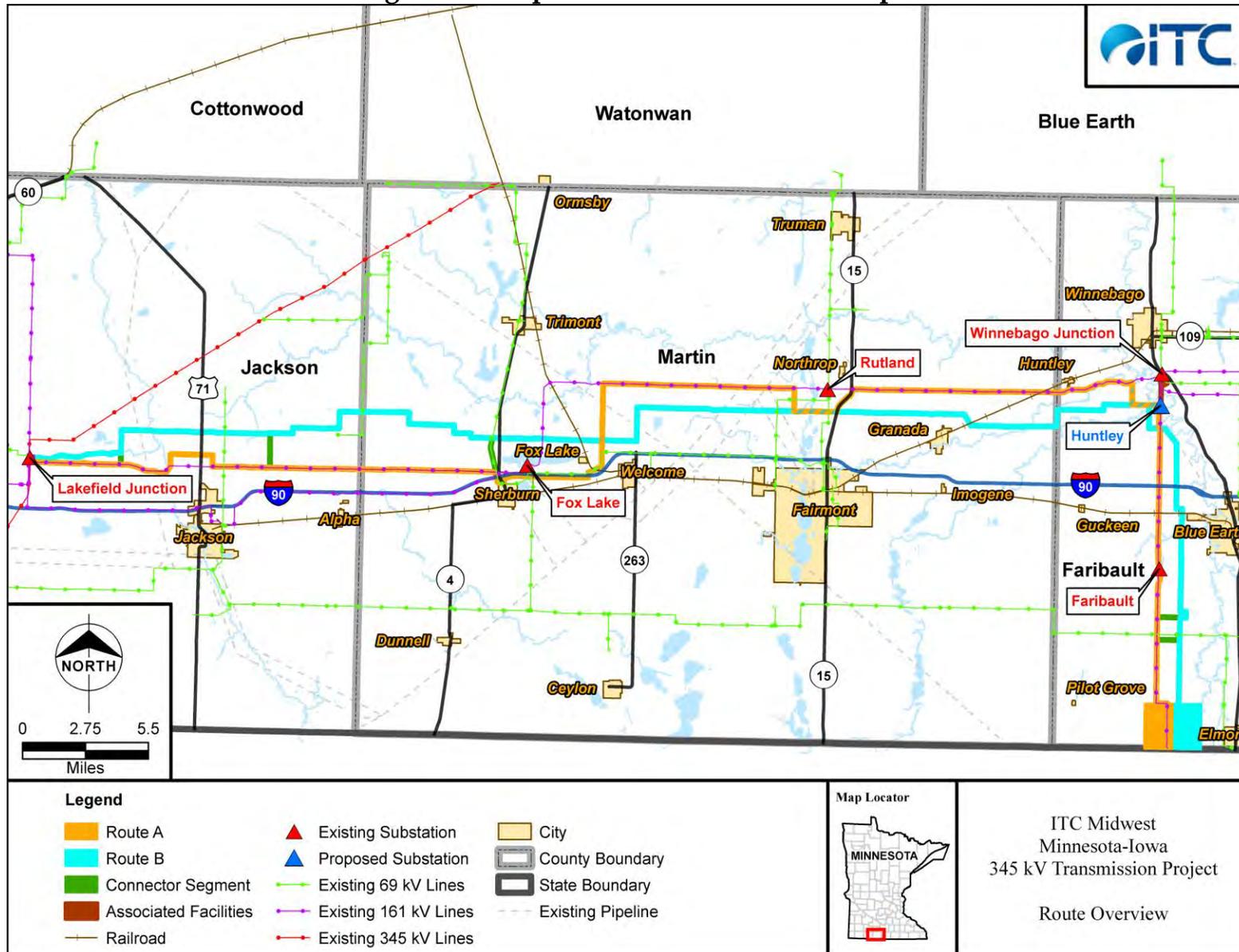


5.0 DESCRIPTION OF PROPOSED ROUTES

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.

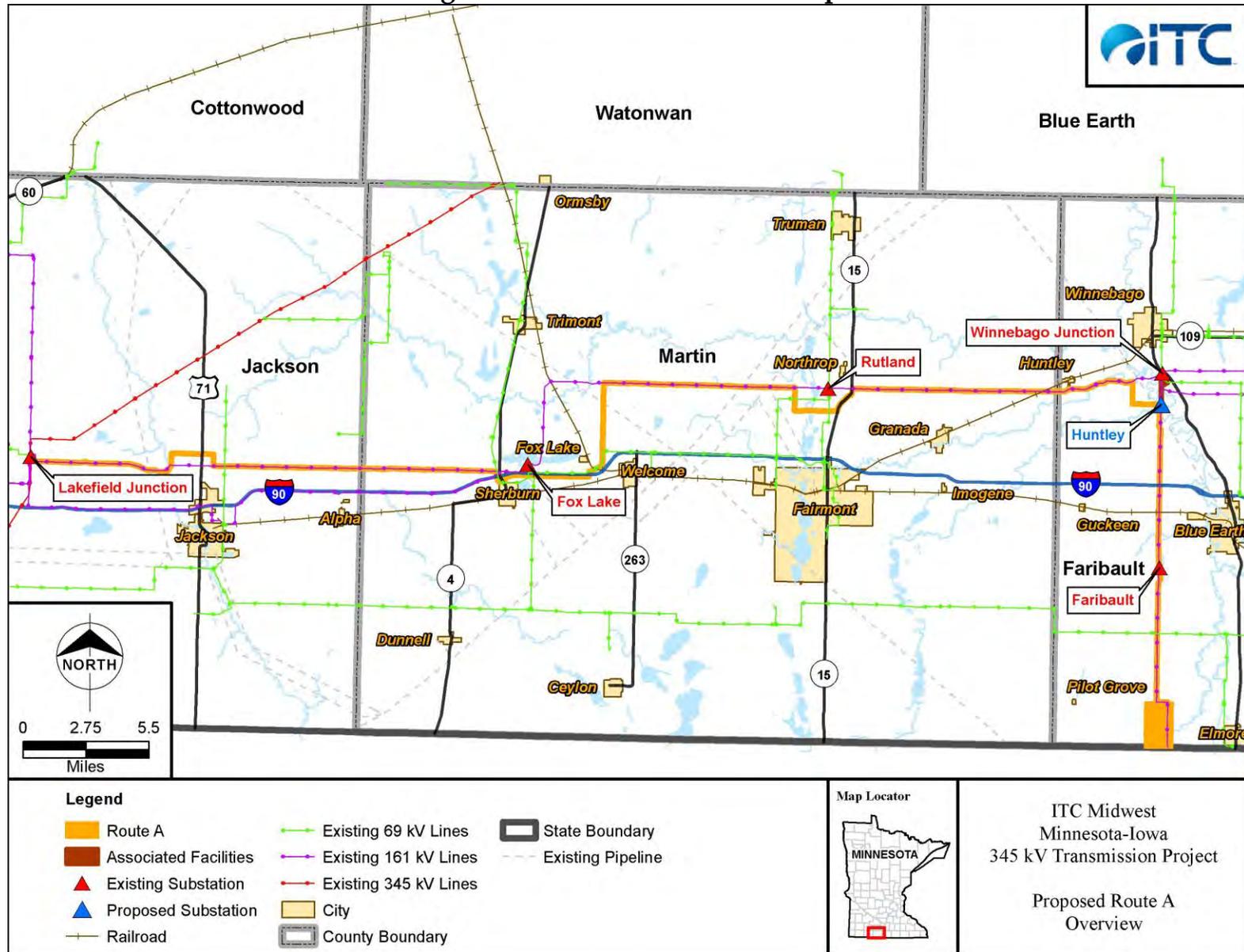
As part of overall route review and analysis, ITC Midwest considered two possible configurations for the Project to establish a centerline for the purpose of evaluating impacts on human settlement and natural resources. Where the Project is proposed to follow existing transportation rights-of-way, ITC 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

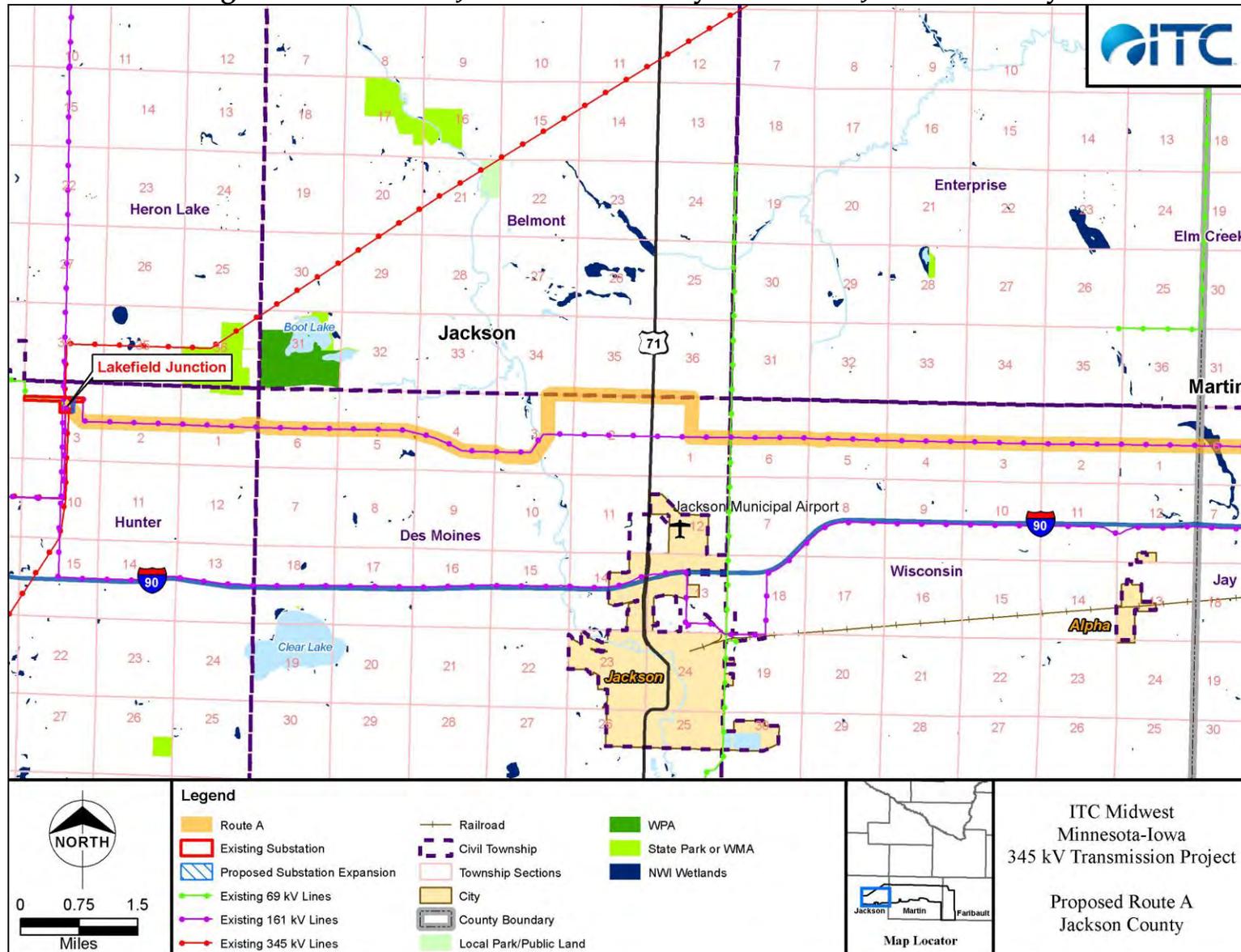


5.1.1 Lakefield Junction to Huntley - Jackson County

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

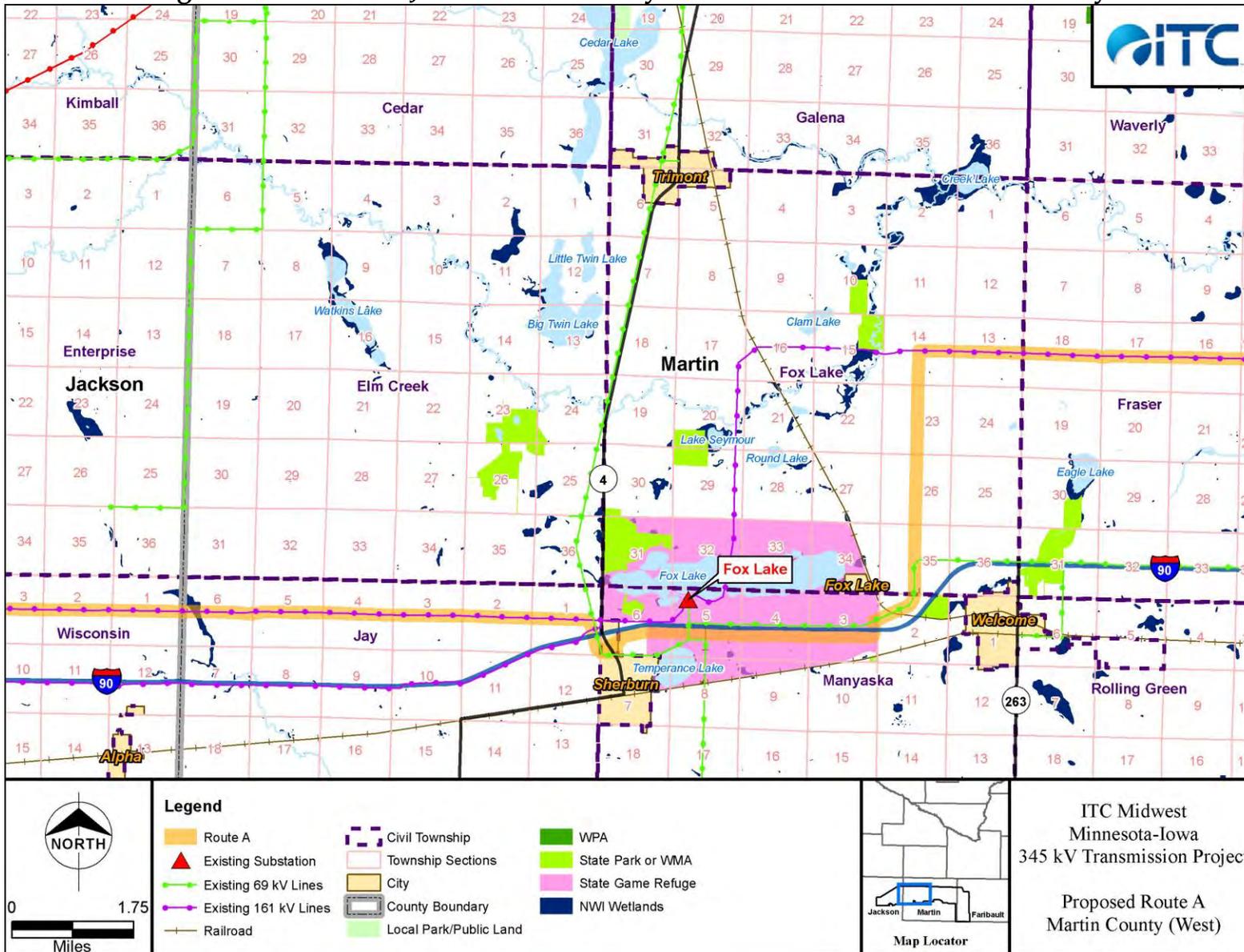
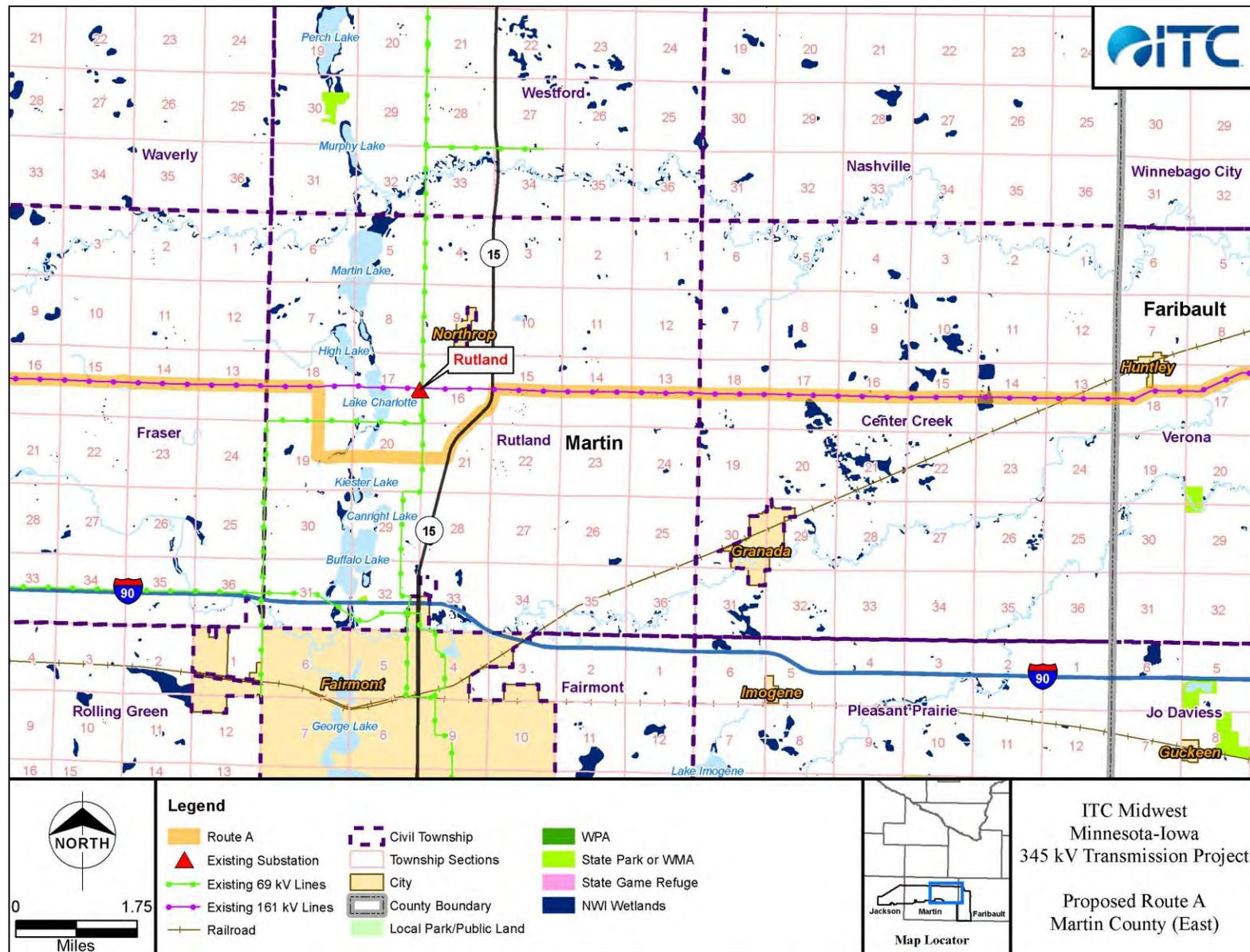


Figure 17. Lakefield Junction to Huntley Route A in Eastern Martin County

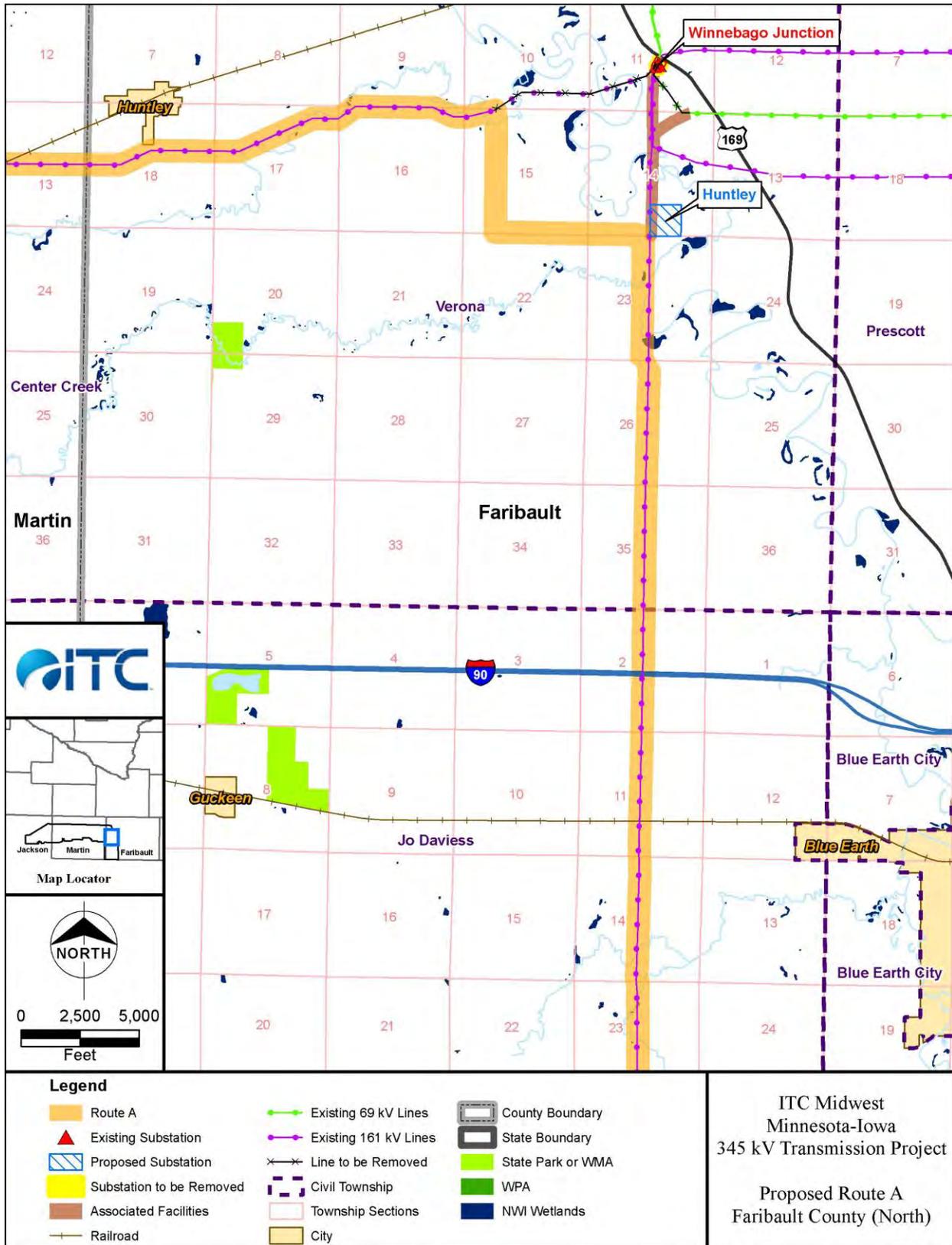


5.1.3 Lakefield Junction to Huntley - Faribault County

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



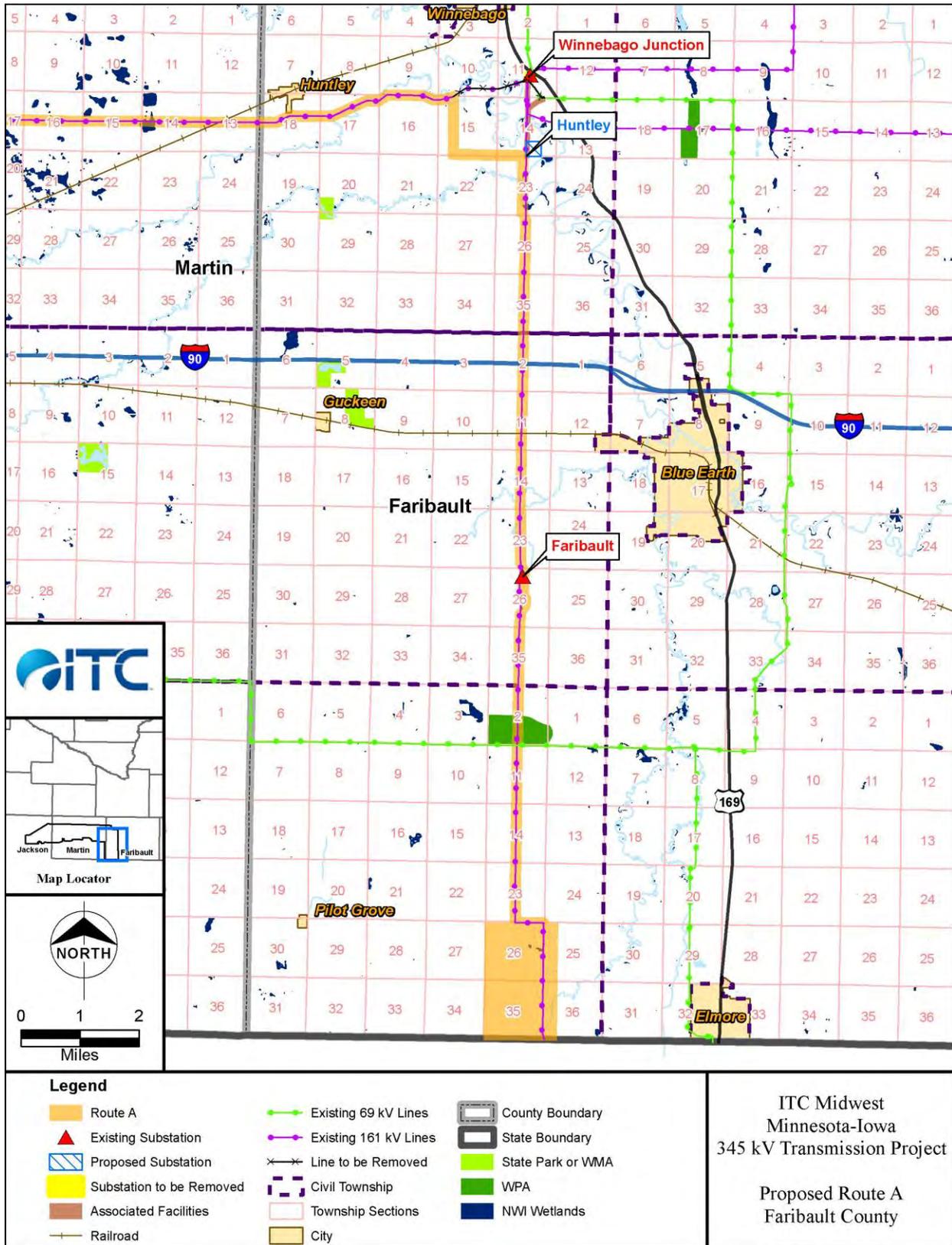
5.1.4 Huntley to Iowa Border - Faribault County

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

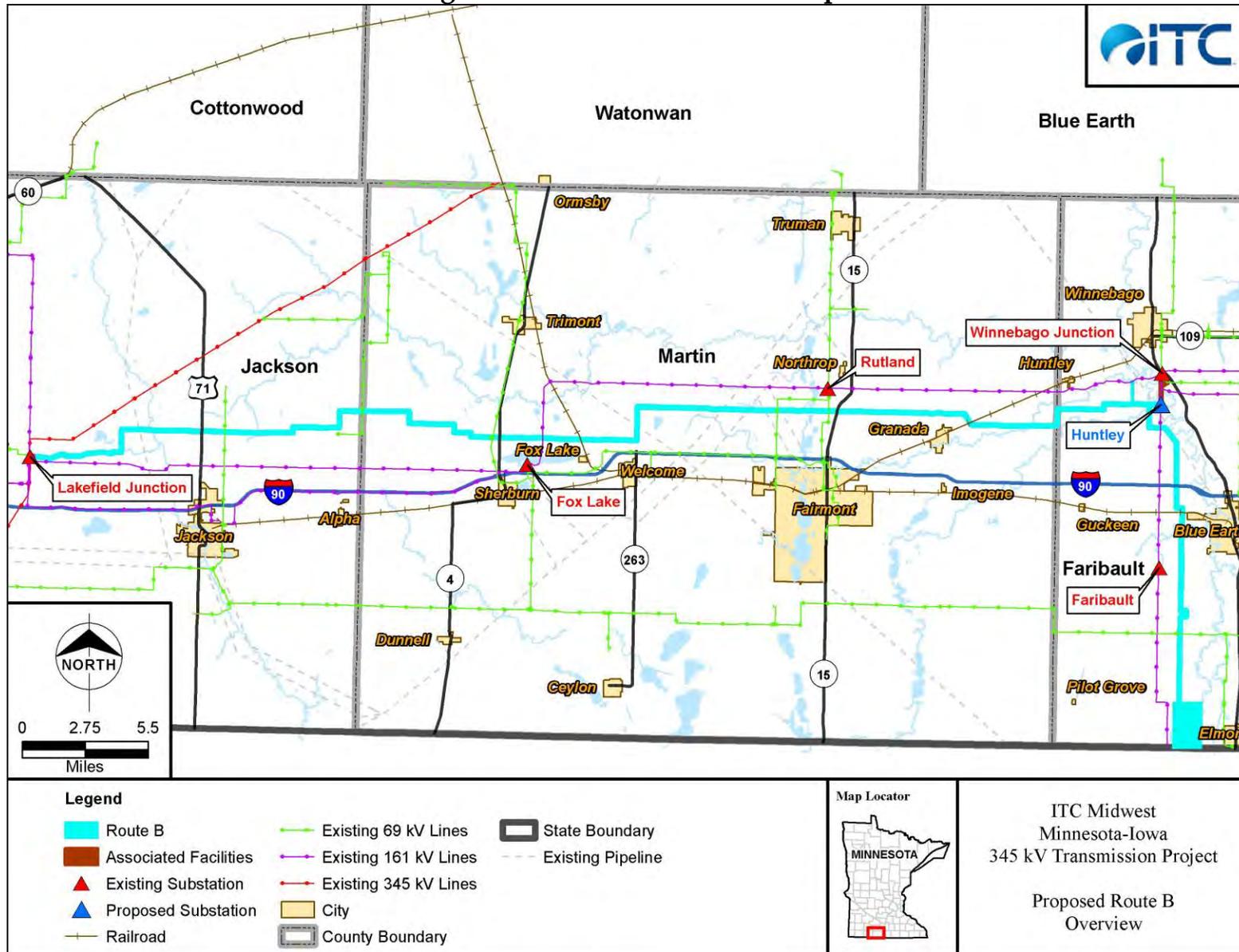


5.2 ROUTE B

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

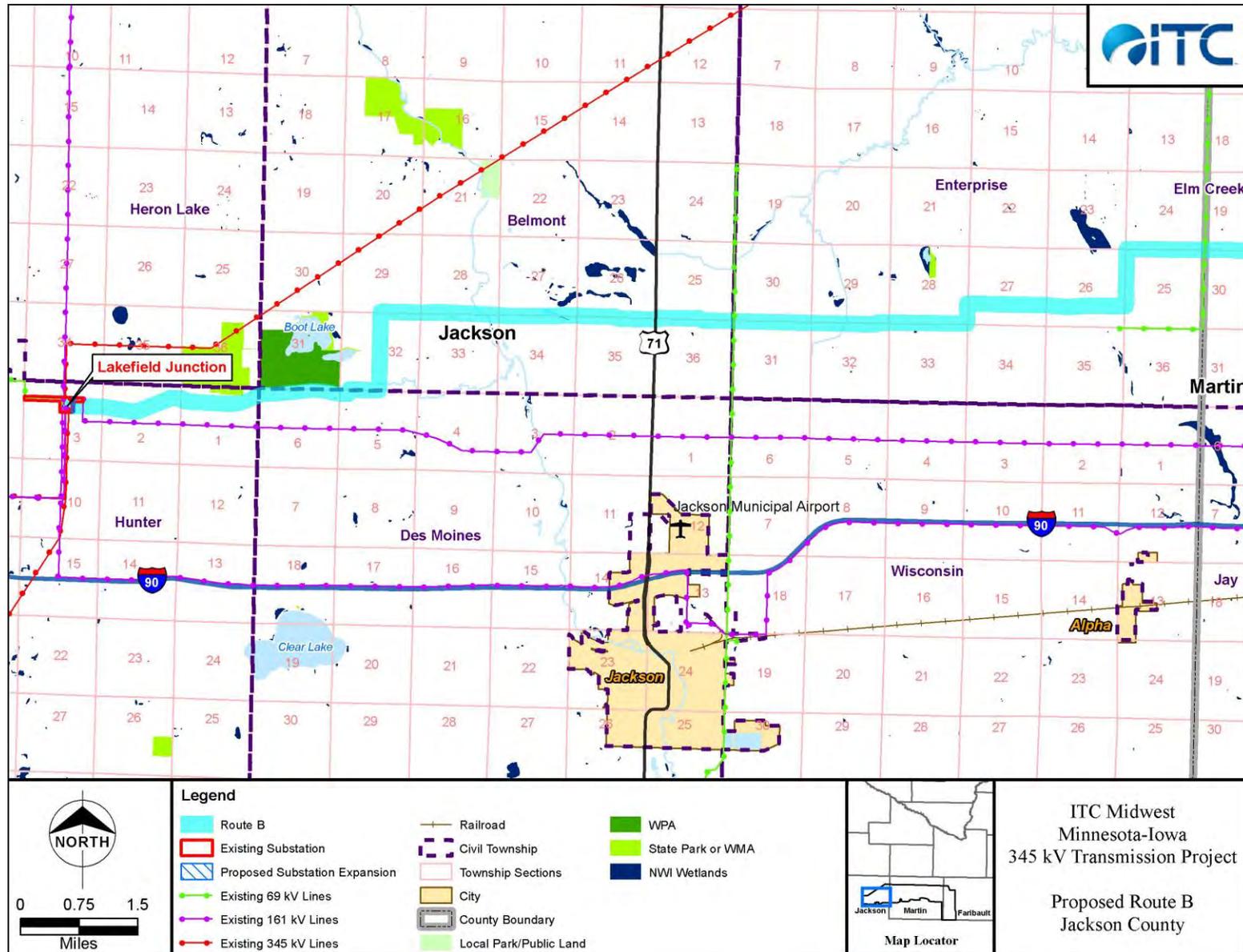


5.2.1 Lakefield Junction to Huntley - Jackson County

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

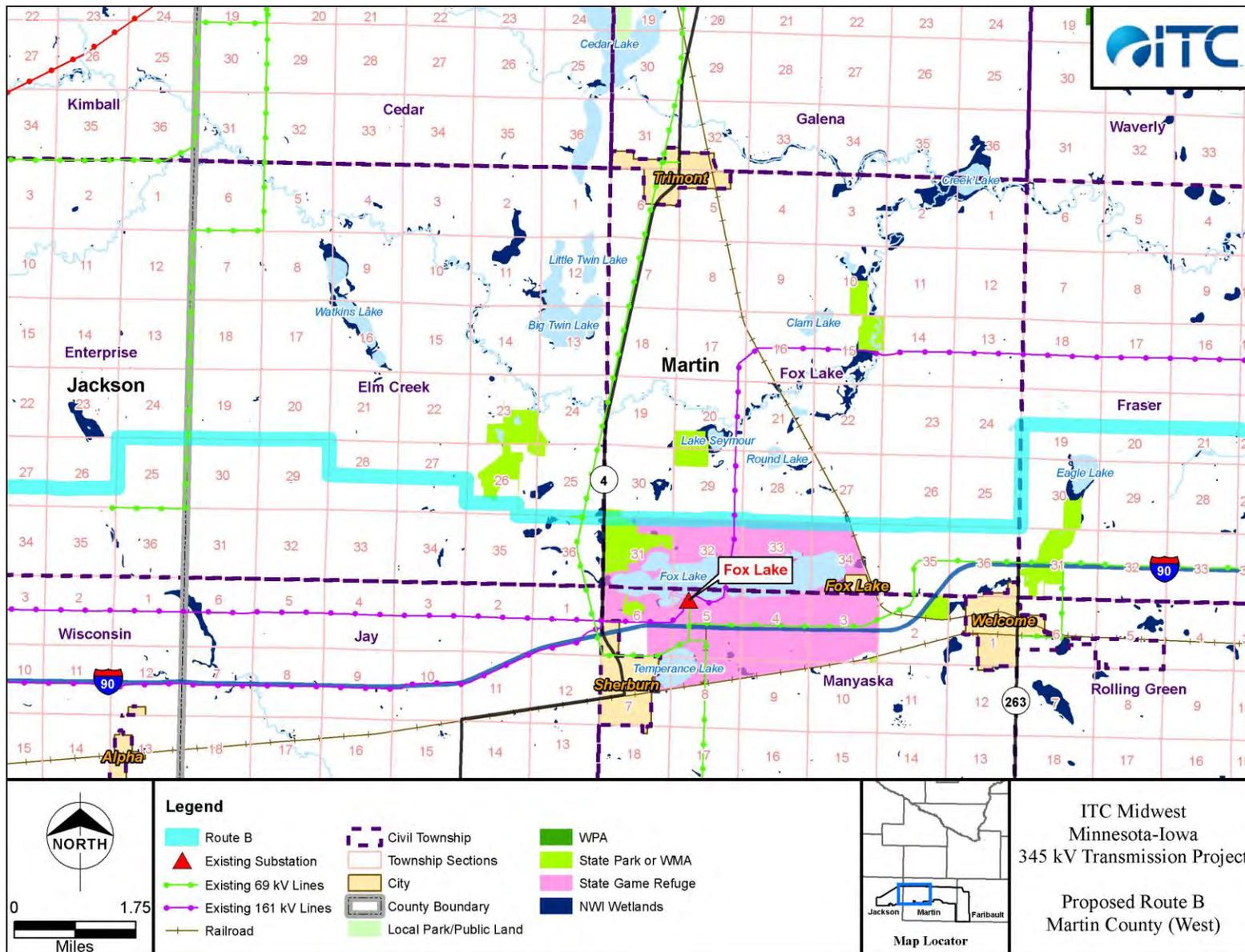
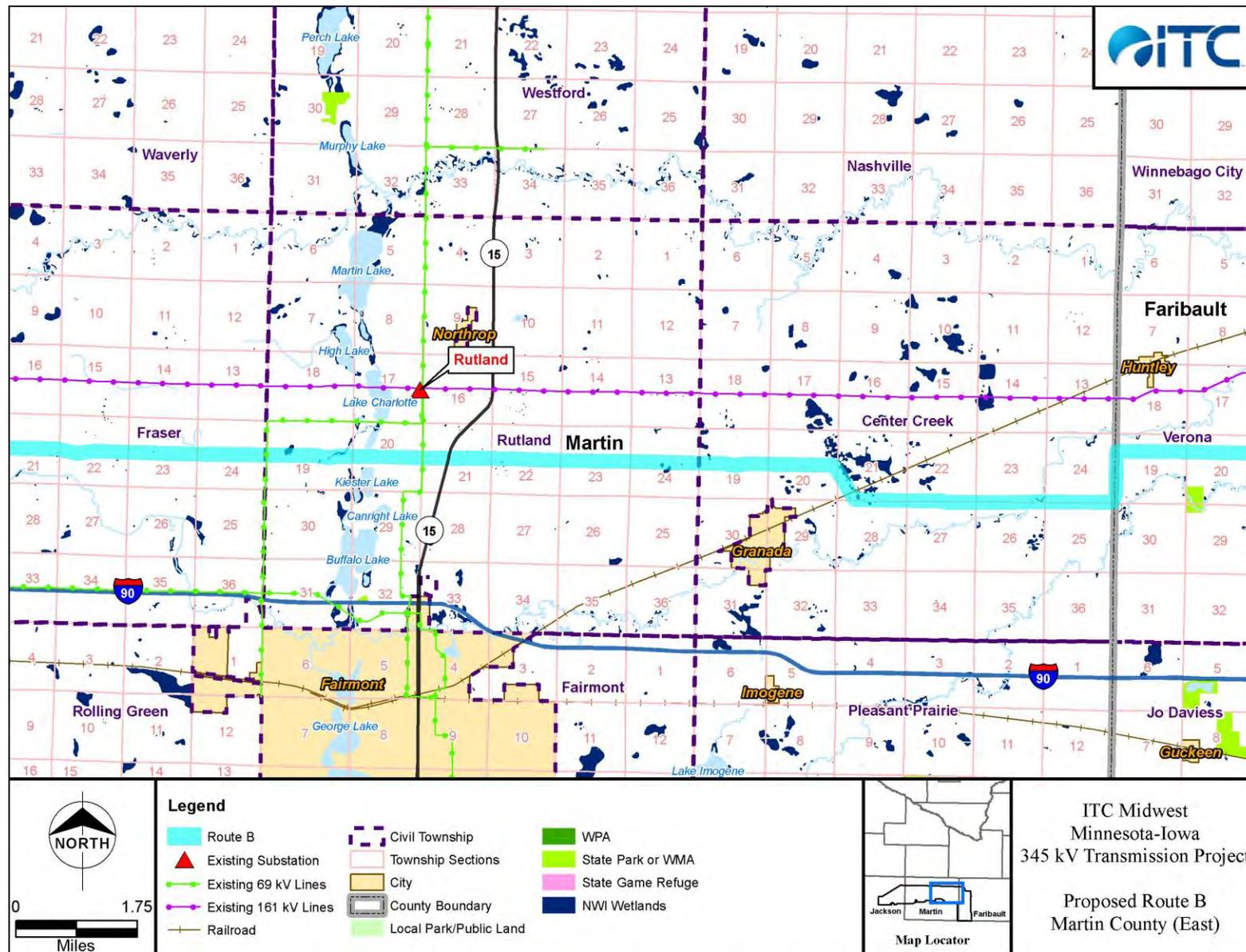


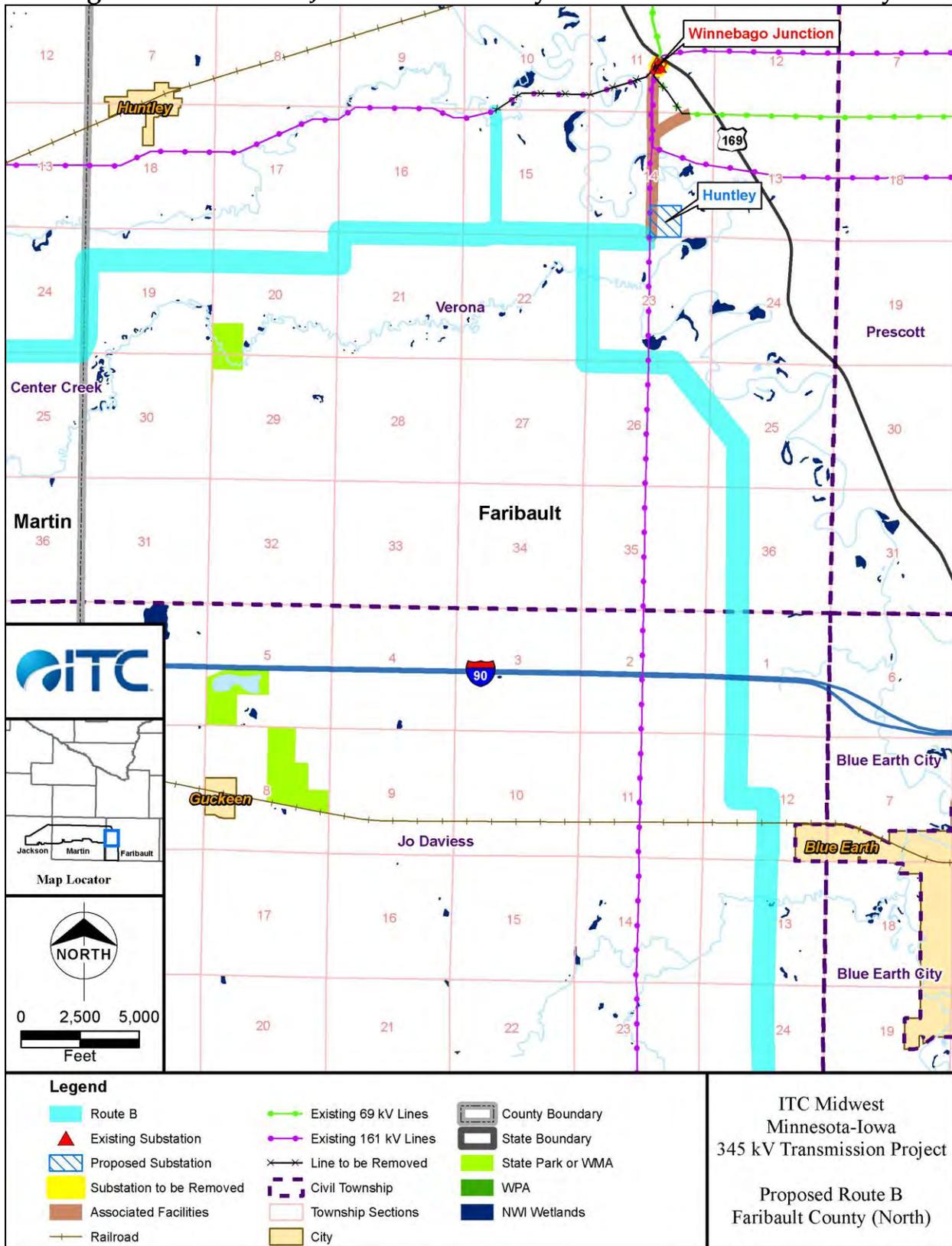
Figure 23. Lakefield Junction to Huntley Route B in Eastern Martin County



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

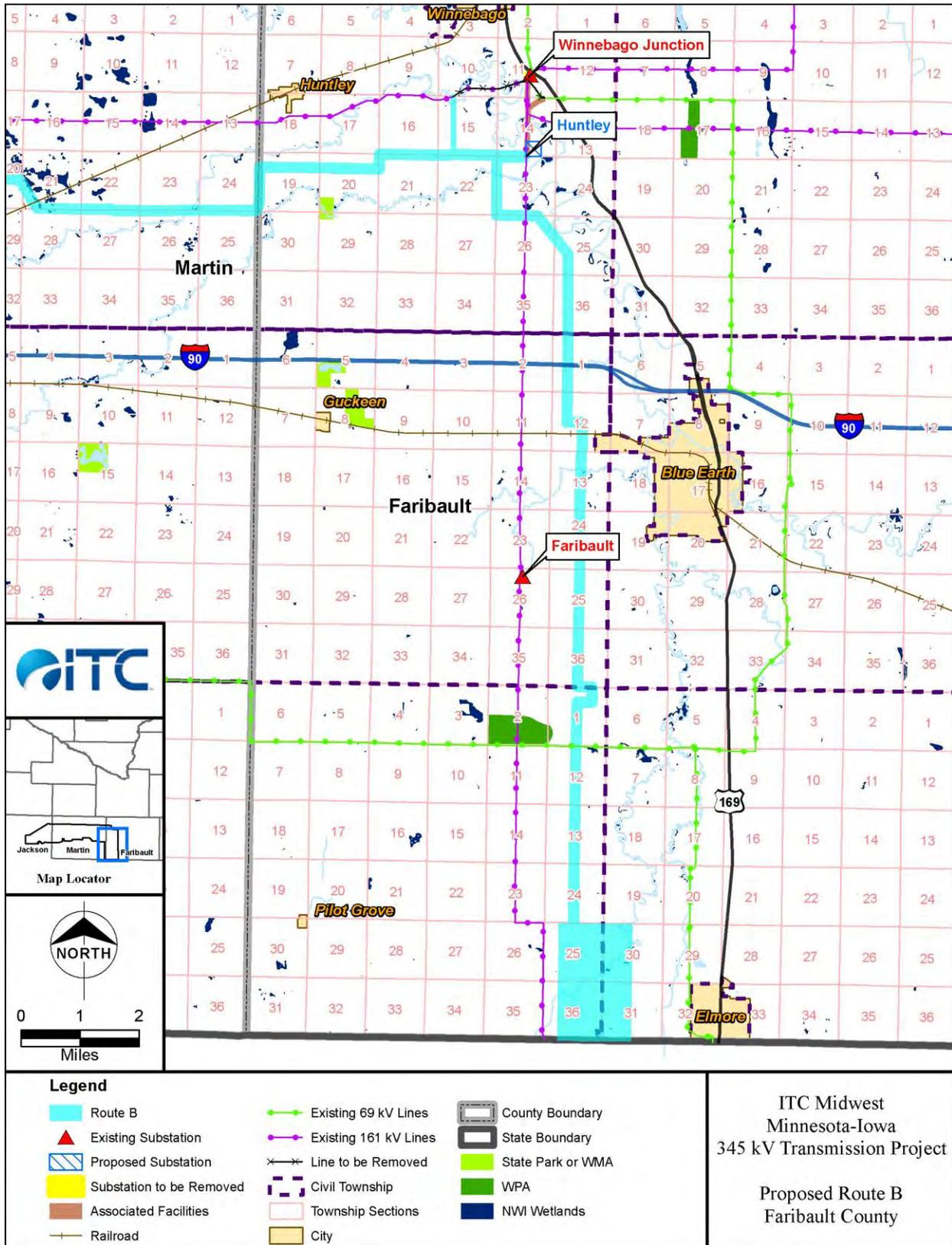


5.2.4 Huntley to Iowa Border - Faribault County

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:

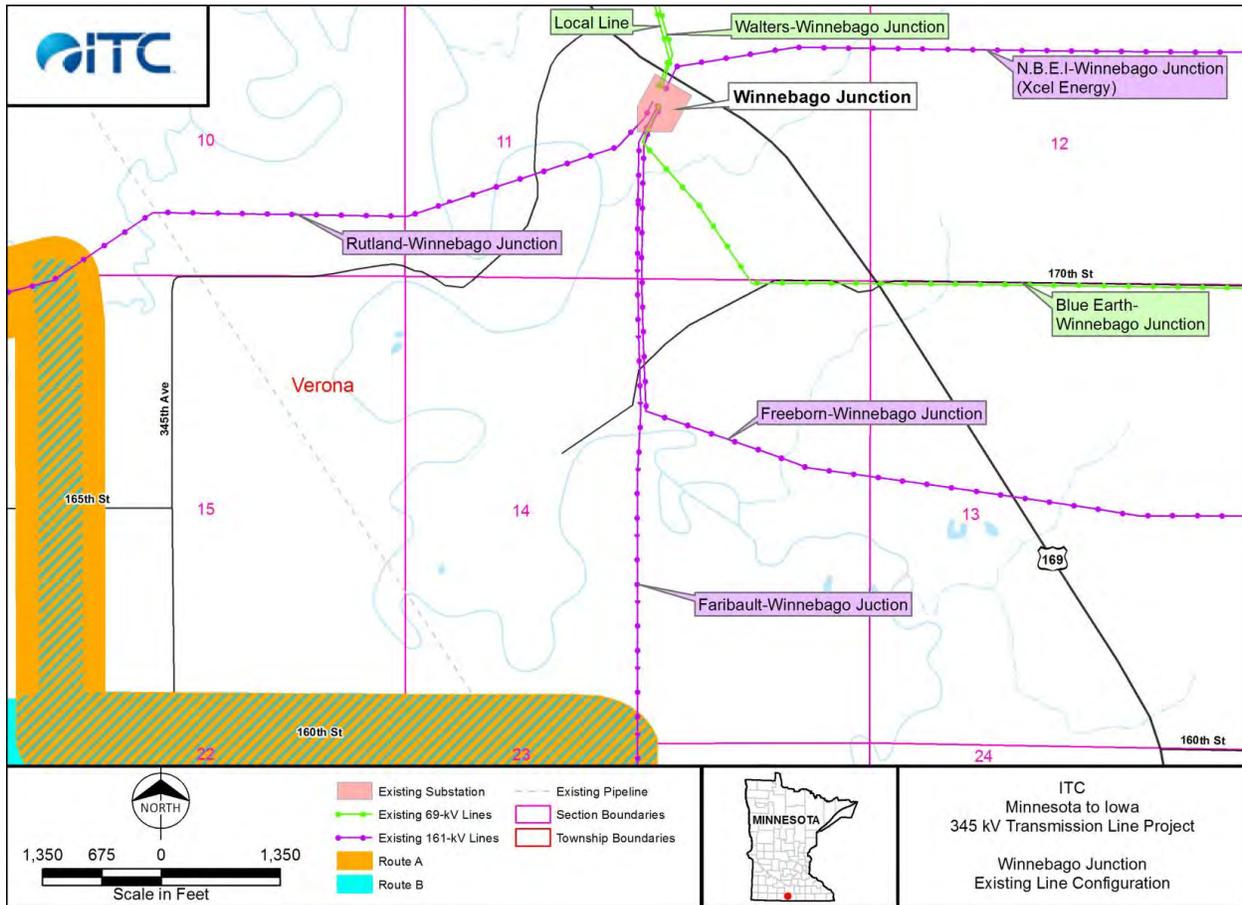
- a. Rutland – Winnebago Junction;
- b. N.B.E.I. – Winnebago Junction (Owned by Xcel Energy);
- c. Faribault – Winnebago Junction; and
- d. Freeborn – Winnebago Junction.

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



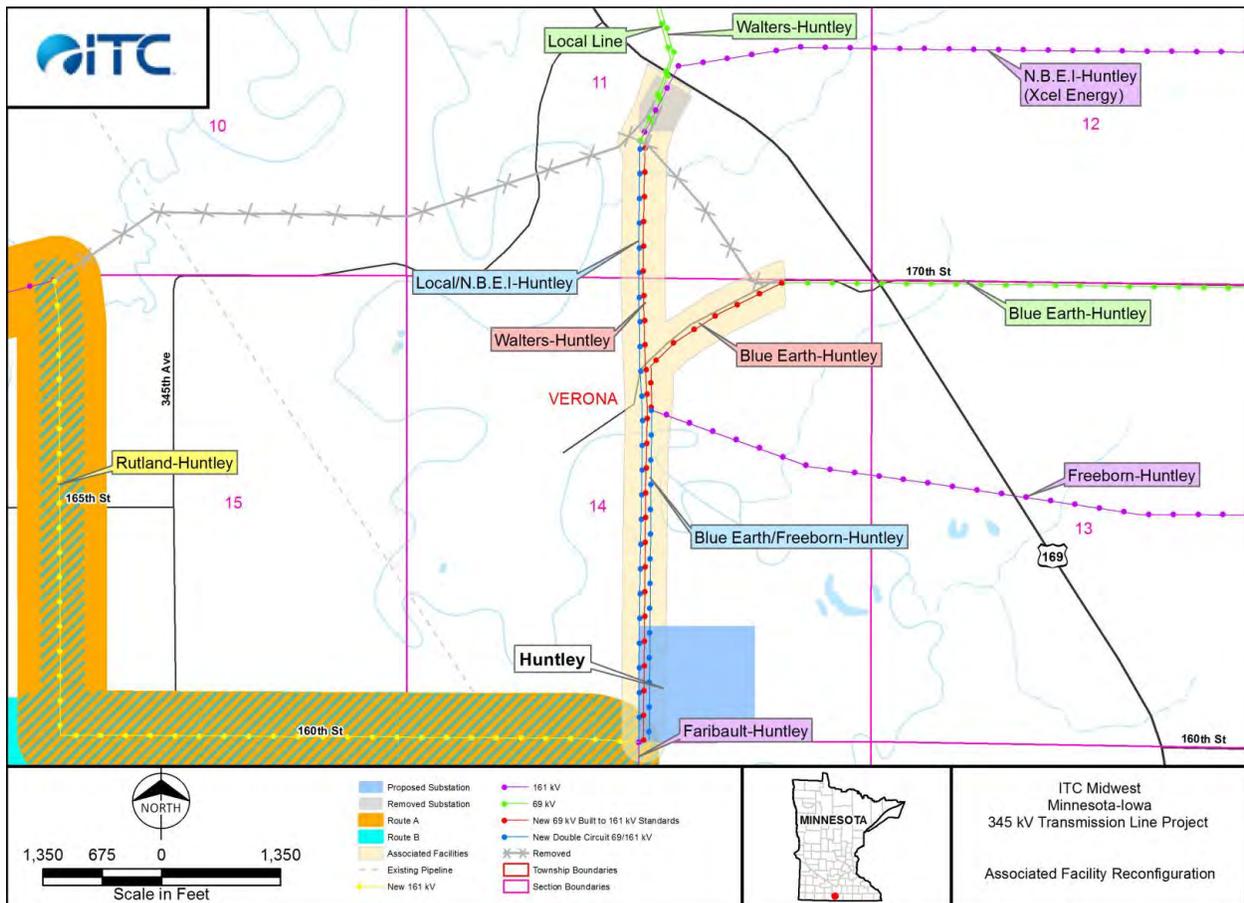
All of these lines, except for the N.B.E.I. – Winnebago Junction line, are owned by ITC Midwest. The N.B.E.I. – Huntley line is owned by Xcel Energy. The circuit would be co-located with a 69 kV line owned by ITC Midwest, but Xcel Energy would own the N.B.E.I. – Huntley insulators and conductor while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

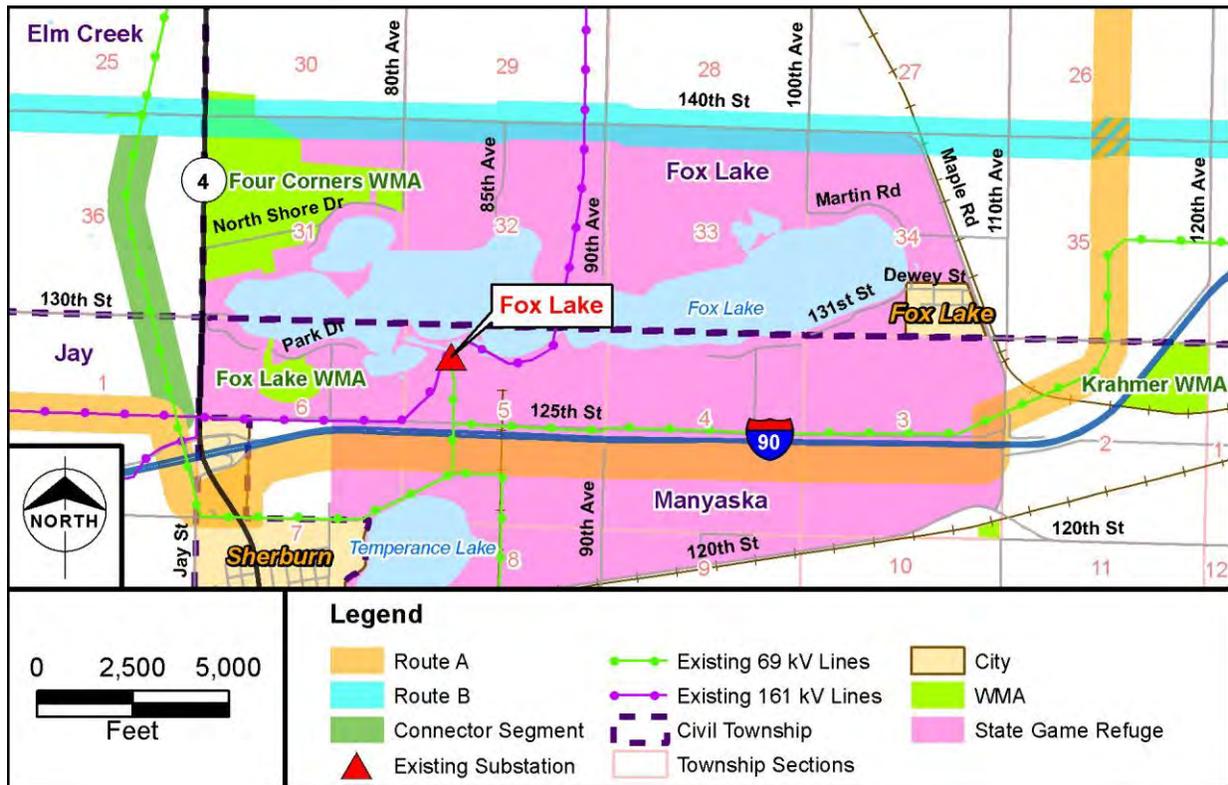


5.4.2 Fox Lake Game Refuge

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

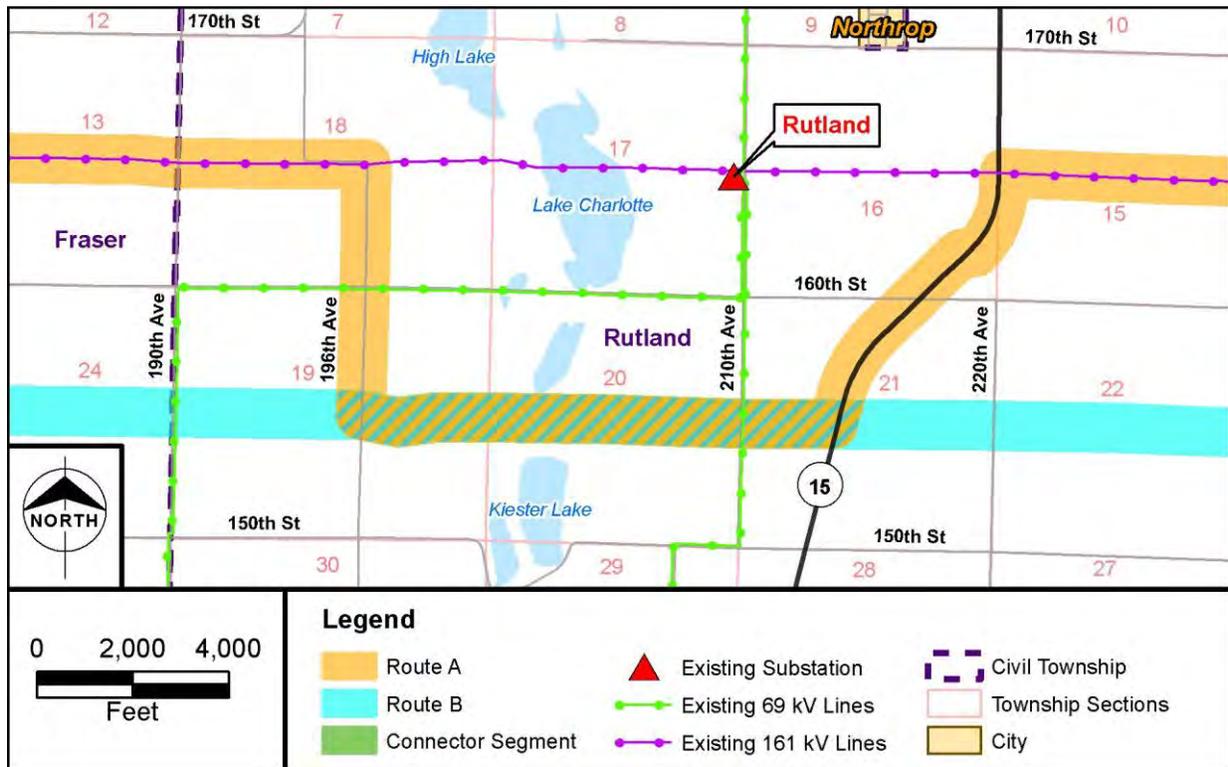


A short connector segment to the west of the Fox Lake Game Refuge and County Highway 4 was developed to allow a connection point between Route A and Route B. Use of the connector would co-locate the 345 kV line with the existing Fox Lake to Watonwan Junction 69 kV transmission line in this area along 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



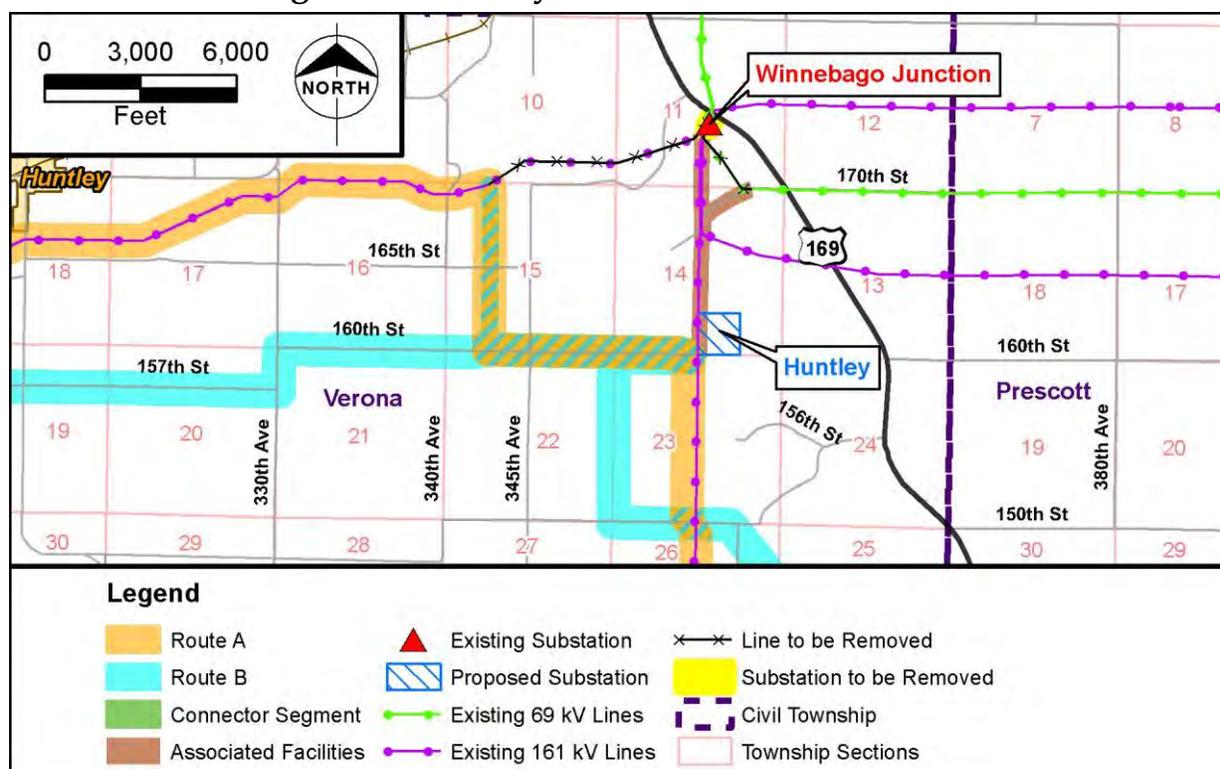
The connector segment extends east from 196th Avenue, generally along the quarter section line between residences and lakes in Rutland Township, Sections 19, 20, and 21. It ends just west of County Highway 15 at the point where Route B continues east across the highway and Route A turns north along the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