakefield Junction to Huntley segment. This segment of Route B contains portions of 13 RIM lands and 13 MCBS. One MCBS site has a ranking of below biodiversity significance, while twelve sites have moderate rankings and one site has an outstanding ranking. The right-of-way for Route B crosses portions of eight MCBS, including the Center Creek 21 site of outstanding importance, and five RIM land parcels. The Route B application alignment crosses seven MCBS, all but four of which could be spanned. Belmont Bridge South East, Belmont 34, 35, Elm Creek 36, and Center Creek 21 would all likely contain a single pole structure. The application alignment also crosses one RIM site that could easily be spanned.

(b) *Huntley to Iowa Border*

The general flora description provided in **Section 6.5.3** would be applicable to the proposed Huntley to Iowa border segment of Route B. Route B contains a portion of two RIM land parcels. A portion of the Verona 25 MCBS site is also crossed by Route B, and it has a moderate biodiversity ranking. There is a single RIM parcel within the 200-foot right-of-way for Route B, but this portion of the application alignment does not cross any MCBS for RIM lands.

(c) *Impacts and Mitigation*

The construction, operation, and maintenance of Route B would be designed to minimize potential adverse impacts to all wildlife resources, especially threatened and endangered plant and animal species, although no impacts to

listed species are anticipated. The primary impact would be loss of 12.1 acres of woodland habitat, in addition to the conversion of 1.6 acres of forested wetland to non-forested wetland. Clearing of woodland habitat would be limited to the 200-foot right-of-way. Following completion of construction, the right-of-way would be appropriately restored and available for wildlife habitat.

The Route B application alignment crosses the edge of the core of the GBCA around Boot Lake WPA. The application alignment right-of-way, and route all pass through the matrix of this GBCA. Route B also passes through the matrix of the GBCA surrounding the Belmont 27 Plus MCBS site. This MCBS site and the core of this GBCA are not within the Route, however. There are five GBCA sites northwest of Sherburn and south of Big Twin Lake. The Route B application alignment passes between these GBCAs. A small portion of the GBCA core in the Elm Creek 36 MCBS site is within Route B and the right-of-way, but no other GBCAs in this area are within Route B or the right-of-way. The GBCA matrices are available in **Appendix C**.

8.8.9 Fauna

Those resident and migratory wildlife species discussed in **Section 6.5.4** would also be found along Route B.

Route B crosses several areas of high-quality wildlife habitat that occur naturally or are being managed. These areas include the MnDNR Four Corners WMA, Caron WMA, and the Toe WMA

(a) *Lakefield Junction to Huntley*

The general fauna description provided in **Section 6.8.9** would be applicable to the proposed Route B along the Lakefield Junction to Huntley segment. The Lakefield Junction to Huntley segment of Route B crosses of the Four Corners WMA, the Caron WMA, and the Toe WMA.

(b) *Huntley to Iowa Border*

The general fauna description provided in **Section 6.8.9** would be applicable to the proposed Route B Huntley to Iowa segment. The Huntley to Iowa segment of the Route B application alignment would not cross any established WMAs.

(c) *Impacts and Mitigation*

The Route B application alignment crosses the edge of the core of the GBCA around Boot Lake WPA. The right-of-way and route cross this GBCA matrix. Route B also crosses the matrix of the Belmont 27 East MCBS site. The route passes between five GBCAs northwest of Sherburne and south of Big Twin Lake. A small portion of the GBCA care in the Elm Creek 36 MCBS site is crossed by Route B but is not crossed by the proposed right-of-way. Overall, impacts and mitigation measures for Route B would be similar to those discussed in **Section 6.8.9(a)** for Route A, except that Route B crosses WMAs in the Study Area. Crossing of WMAs would be at WMA boundaries or parallel to existing roadways or other infrastructure, where feasible.

8.9 RARE AND UNIQUE NATURAL RESOURCES

8.9.1 Threatened and Endangered Species

The previous discussion in **Section 6.9** regarding rare and unique natural resources for Route A would also generally apply to Route B as both routes cross the same counties in southwestern Minnesota. Prairie bush clover is the only federally-listed threatened or endangered species in Jackson and Martin counties. No federally-listed species are known to occur in Faribault County. No known occurrences of prairie bush clover have been recorded along Route B.

For a summary of State-listed threatened, endangered, and special concern species, see **Section 6.9.1**. The Route B 200-foot right-of-way crosses four known occurrences of remnant prairie.

(a) *Impacts and Mitigation*

ITC Midwest does not foresee any impacts to the prairie bush clover or its habitat in the construction of Route B. ITC Midwest will coordinate with MnDNR and USFWS, as appropriate, to identify potential locations for prairie bush clover and other rare and unique natural resources along Route B.

It is likely that the identified occurrences of remnant prairies along the Route B right-of-way can be spanned. ITC Midwest will coordinate with the MnDNR to ensure proper measures are in place to avoid impacts to the identified remnant prairie type.

No threatened or endangered species have been recorded along the application alignment or within the 200-foot right-of-way. Overall, no adverse impacts to

rare or unique resources, such as loss of habitat or disturbance, are anticipated. ITC Midwest will coordinate with MnDNR and other appropriate agencies to identify rare and unique resources along Route B and concerning any recommendations to minimize or avoid impacts to protected species. If any potential impacts to known species or previously unidentified protected species are identified, the USFWS, MnDNR or other federal or State agency may require measures to be taken to minimize any potential impacts.

8.9.2 Natural Resource Sites

Background information on various natural resource sites within the Study Area is provided in **Section 6.9.2**. Route B crosses portions of 15 MCBS sites, with only one site having a below minimum biodiversity significance ranking (**Appendix D**). Seven are crossed by the application alignment: Belmont 33, Belmont 34 35, Belmont Bridge South East, Center Creek 21, Center Creek 26 North, Elm Creek 36, and Fox Lake 34.

These crossings are summarized in **Table 67**. Further details regarding MCBS and RIM sites were provided in **Section 6.9.2.**

Table 67. MCBS Sites Crossed by Route B

Site Name	Crossed by Application Alignment	Crossed by Route B	Biodiversity Significance Ranking
Belmont 27 East	—	Yes	Moderate
Belmont 33 (crossed twice)	Yes (once)	Yes	Moderate
Belmont 34 35	Yes	Yes	Moderate
Belmont Bridge South East	Yes	Yes	Moderate
Caron WMA plus	—	Yes	Moderate
Center Creek 21	Yes	Yes	Outstanding
Center Creek 21 North	—	Yes	Moderate
Center Creek 26 North	Yes	Yes	Below
Center Creek 28 NW	—	Yes	Moderate
Elm Creek 36 (crossed twice)	Yes (once)	Yes	Moderate
Fox Lake 34	Yes	Yes	Moderate
Verona 25	—	Yes	Moderate

Route B does not cross any SNAs, State parks, or known occurrences of threatened or endangered species. Route B crosses the MnDNR Four Corners WMA, Caron WMA, Bootleg Lake WMA and the Toe WMA. Route B also crosses

the southern boundary of the Boot Lake WPA. Of these sites, only the Four Corners WMA would be crossed by the Route B application alignment. These impacts are summarized in **Table 68**.

Table 68. Summary of Environmental Sites for Route B

Environmental Site Type	Total
Number of MCBS Biodiversity Sites Crossed by Route	15
Number of WMAs in Route B	3
Number of WMAs within one mile of Route B	9
Number of WMAs within Right-of-Way	3
WMA Temporary Impacts (acres)	<1
Lengths (ft) of WMAs over 1,000 ft that are Crossed by Right-of-Way	0
Number of Poles in WMAs	0
Number of SNAs within one mile of Route	0
Number of WPAs in Route B	1
Number of WPAs within one mile of Route	2
Number of WPAs within Right-of-Way	1
Number of State Parks within one mile of Route	0
USFWS WRPs within one mile of Route	1
State-listed Species Observations within Study Area	35
T & E Species Observations within Route	7
Number of Observations of T & E Species within Right-of-Way	5
Number of Observations of T & E Species within Alignment	5
Number of Observations of T & E Species within one mile of Route	19
Number of T & E Species within one mile of Route	16

Source: MnDNR, MnDOT, ITC Midwest, NAIP, NWI

(a) *Impacts and Mitigation*

The general mitigation methods discussed in **Section 6.9.2(a)** are also applicable to Route B. The Route B application alignment crosses one WMA, the Four Corners WMA. The application alignment at this crossing is parallel to 140th Street in Martin County to minimize impacts to the WMA in this area. The Four Corners WMA is located on both sides of 140th Street, but primarily located south of 140th Street. This routing minimizes impacts to the WMA by locating the Project along an existing linear corridor (road right-of-way). ITC Midwest will coordinate the proposed transmission line construction with the MnDNR, USFWS, and any other appropriate natural resource agencies to minimize Project-related impacts in this area and secure all required permits for construction-related activities through natural resource sites.

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9.0 FEDERAL AND STATE AGENCY, LOCAL GOVERNMENT, AND PUBLIC INVOLVEMENT

ITC Midwest engaged in extensive public and agency outreach for the proposed Project. Throughout the process, ITC Midwest provided opportunities for stakeholders and potentially-affected landowners to participate in the routing process. This engagement provided ITC Midwest with valuable insight into landowner and public agency preferences regarding development of Project facilities, including the development of Route Alternatives analyzed for the Project. ITC Midwest conducted a total of six public open houses, approximately 30 agency and local official meetings, and over one year of active stakeholder and public agency outreach during preapplication activities for the Project.

This section describes outreach efforts conducted by the Applicant and discusses preapplication involvement by federal, State, and local agencies as well as the public information outreach campaign employed by ITC Midwest during this Project.

9.1 AGENCY INVOLVEMENT IN PRE-APPLICATION

As part of preapplication efforts, ITC Midwest initiated its outreach campaign to public agencies in June 2012 through an agency inquiry letter. The letter introduced the Project and requested agency input into public and natural resources that may be potentially affected by the proposed Project. In the letter, the applicant provided preliminary project details and a potential timeline for major project milestones. The applicant also requested input from the federal and State agencies with respect to the resources under their jurisdiction as well as the identification of federal and State permits and/or approvals that may be potentially required for the project. The applicant mailed a total of 25 inquiry letters to federal, State, and local officials. The recipients are listed below in **Table 69**. Copies of the letters are provided in **Appendix I.**

Table 69. Public Agency Inquiry Letter Contact List

Agencies	Location
U.S. Army Corps of Engineer, St. Paul District – Regulatory Branch	St. Paul, MN
U.S. Fish and Wildlife Service – Twin Cities Field Office	Bloomington, MN
United States Department of Agriculture – Natural Resources Conservation Service	St. Paul, MN
Minnesota Department of Agriculture – Agricultural Development and Financial Assistance Division	St. Paul, MN
State Historic Preservation Office – Minnesota Historical Society	St. Paul, MN
Minnesota Department of Natural Resources – Natural Heritage Information System	St. Paul, MN
Minnesota Department of Transportation – District 7	Mankato, MN
Minnesota Pollution Control Agency – Environmental Review Unit	St. Paul, MN
Minnesota Board of Water and Soil Resources	New Ulm, MN
Jackson County – County Coordinator	Jackson, MN
Jackson County – County Engineer	Jackson, MN
Jackson County Soil and Water Conservation District	Lakefield, MN
Martin County – County Coordinator	Fairmont, MN
Martin County – County Engineer	Fairmont, MN
Martin County Soil and Water Conservation District	Fairmont, MN
Faribault County – Department of Planning and Zoning	Blue Earth, MN
Faribault County Soil and Water Conservation District #1	Blue Earth, MN
Faribault County Soil and Water Conservation District #2	Blue Earth, MN
Faribault County Soil and Water Conservation District #3	Blue Earth, MN
Faribault County Development Corporation	Blue Earth, MN
Faribault County Economic Development Authority	Blue Earth, MN
City of Lakefield	Lakefield, MN
City of Fairmont	Fairmont, MN
City of Blue Earth	Blue Earth, MN
City of Winnebago	Winnebago, MN

In addition to the initial outreach inquiry letter, ITC Midwest staff conducted individual meetings with the MnDNR and USFWS on November 9, 2012. The results of these meetings are discussed below in detail under their agency-respective headings.

9.1.1 Federal Agencies

(a) *U.S. Army Corps of Engineers*

The USACE was initially contacted for this Project through the June 2012 agency inquiry letter sent to the St. Paul District, Regulatory Branch. ITC Midwest did not receive any initial feedback from the USACE and there were no preapplication meetings held with this agency.

(b) *U.S. Fish and Wildlife Service*

Initial contact with the USFWS was conducted via the June 2012 agency inquiry letter sent to the Twin Cities Field Offices. Following delivery of the letter, ITC Midwest received a request from the USFWS on July 25, 2012 for GIS data regarding the proposed Study Area. An electronic folder containing the requested GIS data was sent to the USFWS on July 26, 2012.

ITC Midwest held a meeting with the USFWS on November 9, 2012 to discuss potential routing issues relating to the Pilot Grove Lake WPA. ITC Midwest introduced the Project and discussed the overall routing process and general timeline associated with the Project. The USFWS provided an overview of their approach to analyzing impacts to areas such as the Pilot Grove Lake WPA and stated that the location of the line through the Pilot Grove Lake WPA may be acceptable provided that potential impacts to the right-of-way are addressed prior to construction of the line and that the right-of-way not be increased beyond its current 100-foot width. ITC Midwest staff inquired about the availability of USFWS data regarding local bald eagle nest locations; USFWS staff indicated that their records for local eagles were not up to date at this time and recommended using MnDNR data.

(c) *U.S. Department of Agriculture*

Agency correspondence with the USDA was conducted primarily through the NRCS. The NRCS was initially contacted through the June 2012 agency inquiry letter sent to the State Conservationist. ITC Midwest did receive a GIS data request from the NRCS on July 14, 2012 regarding Study Area boundary data.

ITC Midwest provided the requested GIS data via email on July 15, 2012. There were no preapplication meetings conducted with the USDA.

9.1.2 State Agencies

(a) *Minnesota Department of Agriculture*

The Minnesota Department of Agriculture ("MnDOA") was initially contacted about the Project through the June 2012 agency inquiry letter sent to the Agricultural Development and Financial Assistance Division. ITC Midwest did not receive any initial feedback from the MnDOA and there were no preapplication meetings held with this agency although information on organic farm locations was requested of the MnDOA.

(b) *Minnesota Historical Society – SHPO*

The Minnesota SHPO was initially contacted about the Project through the June 2012 agency inquiry letter sent to the Deputy State Historic Preservation Officer. ITC Midwest sent representatives to the SHPO on July 25-26, 2012 to review the available records for potential cultural or historic resources within the Study Area. ITC Midwest did not conduct any formal preapplication meetings with the SHPO.

(c) *Minnesota Department of Natural Resources*

The MnDNR was contacted initially through the June 2012 agency inquiry letter. ITC Midwest staff followed up directly with MnDNR staff from the National Heritage Information Group to obtain access to MnDNR natural heritage GIS data. The data was acquired on December 6, 2012 and was used to determine the proximity of resources to the alternative route network developed for the Project.

ITC Midwest staff met with representatives of the MnDNR on November 9, 2012 to introduce the Project in greater detail and to discuss any potential routing concerns or opportunities the MnDNR could identify for the Project. MnDNR staff indicated that the agency is in the process of acquiring property rights on approximately 80 acres west of the current boundary of the Four Corners WMA from the Fox Lake Conservation League. The MnDNR plans to fold this area into the existing Four Corners WMA. Eventually, the MnDNR would like to expand the Four Corners WMA further to the west/northwest in order to connect with the nearby Caron WMA. MnDNR staff indicated that this area is within a highly-utilized bird migration corridor and that connecting the two areas would

provide a valuable resource for migrating bird species. As a result of this expansion, MnDNR staff indicated that they would prefer to see a Route Alternative that extended south of the Fox Lake Refuge and was not located through or in proximity to the Four Corners WMA or the Caron WMA. A revised route was developed to avoid the Four Corners WMA and the Fox Lake WMA. A description of this reroute is provided below in **Section 9.3.**

(d) *Minnesota Department of Transportation*

MnDOT was initially contacted for this Project through the June 2012 agency inquiry letter sent to MnDOT District 7. The MnDOT provided a formal reply to the inquiry letter (**Appendix I**) in which they indicated the type of permits that may be required for the Project as well as identification of the MnDOT Utility Accommodation Policy.

ITC Midwest staff contacted the MnDOT directly to obtain additional GIS data relating to the ARMER emergency tower locations in southern Minnesota. MnDOT staff indicated that any proposed transmission line should be located at least 350 feet away from any existing or proposed ARMER tower location. The GIS data was provided by MnDOT staff on November 11, 2012 and was incorporated into the Project database to ensure consideration in the route development and evaluation process.

On March 8, 2013, ITC Midwest and MnDOT District 7 representatives met to review the route that the company intended to propose in this Route Permit Application. The discussion focused on Route A near Interstate 90, State Highway 4, and State Highway 15. The MnDOT representatives requested additional information on the route development process. MnDOT indicated that it would review the routes in these areas along with information provided in the Application and provide comments on the Route A and Route B application alignments, any conditions it may recommend the Commission consider including in the Route Permit, and if there are any safety or design considerations not already accounted for in the application alignments that it would recommend for analysis in the EIS.

(e) *Minnesota Pollution Control Agency*

The MPCA was initially contacted about the Project through the June 2012 agency inquiry letter sent to the Agricultural Development and Financial

Assistance Division. ITC Midwest did not receive any initial feedback from the MPCA and there were no preapplication meetings held with this agency.

(f) *Minnesota Board of Water and Soil Resources*

The BWSR was initially contacted about the Project through the June 2012 agency inquiry letter. ITC Midwest did not receive any initial feedback from the BWSR and there were no preapplication meetings held with this agency.

9.1.3 Local Government Units and Local Interest Groups

ITC Midwest conducted an extensive outreach program for the Project throughout Jackson, Martin, and Faribault Counties. Contact with these counties and other LGUs was typically initiated through the county administrator or county coordinator. From these initial contacts, ITC Midwest was connected with other groups and LGUs that further expanded county and local outreach efforts for the Project. Since March 2012, ITC Midwest participated in approximately 30 meetings with county officials and LGUs over a period of 11 months prior to application of the Route Permit. The intent of each specific meeting changed over time in relation to the phase of the Project, but the initial goal of these meetings was to introduce ITC Midwest and the Project to the local community and agency representatives and to obtain feedback and information from these groups that could assist in the development of alternative routes for the Project. The first of these preapplication meetings occurred in March of 2012 and continued into March 2013 prior to the filing of the application for the Route Permit. In response to the preapplication leters sent to LGUs on September 27, 2012, ITC Midwest received requests for meetings from the Southwest Regional Development Commission and the three counties through which the Project is proposed to cross. A list of the agency meetings completed during the preapplication process is included below in **Table 70**.

Table 70. Pre-Application Meetings With LGUs and Local Interest Groups

LGU or Local Interest Group	Date
Faribault County Farm Service Agency – Project/substation overview	3/22/12
Faribault County Soil and Water Conservation District - Project/substation overview	3/22/12
Faribault County Highway Department - Project/substation overview	3/22/12

LGU or Local Interest Group	Date
City of Winnebago – Project overview meeting	4/20/12
Faribault County – Planning and Zoning Administrator	4/24/12
Faribault County Economic Development Commission	4/24/12
Martin County – Project overview meeting	5/10/12
City of Blue Earth – Project overview meeting	5/14/12
Jackson County Coordinator - Project overview meeting	5/14/12
Jackson Economic Development – Project overview meeting	5/14/12
City of Lakefield – Project overview meeting	5/14/12
Jackson County – County Engineering Department	5/18/12
Martin County – Economic Development Association and IGNITE	6/4/12
Jackson County – Route study meeting	7/9/12
Martin County – Route study meeting	7/9/12
Faribault County – Route study meeting	7/9/12
Faribault County Economic Development Association	7/10/12
City of Sherburn – Project overview meeting	8/6/12
City of Trimont – Project overview meeting	8/6/12
City of Fairmont – Project overview meeting	8/6/12
Blue Earth Chamber of Commerce	9/5/12
Jackson Chamber of Commerce	9/5/12
Fairmont Chamber of Commerce	9/5/12
Jackson County Public Open House (2 meetings)	9/11/12
Faribault County Public Open House (2 meetings)	9/12/12
Martin County Public Open House (2 meetings)	9/13/12
Southwest Regional Development Commission	10/29/12
Jackson County Board of Commissioners – Project overview meeting	11/27/12
Martin County Board of Commissioners – Project overview meeting	12/19/12
Faribault County Board of Commissioners – Project overview meeting	12/19/12
Fox Lake Conservation League – Project overview meeting	12/28/12
Minnesota Ducks Unlimited – Project overview meeting	12/28/12
Southern Minnesota Initiative Foundation	1/11/13
Southwest Regional Development Commission	2/22/13
City of Jackson	3/20/13

9.1.4 Charitable Giving and Grants

In addition to other community outreach efforts, ITC Midwest supports local organizations through sponsorship of local events, fundraising efforts, and charity drives. ITC Midwest provided support for numerous groups in Martin, Jackson, and Faribault counties ranging from 4-H Clubs, county fairs, and local charitable organizations. ITC Midwest also worked with the Fox Lake Conservation League to support vegetation management programs in and around Fox Lake.

Additionally, the company's Charitable Giving Program encourages qualified charitable organizations to apply for grants that support four primary areas: education, environmental stewardship, social services and health and wellness. More information on ITC's Charitable Giving Program is available on its website: http://www.itc-holdings.com/itc-holdings/community/charitable-giving-program.html

9.2 PUBLIC INFORMATION OUTREACH

9.2.1 Mailings and Newsletters

In August 2012, ITC Midwest mailed over 3,700 notices for the September 2012 open houses to landowners and local governmental units. A copy of this letter is available in **Appendix J**. After the open houses were completed, ITC Midwest also mailed a post card thanking those who attended the open houses for their participation and comments.

In January 2012, ITC Midwest provided notice of the overall Project to landowners, residents, local units of government, and State agencies and elected officials through mailings and legal notice publications as required by its Notice Plan for the Certificate of Need. Maps of the routes, current as of January 18, 2013, were provided to six libraries, two in each of the three counties, so landowners could review the routes that ITC Midwest intended to include in this Application and the maps were also posted on its website. The information provided at the libraries and on the website provided information on how individuals can participate in the routing process and how to have their name added to the Project List to be maintained by EFP.

9.2.2 Open House Meetings

ITC Midwest conducted six public open houses during the week of September 10th. The meetings included two each in Jackson County (September 11), Faribault County (September 12), and Martin County (September 13). ITC Midwest staff presented large-scale maps showing the initial route network developed as a result of agency responses, county meetings, site reconnaissance, and the GIS database developed for the Project. The open houses included nine separate information booths ranging in focus from routing, design and construction, regulatory, real estate/right-of-way and environmental/EMF. A total of 445 individuals attended the meetings. Pre-meeting media visits were conducted by ITC Midwest staff with the Fairmont Sentinel, Faribault County Register, St. Paul Pioneer Press, and the Lakefield Standard. The Fairmont Sentinel and the Worthington Daily Globe sent reporters to cover the open house meetings and the Lakefield Standard conducted a follow-up story after the meetings with ITC Midwest staff.

In addition to extensive verbal comments, ITC Midwest received a total of 114 formal written comments. Landowner feedback from these open houses included comments and concerns related to proximity to municipal airports, agricultural infrastructure (*e.g.*, center-pivot irrigation systems), wind farm development and structure locations, land use and agricultural practices, preference to utilize field lines, and other potential considerations to route development. A summary of common themes provided by both written and verbal comments is presented below in **Section 9.2.3**.

Eighty-eight of the respondents who wrote formal comments indicated a desire for ITC Midwest to choose the existing Lakefield to Border 161 kV Transmission Line rather than creating a new corridor for the proposed Project. Between the public open houses, ITC Midwest staff also met with representatives from Jackson Municipal Airport to discuss future airport expansions plans. A summary of this meeting is provided below in **Section 9.3.1(a)**.

9.2.3 Summary of Common Themes

During the public open house meetings, both formal and informal comments were collected and summarized into common themes, including:

- Use the existing 161 kV right-of-way as the preferred location for the new line

- Use existing field division lines rather than crossing through agricultural fields
- Locate the new line along roads rather than through the middle of farm fields; avoid crossing agricultural fields at angles
- New utility development near Lakefield Junction Substation would add additional infrastructure to an area that is already crowded with existing utility infrastructure
- Remove old/unused transmission structures and lines if developing new lines in the area; avoid paralleling existing transmission lines
- Avoid surrounding WMAs/WPAs with utility development
- Avoid routes near wetland areas or other sensitive natural resources
- Use existing transmission crossings across lakes rather than build new transmission rights-of-way in other locations
- Compensate landowners for impacts to agricultural land
- Minimize or avoid impacts to residents, landowners, and equipment from electric and magnetic fields and/or electrical interference generated by the new line
- Avoid or minimize impacts to drain tiles; use local contractors or someone familiar with local agricultural resources for repair of damaged tiles
- Minimize impacts to aerial sprayers used for agricultural production
- Minimize or avoid placement of transmission structures near farm equipment and facilities, including center-pivot irrigation systems
- Support for and against additional transmission development in the area that would support existing and proposed wind farms
- Potential for new transmission line or facilities to negatively impact property values
- Provide support and compensation for maintenance and repair or local/town roads during and after construction of new line
- Provide process by which landowners/residents may submit damage claims from activities related to the new line
- Concern with the use of helicopters for construction and maintenance of the line
- Provide justification for not building the new line underground
- Provide evidence of the need for the line and how it is being funded

9.3 ROUTE SEGMENTS INCORPORATED THROUGH PUBLIC AGENCY INVOLVEMENT

Throughout the outreach activities for the Project, changes to the location of individual route segments were recommended as a result of discussions with various agencies and officials. Modifications to these segments were primarily the result of the presence of routing constraints and the preferences of agency staff on the location of segments near sensitive resources. These modifications ranged from minor changes to the location of an individual segment to more major revisions to segment locations or the creation of entirely new segments or the elimination of others. During the route development process, some of these modifications were eliminated and some were incorporated into the location of Route A and Route B segments. The two primary areas where modifications were incorporated into Routes A and B are discussed in detail below.

9.3.1 Lakefield Junction to Huntley

(a) *Jackson Municipal Airport*

During initial route planning activities, the Jackson Municipal Airport was identified as a potential routing constraint to the Project due to its proximity to the alternative route segments. A meeting with Jackson Airport staff was conducted on September 11, 2012 to discuss the Minnesota to Iowa 345 kV transmission line project and its proximity to the airport. Jackson Municipal Airport staff indicated that a new runway project was being proposed for the airport (**Appendix K**). The new runway would be located northeast of the existing runway and extend 5,000 feet in length. It has a projected date of completion between 2015 and 2018. The longer runway would enable a wider range of aircraft to operate at the airport. Airport staff anticipated that air traffic to and from the airport would increase with the new proposed runway.

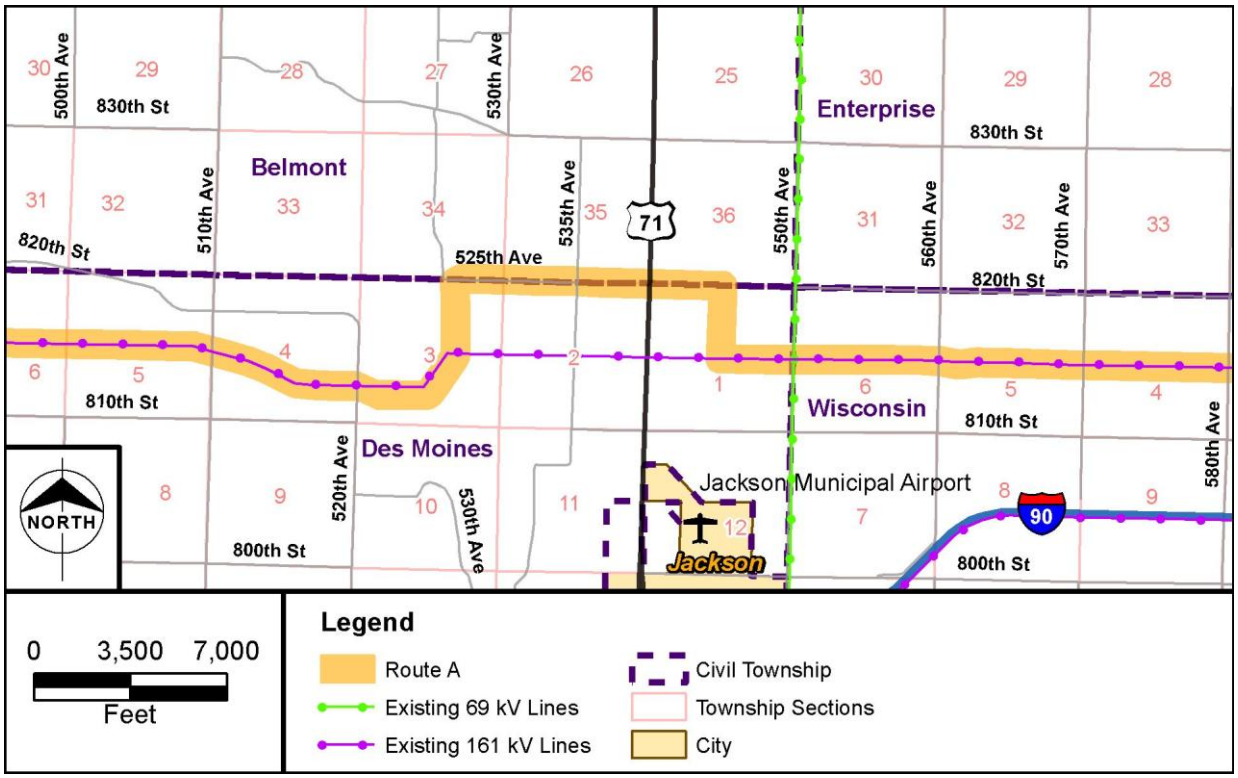
Route A, as originally proposed, used existing 161 kV right-of-way (**Figure 35**) in the area near the Jackson Municipal Airport. Rebuilding this line as a double-circuit 345 kV/161 kV line with typical heights of 130 to 150 feet was determined to potentially present a navigational hazard for airport operations. As a result, Route A was routed further north, off of the existing 161 kV alignment to provide additional distance from the airport. Just east of the Des Moines River, to enable use of the existing river crossing, Route A turns north from the existing line for approximately 0.5 mile then turns east. Proposed structure heights and locations along this alignment were presented to the FAA in order to model test cases that

would identify hazards to air navigation. Although the FAA's model results indicated that the proposed 130-foot structures would not pose a risk to air navigation, a revised modeling effort was conducted by the FAA based on a potential structure height of 150 feet.

This subsequent effort took into account a recent amended instrument approach procedure for Jackson Municipal Airport's primary runway (runway 13). This adjustment would affect the existing 161 kV alignment as well as the Route A application alignment **(Figure 35**). Using the amended approach procedure, a maximum elevation (pole height plus ground elevation) of 1,550 feet mean sea level would apply to structures within the area of this approach procedure. At this elevation, several structures along the approach to the runway for Route A would be required to be less than 125 feet above ground level, and for some, less than 110 feet above ground level to avoid a determination as a hazard to navigation. ITC Midwest evaluated this information and determined it can construct Route A with low profile structures to avoid hazards to air navigation. For future permitting efforts in this area, the FAA would conduct an aeronautical study for potential airspace impacts, including potential mitigation measures such as marking or lighting requirements. If the FAA so requires, ITC Midwest would file a Form 7560-1 Notice of Construction/Alteration to the FAA electronically for each structure.

The revised Route A continues approximately two miles to the east, and then turns south for 0.5 mile until reaching the original 161 kV right-of-way and extending east. There were no revisions to Route B as a result of FAA feedback.

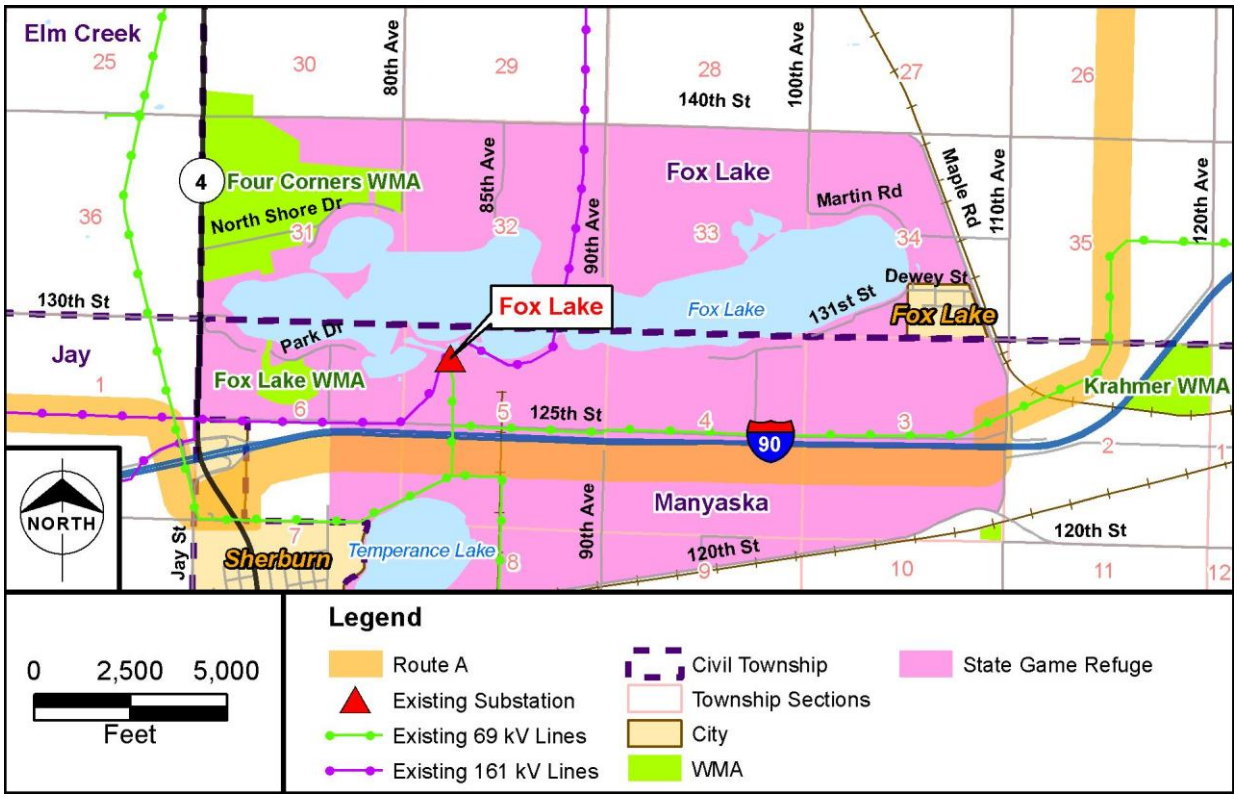
Figure 35. Route A Location near Jackson Municipal Airport



(b) *Fox Lake Game Refuge*

The Fox Lake Game Refuge, just north of the town of Sherburn, includes considerable public lands around Fox Lake. In addition to the Refuge itself, the area in and around Fox Lake Game Refuge includes the Four Corners, Fox Lake, Caron, Seymour Lake, and Krahmer WMAs (**Figure 36**). The existing Lakefield Junction to Border 161 kV line currently extends through the Refuge and across Fox Lake. In an effort to minimize additional lines across the Refuge and Fox Lake, both the original segments of Route A and Route B were developed to avoid crossing the lake and to be located off, or along the edge of, Refuge and WMA lands.

Figure 36. Route A Location near Fox Lake Game Refuge



As discussed in **Section 9.1.2(c)**, ITC Midwest staff participated in a meeting with the MnDNR to discuss the Project and the location of routes in the vicinity of Fox Lake and other public lands within the Study Area. At the time of this meeting, ITC Midwest intended to propose, in this Route Permit Application, that Route A follow 140th Street. During the meeting, MnDNR staff indicated that the agency is in the process of acquiring property rights on approximately 80 acres west of the current boundary of the Four Corners WMA from the Fox Lake Conservation League. The MnDNR plans to add this 80-acre parcel into the existing Four Corners WMA with the goal of eventually expanding the Four Corners WMA to connect with the nearby Caron WMA. As a result of this expansion, MnDNR requested a Route Alternative that extended south of the Fox Lake Refuge and was not located through or in proximity to any of the WMAs north of Fox Lake. A revised route was developed to avoid the WMAs in this area.

Instead of extending across Fox Lake or in proximity to several WMAs, the revised Route A turns south for approximately 0.4 mile and extends along an existing 69 kV line that would be double-circuited. The revised Route A then turns east and crosses through the northern portion of the town of Sherburn and continues eastward paralleling the south side of Interstate 90 for approximately

3.9 miles while extending through the Fox Lake Game Refuge. Route A then turns north crossing back over Interstate 90, co-locating with an existing 69 kV line, eventually exiting the Fox Lake Game Refuge, turning north, and rejoining the existing 161 kV right-of-way near the intersection of 170th Street and 115th Avenue. Route A would avoid crossing any WMA land and would avoid introducing new transmission structures between WMAs in the area.

9.3.2 Winnebago Junction to Huntley—161 kV Transmission Line

There were no modifications made to the routes for the associated facility reconfigurations from Winnebago Junction-Huntley as a result of agency involvement.

9.3.3 Huntley to Iowa Border

There were no modifications made to Route A or B segments from Huntley to the Iowa border that were incorporated as a result of agency involvement. ITC Midwest staff did meet with the USFWS on November 9, 2012 to discuss any routing concerns USFWS had with the Project. As discussed in **Section 9.1.1(b)**, USFWS staff indicated that the location of the line through the Pilot Grove Lake WPA may be acceptable provided that right-of-way not be increased beyond its current 100-foot width and that potential impacts to the right-of-way be addressed prior to construction. ITC Midwest completed additional evaluation of the existing alignment through the Pilot Grove Lake WPA and determined that for this short portion of the line and due to the special circumstances including the USFWS's vegetation management program, it would be feasible to locate the proposed Project within the existing 100-foot right-of-way. Therefore, there were no modifications to Route A or Route B from Huntley to the Iowa border.

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10.0 REQUIRED PERMITS AND APPROVALS

The Project will be constructed in Minnesota and Iowa. In addition to a Minnesota Certificate of Need and Route Permit, ITC Midwest will be required to obtain a number of other permits or approvals from local, State and federal agencies prior to constructing the facilities in Minnesota and Iowa. A list of permits and other approvals that may be required for the Project is presented in **Table 71.** All required permits will be obtained prior to construction.

Table 71. List of Potential Permits and Approvals

Permit	Jurisdiction
Federal Requirements	
Clean Water Act Section 404 Permit (Local/State/Federal Application for Water/Wetland Projects)	USACE
Rivers and Harbors Act Section 10 Permit	USACE
Part 7460 review	FAA
Special Use Permit	USFWS
Incidental Take Permit	USFWS
Eagle Non-Purposeful Take Permit	USFWS
Spill Prevention, Control and Countermeasure ("SPCC") Plan	MPCA/EPA
Minnesota State Approvals	
License to Cross Public Waters or State Lands Public Water Works Permit	MnDNR
General Permit No. 1997-0005; Temporary Water Appropriations	MnDNR
Endangered Species Statutes – Permits and Coordination	MnDNR
Utility Permit on Trunk Highway Right-of-Way (Long Form No. 2525)	MnDOT
Driveway Access	MnDOT
Oversize/overweight permits	MnDOT
NPDES Permit	MPCA
Clean Water Act, Section 401 Permit	MPCA
Agriculture Impact Mitigation Plan	MnDOA

Permit	Jurisdiction
Minnesota Local Approvals	
Local/State/Federal Application for Water/Wetland Projects (under WCA)	County, Township, City, BWSR
Work within the Right-of-Way permits	County, Township, City
Lands Permits	County, Township, City
Overwidth/Overweight Loads Permits	County, Township, City
Road Crossing Permits	County, Township, City
Driveway/Access Permits	County, Township, City
Coordination meetings	Soil and Water Conversation Districts
Iowa State Approvals	
Electric Transmission Franchise	Iowa Utilities Board
NPDES Permit	IDNR
Clean Water Act, Section 401 Permit	IDNR
Flood Plain Development Permit	IDNR
Joint 404 Application Form – Wetlands	IDNR
Work within the Right-of-Way Permit	IDOT
Utility Accommodation Permit	IDOT
Railroad Permit	Iowa Utilities Board
Iowa Local Approvals	
Building Permits/Zoning Compliance Permits	County, City
Overwidth/Overweight Loads Permits	County, City
Utility Accommodation Permits	County, City
Entrance Permits	County, City
Local Floodplain Requirements	County, City
Other Approvals	
Approval to cross lands with conservation easements	Various, depending on program, including USDA, NRCS, and local implementing governmental entities

10.1 FEDERAL APPROVALS

10.1.1 USACE, Section 404, Clean Water Act, Permit

A Section 404 permit is required from the USACE under the CWA for discharges of dredged or fill material into waters of the United States. ITC Midwest will apply for these permits once a Route Permit is issued for the Project.

10.1.2 USACE, Section 10, Rivers and Harbors Act, Permit

The USACE regulates impacts to navigable waters of the United States under Section 10 of the River and Harbors Act. No rivers or streams regulated under Section 10 are crossed by routes proposed in this Application.

10.1.3 FAA, Part 7460 Review

Notice and approval are required for structures 200 feet in height or when the structure height would exceed a slope requirement as defined in the FAA Advisory Circular (AC 70/7460-2K). Form 7460-1 is required for the notice. A Form 7460-1 Notice of Construction/Alteration would need to be filed to the FAA electronically for each structure. The FAA will conduct an aeronautical study for potential airspace impacts and issue a determination based on their study, including potential mitigation measures such as marking or lighting requirements. The results of future studies would be based on the conditions at the time of the study and the judgment of the FAA specialist and may not be the same as what they determined as part of the previously conducted studies. Prior to construction, structure locations will be amended to reflect actual placement and re-submitted to the FAA to verify compliance. Once construction is complete, as-built information must be provided to the FAA using Form 7460-2. ITC Midwest will also coordinate with local outposts regarding clearance issues, if required, based on FAA review.

10.1.4 USFWS, Special Use Permit

This permit is required for the placement of facilities within easements owned by the USFWS. Compatibility is determined in accordance with the National Wildlife Refuge System Improvement Act. A compatible use is a wildlife-dependent recreational use or any other use on lands that in the sound professional judgment of the director will not materially interfere with or detract from the fulfillment of the mission of the USFWS (wildlife conservation) or purposes of the land. ITC Midwest will work closely with the USFWS on potential impacts to their lands.

10.1.5 USFWS, Incidental or Non-Purposeful Take Permit

If it is determined that the Project may result in the "take" of threatened or endangered species under Section 10 of the Endangered Species Act, ITC Midwest will work closely with USFWS to apply for an incidental take permit. The purpose of the incidental take permit is to authorize the incidental take of a

listed species, not to authorize the activities that result in take. ITC Midwest does not anticipate the need to obtain a non-purposeful permit for impacts to Federally threatened or endangered species.

No bald or golden eagle nests have been identified along either route proposed in this Application. Based on this, unless a bald or golden eagle nest is identified within 660 feet of the final route approved by the Commission, ITC Midwest does not anticipate the need to obtain a non-purposeful take permit under the Bald and Golden Eagle Protection Act.

10.1.6 Spill Prevention, Control and Countermeasure ("SPCC") Plan

An SPCC plan is required to prevent discharge of oil or other petroleum products into waters of the United States, and is required if the aboveground storage capacity for the substance is greater than 1,320 gallons and there is a potential of a discharge into navigable waters of the United States. ITC Midwest will update and develop their SPCC plans at Project substations that meet the criteria per 40 CFR 112. Any fuel storage required during construction will have an appropriate SPCC plan prepared for the facilities, if necessary.

10.2 MINNESOTA STATE APPROVALS

10.2.1 MnDNR, License to Cross Public Waters or State Lands

The MnDNR Division of Lands and Minerals regulates utility crossings over, under, or across any State land or public water identified on the Public Waters and Wetlands Maps. A license to cross Public Waters is required under Minnesota Statutes Section 84.415 and Minnesota Rules Chapter 6135. For utility crossings, a license issued by the Division of Lands and Minerals also constitutes the required Public Water Works Permit under Minnesota Statutes Chapter 103G.

ITC Midwest does not anticipate that a license to cross public lands would be required for Route A. For Route B, however, ITC Midwest anticipates that a license to cross public lands may be necessary for the crossings at the Four Corners WMA.

10.2.2 MnDNR, General Permit: Temporary Water Appropriations

A water use (appropriation) permit from MnDNR Waters is required if Project construction requires withdrawing more than 10,000 gallons of water per day or one million gallons per year. ITC Midwest will evaluate whether the Project meets the criteria under General Permit 1997-0005 for construction dewatering activities.

10.2.3 MnDOT, Utility Permit

A permit from MnDOT is required for construction, placement, or maintenance of utility lines adjacent to, above, or across trunk highway right-of-way. If it is determined that a utility permit is necessary for construction of the Project, a utility permit will be obtained prior to construction commencing.

10.2.4 MPCA, NPDES Permit

An NPDES Permit from the MPCA is required for stormwater discharges associated with construction activities disturbing equal to or greater than one acre of land. When an NPDES construction stormwater permit is required, an applicant must also develop and implement a SWPPP, which includes best management practices and construction measures to be implemented to minimize discharge of sediment during stormwater events. An NPDES construction stormwater permit will be obtained for the Project and a SWPPP will be developed prior to construction.

10.2.5 MPCA, Section 401, Clean Water Act

Section 401 water quality certification is required from the MPCA to obtain a federal permit for any activity that may result in a discharge to waters of the United States. This ensures the Project will comply with State water quality standards according to the CWA.

10.3 MINNESOTA LOCAL APPROVALS

Once the Commission issues a route permit, local zoning, building and land use regulations and rules are preempted. Minn. Stat. § 216E.10, subd. 1. Typical other approvals associated with transmission line and associated facility construction are further detailed below.

10.3.1 Local/State/Federal Application for Water/Wetland Projects

The Minnesota Board of Water and Soil Resources administers the State Wetland Conservation Act pursuant to Minnesota Rule 8420. The Project may require local approvals or permits if permanent impacts to wetlands are anticipated due to construction.

10.3.2 Lands Permits, including Road Crossing/right-of-way Permits

These permits may be required to occupy county, township, and city right-of-way and lands such as park lands, watershed districts, or other properties owned by these entities.

10.3.3 Over-width/Overweight Loads Permits

These permits may be required to move over-width or heavy loads on county, township, or city roads.

10.3.4 Driveway/Access Permits

These permits may be required to construct access roads or driveways that access county, township or city roadways.

10.4 IOWA STATE APPROVALS

10.4.1 IUB, Electric Transmission Line Franchise

A franchise from the Iowa Utilities Board is required to construct a transmission line above 69 kV and greater than one mile in length in Iowa that is not located wholly within a city's jurisdiction. The Iowa portion of the Project is to be located in Kossuth County in areas outside city limits. Because of this, ITC Midwest will apply for a franchise from the Iowa Utilities Board prior to commencing construction of the Project in Iowa. 199 IAC 11.3(4).

10.4.2 IDNR, NPDES Permit

An NPDES General Permit No. 2 from the Iowa Department of Natural Resources ("IDNR") is required for each construction area one acre or more in size. This permit governs stormwater discharges associated with construction activities and requires the permittee to file a notice of intent with the IDNR and

to provide public notice. A requirement of the permit is to develop and implement a SWPPP, which includes construction measures to minimize discharge of pollutants from the site.

10.4.3 IDNR, Section 401, Clean Water Act

Section 401 water quality certification is required from the IDNR to obtain a federal permit for any activity that may result in a discharge to waters of the U.S. This ensures the Project will comply with Iowa **Chapter 61** Water Quality Standards and the federal Clean Water Act.

10.4.4 IDNR, Flood Plain Development Permit

If the Project will result in the construction of any structures, deposits or excavation with a floodplain or floodway, a State Flood Plain Development Permit may be required. The IDNR will also provide a letter stating that no such permit is required if the pre-approval request does not trigger the requirements for a State Flood Plain Development Permit.

10.4.5 IDNR, Sovereign Land Construction Permit

If the Project will result in any construction on land owned in fee title by the State of Iowa, then a Sovereign Land Construction Permit is required. The IDNR will also provide a letter stating that no such permit is required if the pre-approval request does not trigger the requirements for a Sovereign Land Construction Permit.

10.4.6 IDNR and USACE, Joint Wetland Application

The IDNR and USACE each have regulatory jurisdiction over wetlands in Iowa. Construction, excavation or filling in streams, lakes, wetlands, or on the flood plains may require permits from both the USACE and IDNR. A Joint 404 Permit and 401 Certification Application Form (Protecting Iowa Waters) must be submitted to both agencies to begin the permit process prior to initiating excavation or dredging in a wetland, lake, stream or river.

10.4.7 IDOT, Utility Accommodation Permit

A utility accommodation permit from the Iowa Department of Transportation ("IDOT") is required before any utilities may be placed in, on, above or below the primary highway right-of-way. The purpose of the permit process is to ensure the safety of motorists, pedestrians, construction workers and other

highway users; to ensure the integrity of the highway; and to document the location of utility facilities for use in managing the highway right-of-way and in locating the facilities in the future.

10.4.8 IDOT, Work Within the Right-of-Way Permit

A work within the right-of-way permit must be obtained from the IDOT prior to the start of any construction within the right-of-way.

10.4.9 IDOT, Access Permit

An access permit from IDOT is required if design or construction of the Project requires a new or expanded access to a State highway.

10.4.10 Railroad Permit

ITC Midwest must receive authorization prior to crossing railroad rights-of-way with the Project. ITC Midwest will follow the notice provisions and other requirements of Iowa Code section 476.27 and Iowa Administrative Rules Chapter 42 to obtain such authorization prior to entering railroad right-of-way.

10.5 IOWA LOCAL APPROVALS

10.5.1 Over-Width/Overweight Loads Permits

These permits may be required to move over width or heavy loads on county, township, or city roads.

10.5.2 Utility Accommodation Permit

A utility accommodation permit from Kossuth County is required before any utilities may be placed in, on, above or below the county road right-of-way.

10.5.3 Entrance Permits

Entrance permits are required to construct or widen access roads or driveways that access county or city roadways.

10.5.4 Building Permits/Zoning Compliance Permits

For each county in which the Project will be built, a building and construction permit may be required for each installation, depending on the county's ordinances. For any installations in or within two miles of any municipality,

building and construction permits may be needed, depending on the municipality's ordinances. These permits may be required by the local jurisdictions for substation modifications and construction. If the specifications for any installation of the Project will violate any County or City zoning ordinances, then a variance or special use permit may be required.

10.5.5 Local Floodplain Requirements

For any county or municipality in which the Project will be built, a floodplain development permit will be required if that county or municipality requires such a permit.

10.6 OTHER APPROVALS

There are lands throughout the Study Area that are part of various conservation programs including RIM, WRP, CRP, and CREP. ITC Midwest will work with landowners, local government entities administering such programs, and the sponsoring federal agency on a site-by-site basis to coordinate the approvals necessary for placing the transmission or associated facilities on these lands.

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11.0 ACRONYMS USED IN APPLICATION

Acronym	Definition
AADT	Annual Average Daily Traffic
ACSR	Aluminum Conductor Steel Reinforced
ACSS	Aluminum Conductor Steel Supportetd
ACSS	Aluminum Conductor Steel Supported
ALP	Airport Layout Plan
AQI	Air Quality Index
ARMER	Allied Radio Matrix for Emergency Response
AWOS	Automated Airport Weather Station
BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
CAA	Clean Air Act
CO	Carbon Monoxide
CP	Canadian Pacific Railroad
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWA	Clean Water Act
dB	Decibel
dBA	A-Weighted Decibel
EF	Electric Field
EFP	Department of Commerce, Energy Facility Permitting
EIS	Environmental Impact Statement
ELF	Extremely-Low Frequency
EMF	Electromagnetic Fields
END	Endangered
EPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration

Acronym	Definition
FAR	Federal Aviation Regulations
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GAP	Gap Analysis Program
GBCA	Grassland Bird Conservation Area
GIS	Geographic Information System
GPS	Global Positioning System
HUC	Hydrologic Unit Codes
Hz	Hertz
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IDNR	Iowa Department of Natural Resources
IDOT	Iowa Department of Transportation
IEEE	Institute of Electrical and Electronics Engineers
IUB	Iowa Utilities Board
kV	Kilovolt
kV/m	Kilovolt per meter
LGU	Local Government Unit or Local Unit of Government
Lx	Exceedance Sound Level
MCBS	Minnesota County Biological Survey
MDA	Minimum Decent Altitude
MF	Magnetic Field
mG	Milligauss
MISO	Midwest Independent Transmission System Operator
MnDNR	Minnesota Department of Natural Resources
MnDOA	Minnesota Department of Agriculture
MnDOT	Minnesota Department of Transportation

Acronym	Definition
MPCA	Minnesota Pollution Control Agency
MTEP	MISO Transmission Expansion Plan
MVA	Megavolt-Ampere
MVP	Multi-Value Project
NAC	Noise Area Classification
NEPA	National Environmental Protection Act
NERC	North American Electric Reliability Corporation
NESC	National Electric Safety Code
NHD	National Hydrography Dataset
NHIS	Natural Heritage Information System
NLCD	National Land Cover Database
NOx	Nitrogen Oxides
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	Ozone
OSHA	Occupational Safety and Health Administration
PEM	Palustrine System Emergent
PFO	Palustrine System Forested
PM	Particulate Matter
PPSA	Power Plant Siting Act
PSS	Palustrine System Scrub-Shrub
PUB	Palustrine System Unconsolidated Bottom
PWI	Public Waters Inventory
RIM	Reinvest in Minnesota
RTO	Regional Transmission Organizations

Acronym	Definition
SCIP	Statewide Communication Inoperability Plan
SF_6	Sulfur Hexafluoride
SHPO	Minnesota State Historic Preservation Office
SNA	Scientific and Natural Area
SO_2	Sulfur Dioxide
SPC	Special Concern
SPCC	Spill, Prevention, Control, and Countermeasure
SSTS	Subsurface Treatment System
SWPPP	Stormwater Pollution Prevention Plan
THR	Threatened
UP	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USDA	United Stated Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United State Geological Survey
VHF	Very High Frequency
VOR	VHF Omnidirectional Radio Range
VORTAC	VOR Tactical Air Navigation Aid
WCA	Wetland Conservation Act
WHO	World Health Organization
WMA	Wildlife Management Area
WPA	Waterfowl Production Area
WRP	Wetland Reserve Program

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