STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of the Application of ITC Midwest LLC for a Certificate of Need for the Minnesota-Iowa 345 kV Transmission Line Project in Jackson, Martin, and Faribault Counties	PUC Docket No. ET6675/CN-12-1053 OAH Docket No. 60-2500-30782
In the Matter of the Application of ITC Midwest LLC for a Route Permit for the Minnesota-Iowa 345 kV Transmission Project and Associated Facilities in Jackson, Martin, and Faribault Counties	PUC Docket No. ET6675/TL-12-1337 OAH Docket No. 60-2500-30782

REBUTTAL TESTIMONY OF

JACK MIDDLETON

On Behalf of

ITC MIDWEST LLC

April 25, 2014

Exhibit _____

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME.

A. My name is Jack Middleton.

Q. DID YOU PROVIDE DIRECT TESTIMONY IN THESE PROCEEDINGS?

A. Yes. I provided direct testimony on February 24, 2014 on behalf of ITC Midwest LLC ("ITC Midwest" or "Company").

Q. SUMMARIZE YOUR DIRECT TESTIMONY.

A. In my direct testimony, I summarized the route development process undertaken by myself, ITC Midwest witness William ("Dick") Coeur, Routing & Siting Specialist at MBN Engineering, Inc., and ITC Midwest. I discussed the pre-application route development process and the activities undertaken to further evaluate routes after the issuance of the Environmental Impact Statement ("EIS") Scoping Decision. These routes were proposed to be evaluated in the EIS by the Department of Commerce, Energy Environmental Review & Analysis ("EERA"). I provided a comparative analysis of the potential environmental and human settlement impacts associated with the route alternatives identified in the EIS Scoping Decision. I also provided an update on the route alternatives that Mr. Coeur and I recommended ITC Midwest incorporate into what is referred to as "Modified Route A", the route ITC Midwest prefers for the

Minnesota portion of the Minnesota – Iowa 345 kV Transmission Project in Jackson, Martin, and Faribault counties ("Project").

Q. DID YOU REACH ANY GENERAL CONCLUSIONS IN YOUR DIRECT TESTIMONY?

A. Yes. In my direct testimony, I concluded that Modified Route A best balances overall impacts on the environment and human settlement. Should Modified Route A not be selected for the Project, I recommended, in order of preference, Route A then Route B (including Scoping Decision route alternatives M15-R and F3-R, identified in the Draft EIS as CC-1 and HI-3, respectively), over the other routes in the EIS Scoping Decision.

Q. IS THERE ANYTHING IN YOUR DIRECT TESTIMONY THAT YOU WOULD LIKE TO EXPLAIN FURTHER?

A. I would like to provide further explanation on Modified Route A in two areas of the route. One related to routes near the Des Moines River and another related to the routes near the Blue Earth River immediately south of the Huntley Substation site proposed by ITC Midwest in its Route Permit Application.

Q. WHAT WOULD YOU LIKE TO EXPLAIN FURTHER ABOUT MODIFIED ROUTE A NEAR THE DES MOINES RIVER?

A. At the Des Moines River, the EIS Scoping Decision included an alignment alternative, J3-A (identified as JA-2 in the Draft EIS), that followed the existing 161 kV line across the river and for approximately 0.6 mile before

turning north between field lines. The west-east portion of the existing Lakefield Junction – Fox Lake – Rutland – Winnebago Junction – Winnco ("Lakefield to Border") 161 kV Transmission Line crosses through the center of agricultural fields just east of the Des Moines River. In comments, the Minnesota Department of Natural Resources ("MnDNR") stated a preference for a perpendicular crossing of the river instead of using the existing 161 kV line crossing. ITC Midwest developed Modified Route A in this area to stay within EIS Scoping Decision J1-R with a slight alignment modification. The diagonal portion of Modified Route A west of the Des Moines River was developed to provide the ability to place the Project structures on field lines, and locate the conductors across the fields diagonally. This was done to minimize potential impacts to agricultural operations in this area.

Q. WHAT WOULD YOU LIKE TO FURTHER CLARIFY ABOUT MODIFIED ROUTE A NEAR THE BLUE EARTH RIVER?

A. Just south of the Huntley Substation site proposed by ITC Midwest, the existing Lakefield to Border 161 kV Transmission Line crosses the Blue Earth River twice. Modified Route A incorporates a variation of EIS Scoping Decision route alternative F1-R (identified at HI-1 in the Draft EIS). F1-R and HI-1 cut diagonally across a field in this area. Modified Route A in the same area was developed to more closely follow the edge of the field line and limit additional potential impacts to agricultural operations while balancing residential proximity concerns and avoidance

of the Blue Earth River and riparian corridor in Section 23 of Verona Township.

Q. WHAT SCHEDULES ARE ATTACHED TO YOUR REBUTTAL TESTIMONY?

A. Schedule 21: FL-4 and Modified Route A Comparison.

Schedule 22: I90-4 and Route A Draft EIS Route Width South of the Proposed Northern Huntley Substation.

Schedule 23: EIS B2-HI at Iowa Border.

Schedule 24: I-90-R Option 3 and I90-3 Alignment Comparison.

Schedule 25: Alternative Southern Huntley Substation Maps with Applicable Routes.

Schedule 26: Modified Route A Potential Impact Tables Divided by Lakefield Junction Substation – Huntley Substation and Huntley Substation – Iowa border.

Schedule 27: Draft EIS Chapter 6 Charts with Modified Route A.

Schedule 28: Map Illustrating I90-2 and Modified Route A near Fox Lake.

Schedule 29: Draft EIS Chapter 7 Tables with Modified Route A.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN THIS PROCEEDING?

A. I testify to provide information on Modified Route A in the same format as that presented in Chapter 6 and Chapter 7of the Draft EIS prepared by EERA to aid the Administrative Law Judge in making his recommendation and the Minnesota Public Utilities Commission ("Commission") in its

decision-making process. I also testify to provide information on Draft EIS statements for EERA's consideration as it prepares the Final EIS for the Project.

Q. IS MODIFIED ROUTE A REFERENCED IN THE DRAFT EIS?

A. No. However, the Draft EIS evaluates all of the segments that make up Modified Route A.

Q. PLEASE EXPLAIN.

A. ITC Midwest's direct testimony supporting Modified Route A was filed on February 24, 2014. The Draft EIS was released a month later on March 21, 2014. Modified Route A is a combination of route segments presented in the EIS Scoping Decision. Although the various route segments that make up Modified Route A are all included in some form in the Draft EIS, EERA presented its evaluation of routes based on what I would refer to as "combinations" instead of each individual route segment presented in the EIS Scoping Decision. For example, the Draft EIS evaluates the variation "FL-4" around Fox Lake. FL-4 is a combination of Scoping Decision alternative M5-R for approximately four miles, Route B (approximately three miles), and MR-2 (approximately one mile). In this area, Modified Route A is a combination of Route A for approximately three miles, M5-R for approximately 1.2 miles (plus an additional 0.9 mile when it crosses back to the north side of I-90, Route A, Route B (approximately three miles), and MR-2 (approximately one mile).

A figure illustrating these routes is provided in **Schedule 21** to my rebuttal testimony. The comparison information I provided in my direct testimony analyzed segments of Modified Route A against the alternatives using the naming conventions in the EIS Scoping Decision. For ease of reference, my rebuttal testimony includes this comparison data using the revised route variation naming conventions in the Draft EIS. Additionally, I provide an augmented relative merits evaluation of Modified Route A using the same evaluation criteria EERA employed in Chapter 7 of the Draft EIS.

II. THE DRAFT EIS

Q. HAVE YOU REVIEWED THE DRAFT EIS?

A. Yes.

Q. DOES THE DRAFT EIS INCLUDE THE SAME NAMING CONVENTION THAT WAS USED IN THE EIS SCOPING DECISION TO IDENTIFY ROUTE AND ALIGNMENT ALTERNATIVES?

A. No. The Draft EIS assigned different names to the Route Alternatives (routes between the Lakefield Junction and Huntley substations and the Huntley Substation and the Iowa border) and Route Variations (possible route options to Route Alternatives) than the route and alignment alternatives presented in the EIS Scoping Decision and sent to landowners in late 2013. The Draft EIS does, however, provide Table 3-1 that relates the

Draft EIS nomenclature with the nomenclature used in the EIS Scoping Decision. Instead of evaluating individual route alternatives (*i.e.*, J1-R compared to Route A for the same length, etc.), the Draft EIS creates longer variations that provide suggested combinations of route alternatives (*i.e.*, FL-1 combines M3-R and M4-R). As the Draft EIS recognizes on page 16, there are other possible routing options that may be selected using a combination of the EIS Scoping Decision alternatives. Modified Route A would be one of these other routing options. In EIS Scoping Decision nomenclature, Modified Route A, in order from west to east, combines Route A, J1-R with a portion of J3-A, Route A, M5-R, Route A, Route B, M2-R, Route A, a portion of M8-R, M9-R, Route A, a portion of F1-R, and Route A.

Q. DO YOU HAVE ANY GENERAL COMMENTS ON THE DRAFT EIS?

A. EERA undertook a large data evaluation process in its development of the Draft EIS. Based on my review, it provides the analysis required according to the Commission rules for EISs. To provide additional analysis of the alternatives proposed for the Project, the Draft EIS analyzed individual segments proposed during the EIS scoping process and in ITC Midwest's Route Permit Application. The analysis of potential impacts for these variations need to be combined together to provide an end-to-end comparison of Project route alternatives from the Lakefield Junction Substation to the Iowa border. This requires that the associated facilities

proposed for each Route Alternative be incorporated for a comprehensive comparison.

Further, the Draft EIS separates the Project into two segments for its potential impact evaluation in Chapter 6 and Appendix J: (1) the Lakefield Junction Substation to the Huntley Substation and (2) the Huntley Substation to the Iowa border. The Draft EIS also includes evaluations of two Huntley Substation locations. The first location (referred to in the Draft EIS as the "Proposed Huntley Substation" or the "Proposed Northern Huntley Substation" and in the EIS Scoping Decision as "Huntley Substation – Application") is located in Section 14 of Verona Township and is closest to the to-be-decommissioned Winnebago Junction Substation. The second location (referred to in the Draft EIS as the "Alternative Southern Huntley Substation" and in the EIS Scoping Decision as "Huntley Substation – Alternative") is located in Section 2 of Jo Daviess Township. The EIS Scoping Decision stated that the "Alternative Southern Huntley Substation/Huntley Substation – Alternative" site was only an option for EIS Scoping Decision route I-90-R Option 1 and I-90-R Option 2, referred to as I90-5 in the Draft EIS.

Q. DO YOU BELIEVE ANY TECHNICAL CORRECTIONS SHOULD BE MADE TO THE DRAFT EIS?

A. Yes, I do in a several areas that I have summarized as follows:

- In reviewing the data analysis for the Draft EIS Route Alternatives, it appears the Appendix J potential impact tables only include a route width of approximately 723 feet for I90-4 across the Blue Earth River instead of the 1,000 foot width shown in the EIS Scoping Decision. The Draft EIS also appears to reduce the Route A (A1-HI) width from 1,000 feet as requested by ITC Midwest in its Route Permit Application to 723 feet. The discrepancies in route width are illustrated in **Schedule 22** to my testimony. This should be restored to a 1,000-foot route width in the final EIS and the potential impacts should be updated as necessary in Appendix J or in other locations where this data may appear.
- In the Draft EIS, the Route B2-HI anticipated right-of-way extends south of the Iowa border. Specifically, the portion of the Route Alternative that would be necessary to connect Route B to the connection point at the Iowa border, appears to not center the anticipated right-of-way on the anticipated alignment and places some of the right-of-way south of the Iowa border. None of the other alternatives considers the right-of-way and potential impacts south of the Iowa border. **Schedule 23** attached to my testimony illustrates this discrepancy. In my opinion, the Final EIS should be revised to correct this error.
- In reviewing the data analysis for the I90 Route Alternatives, it appears the location of the alignment for I90-3 in the Draft EIS, referred to as I-90-R Option 3 in the EIS Scoping Decision, is in a

slightly different location than depicted in the Scoping Decision. The alignment presented in the Draft EIS for I90-3 starts farther to the east in Section 4 of Jo Daviess Township. Continuing north, the Draft EIS I90-3 alignment parallels the I-90-R Option 3 alignment until crossing over to the west side of Section 33 in Verona Township, maximizing its distance from the I-90-R Option 3 alignment presented in the EIS Scoping Decision at approximately 96 feet.

In addition, the two alignments differ along 160th Street, with the I90-3 Draft EIS alignment remaining on the south side of the road as it turns to head east, while the I-90-R Option 3 alignment crosses to the north side of 160th Street in Section 16 of Verona Township. An example of the difference in alignment is illustrated as **Schedule 24**. The Final EIS should provide an explanation as to why the I90-3 alignment differs from the I-90-R Option 3 alignment.

- In the Draft EIS, Route Alternative A2-H1 and Route Alternative B2-HI denote routes between the Huntley Substation and the Iowa border. Both alternatives originate from the Alternative Southern Huntley Substation/Huntley Substation – Alternative along Interstate 90. These Route Alternatives are intended to only provide an alternate substation location for Draft EIS Route Alternative I90-5 Option 1 and Option 2, referred to in the EIS Scoping Decision as I-90-R Option 1 and I-90-R Option 2, rather than functioning as an alternative substation location available for any Huntley to Iowa

border route alternative. As noted in the Draft EIS maps, a site at Alternative Southern Huntley Substation/Huntley Substation – Alternative has not been identified and an investigation within Section 2 of Jo Daviess Township would be necessary to locate a 40-acre parcel acceptable for the substation.

Should either option for I90-5 and the Alternative Huntley Substation be selected for the Project, all of Section 2 should be designated for the substation site to allow for ITC Midwest to identify an appropriate location for the parcel. Based on the final substation site selected for this route alternative, associated facilities may need to be routed in a manner different than the Draft EIS for I90-5 Option 1 and Option 2. Maps illustrating these alternatives are provided with my rebuttal testimony as **Schedule 25**. The Final EIS, specifically the Appendix J tables for A2-HI and B2-HI, should be revised to make it clear that this substation site and these Huntley Substation to Iowa border Route Alternatives are only associated with I90-5 Option 1 and Option 2.

Q. YOU MENTIONED THAT THE DRAFT EIS EVALUATES POTENTIAL IMPACT DATA IN TWO SEGMENTS. HAS ITC MIDWEST PROVIDED THIS INFORMATION FOR MODIFIED ROUTE A?

A. Yes, but not in the split-segment format. I included Modified Route A Impact Tables as **Schedule 12** to my direct testimony evaluating the full

summary of potential impacts of the Project between the Lakefield Junction Substation and the Iowa border. I have included Impact Tables for Modified Route A divided into the two segments analyzed in the Draft EIS at **Schedule 26** to allow for a more accurate comparison of the split-segment format presented in the Draft EIS.

Q. CHAPTER 6 OF THE DRAFT EIS INCLUDES TABLES COMPARING POTENTIAL RESOURCE IMPACTS OF THE ROUTES IDENTIFIED. HAVE YOU COMPLETED A SIMILAR ANALYSIS OF MODIFIED ROUTE A?

A. Yes. After receiving the Draft EIS, we felt it was appropriate to compare the potential resource impacts of Modified Route A in the same format as that presented by EERA for the DEIS route alternatives. Attached to my testimony as **Schedule 27** are the charts presented in Chapter 6 of the Draft EIS updated to include Modified Route A. In **Schedule 27**, I also identify several assumptions that were made in creating these bar charts in the Draft EIS. These assumptions are identified as footnotes to the applicable charts.

Q. ARE THERE ANY DATA CONSIDERATIONS THAT NEED TO BE KEPT IN MIND WHEN REVIEWING THE CHAPTER 6 BAR CHARTS IN THE DRAFT EIS?

A. Yes. In Figure 1 (Draft EIS Figure 6-1) of **Schedule 27** to my rebuttal testimony, the output of Proximity of Homes – Lakefield to Huntley includes an additional home not included in the data used for Modified Route A in my direct testimony, **Schedule 12**. This is a result of the specific

location of the data point used to include or omit the house in the proximity count. To include a more conservative estimate for this factor, the home was included in this round of analysis for a total of four homes. The total number of residences for this portion of A-LH, as identified in the Draft EIS is five.

For evaluations in the Draft EIS of wetland impacts at both Fox Lake and Lake Charlotte, the National Wetland Inventory layer used to obtain acres of forested and non-forested wetlands was unedited and counted the entire water bodies as non-forested wetlands in the case of Draft EIS variations FL-1 and LC-4, respectively. Unless otherwise noted, water bodies are generally removed from the non-forested wetland count in order to provide a more accurate estimate of potential wetland impacts. For the number of Minnesota Biological Survey ("MBS") sites within 1,000 feet of the proposed alignment, the Draft EIS did not include the Verona 17 site from the MnDNR GIS layer. I understand this is because the site is considered below a minimum biodiversity significance threshold.

Q. IS THERE A ROUTE IN THE DRAFT EIS THAT IS SIMILAR TO MODIFIED ROUTE A?

A. Yes. Between the Lakefield Junction and Huntley substations, I90-2 is most similar to Modified Route A. I90-2 differs from Modified Route A in a few areas: 1) at the Des Moines River, the I90-2 anticipated right-of-way does not incorporate the perpendicular crossing of the Des Moines River, the

additional separation from the Des Moines River MBS site, and the alignment proposed on the south side of 820th Street to avoid an identified well located on the north side; 2) at Fox Lake, the I90-2 anticipated right-of-way stays north of I-90, boxing in a residence on 125th Street and then continues east along an existing 69 kV line; 3) I90-2 continues east to State Highway 15 where it turns north, crossing the highway two times before rejoining the existing Lakefield to Border 161 kV Transmission Line. Between the Huntley substation and the Iowa border, I90-2 would use A-HI. At the Blue Earth River, A-HI's anticipated right-of-way does not incorporate the deviation to avoid crossing the river twice just south of the Proposed Huntley Substation/Huntley Substation – Application. A map comparing I90-2 and Modified Route A is included as **Schedule 28** to my testimony.

Q. DURING YOUR REVIEW OF I90-2 IN THE DRAFT EIS, DID YOU IDENTIFY ANY DISCREPANCIES?

A. Yes. Map 3-8 states that immediately south of the Fox Lake Substation, the route would require a double-circuit 345 kV/161 kV transmission line. I90-2 follows an existing 69 kV transmission line from this location to just west of State Highway 15. To accommodate the relocation of the existing Lakefield to Border 161 kV Transmission Line if it is removed from the lakes as discussed in one option for I90-2, co-location with the existing 69 kV transmission line, and construction of the 345 kV transmission line, triple-circuit structures would be required in this area. Map 3-8 should be

revised to state "begin 161/345 kV triple-circuit with I90-1 or I90-2" at the location immediately south of the Fox Lake Substation in the Final EIS. Any aesthetic evaluations of this portion of I90-1 and I90-2 should also be reevaluated to determine if any revisions are necessary based on a triple-circuit structure instead of a double-circuit structure before the Final EIS is issued.

Q. ARE THERE DIFFERENCES IN POTENTIAL IMPACTS BETWEEN MODIFIED ROUTE A AND I90-2?

A. Yes. There are differences in potential impacts that should be considered. Modified Route A follows more of the existing 161 kV transmission line around Fox Lake and Lake Charlotte. I90-2 does not follow any portion of the existing Lakefield to Border 161 kV Transmission Line in these areas. The I90-2 anticipated right-of-way crosses through the center of the Krahmer Wildlife Management Area ("WMA") near I-90 and the I90-2 route width also crosses the Fox Lake WMA. With Modified Route A, neither the route width nor right-of-way crosses a WMA. Further, Modified Route A would require triple-circuit 345 kV/161 kV/69 kV structures only in the area south of Fox Lake between the Fox Lake Substation and where the existing 69 kV line turns east in Section 35 of Fox Lake Township and along 160th Street south of Lake Charlotte. Construction along I90-2 would require installing triple-circuit structures in the area south of Fox Lake, plus along I-90 toward Fairmont, through the Krahmer WMA, and south of Buffalo Lake west of State Highway 15.

The remainder of the Project along either route would be constructed on double-circuit structures.

Q. ARE THERE ANY CONCERNS YOU IDENTIFIED WITH THE I90-2 ANTICIPATED ALIGNMENT IN THE DRAFT EIS?

A. Yes. The Draft EIS shows I90-2 primarily following the existing 69 kV transmission line between Fox Lake to a point west of State Highway 15. I90-2 could not likely follow the existing 69 kV line centerline between the Fox Lake Substation and State Highway 15 as it appears there are portions of the existing 69 kV line are located fewer than 10 feet from the I-90 Minnesota Department of Transportation right-of-way.

Q. ARE THERE ANY NOTABLE SIMILARITIES BETWEEN I90-2 AND MODIFIED ROUTE A?

A. Yes. Both I90-2 and Modified Route A would be constructed with an available 161 kV circuit position that would accommodate relocation of the existing Lakefield to Border 161 kV Transmission Line between the Fox Lake Substation and Lake Charlotte. This relocation could occur in the future or as part of this Project.

Q. WOULD YOU RECOMMEND ANY MODIFICATIONS TO I90-2?

A. Yes. If I90-2 were selected for the Project, it should include the modifications identified for Modified Route A at the Des Moines

River/Jackson Municipal Airport, immediately south of Fox Lake, and at the Blue Earth River south of the Huntley Substation.

Q. DOES THE DRAFT EIS INCLUDE OTHER ROUTE COMPARISON DATA YOU HAVE REPLICATED TO INCLUDE MODIFIED ROUTE A?

A. Yes. Chapter 7 includes a relative merits analysis. This analysis compares the relative merits of various routing factors identified in the Commission's route rules against the Route Alternatives presented in the Draft EIS. Attached to my rebuttal testimony as **Schedule 29**, I have included my analysis of these various factors for Modified Route A. I have also included information in each table to provide background on how I reached my conclusions.

Q. DID YOUR CONCLUSIONS REGARDING THE RELATIVE MERITS OF THE ROUTE ALTERNATIVES AND ROUTE VARIATIONS DIFFER FROM THE CONCLUSIONS REACHED IN THE DRAFT EIS?

A. Yes.

Q. PLEASE EXPLAIN ANY OF YOUR CONCLUSIONS THAT DIFFER FROM THE RELATIVE MERITS CONCLUSIONS IN THE DRAFT EIS.

A. There are a total of six relative merits conclusions with which I disagree or would like to provide additional clarification regarding potential impacts.

- Figure 7-2, I90-1 and I90-2 – Both of these Route Alternatives provide the ability to remove existing transmission lines across Fox

Lake and Lake Charlotte, resulting in a reduction in the potential for impacts to avian species that utilize these habitats. The existing 161 kV line that crosses both lakes and connects the Fox Lake and Rutland substations could be co-located with the new 345 kV line, reducing the incremental impact on avian species from placing this existing line in a different location.

- Figure 7-3, JA-2, Land-Based Economies/Agriculture – In my opinion, this should be categorized as "minimal to moderate" not "minimal." JA-2 crosses through the center of several fields to the north of 820th Street. Other routing options that cross through fields instead of following existing linear features have been categorized as minimal to moderate in Chapter 7.
- Figure 7-3, JA-2, Use or paralleling of existing ROWs – In my opinion, this should be categorized as minimal to moderate, not minimal. Unlike JA-1 and A-JA, which follow 820th Street in this area, JA-2 crosses through fields. Although it does follow field lines in a few instances, those are not existing rights-of-way, but are what I would consider a different category under the Commission's routing factors in Rule 7850.4100, Subdivision H.
- Figure 7-3, JA-1, Natural Environment / Flora and Fauna – In my opinion and based on Map 6-14 of the Draft EIS, JA-1 should be categorized as moderate. JA-1 extends through native plant communities on the west and east side of the Des Moines River in addition to crossing through two National Heritage Information

System Rare Natural Features sites (Belmont Bridge Southeast and Belmont 34/35) and through approximately one mile of native plant communities in Sections 33 and 34 of Belmont Township. Due to the extent of these resources in this area, these resources would not be able to be spanned and would require multiple structures within these communities.

- Figure 7-4, FL-5 and FL-6, Land Based Economies / Agriculture – As with FL-1, FL-5 and FL-6 would replace the existing H-frame structures with single pole structures, resulting in reduced agricultural impacts where these existing structures are located. The Final EIS should discuss these reduced impacts and evaluate if the proper motif has been assigned in Chapter 7.

Schedule 29 includes an evaluation of Modified Route A against the routing factors identified in the various Figures included in Chapter 7 of the Draft EIS.

III. CONCLUSION

Q. WHAT IS YOUR ROUTE RECOMMENDATION FOR THE PROJECT?

A. Consistent with my direct testimony, my opinion is that Modified Route A best balances overall impacts on the environment, human settlement, and electrical system reliability. Should Modified Route A not be selected for the Project, I recommend, in order of preference, Route A then Route B

(including M15-R and F3-R), over the other routes in the EIS Scoping Decision.

Q. DOES THIS CONCLUDE YOUR PREFILED REBUTTAL TESTIMONY?

A. Yes.

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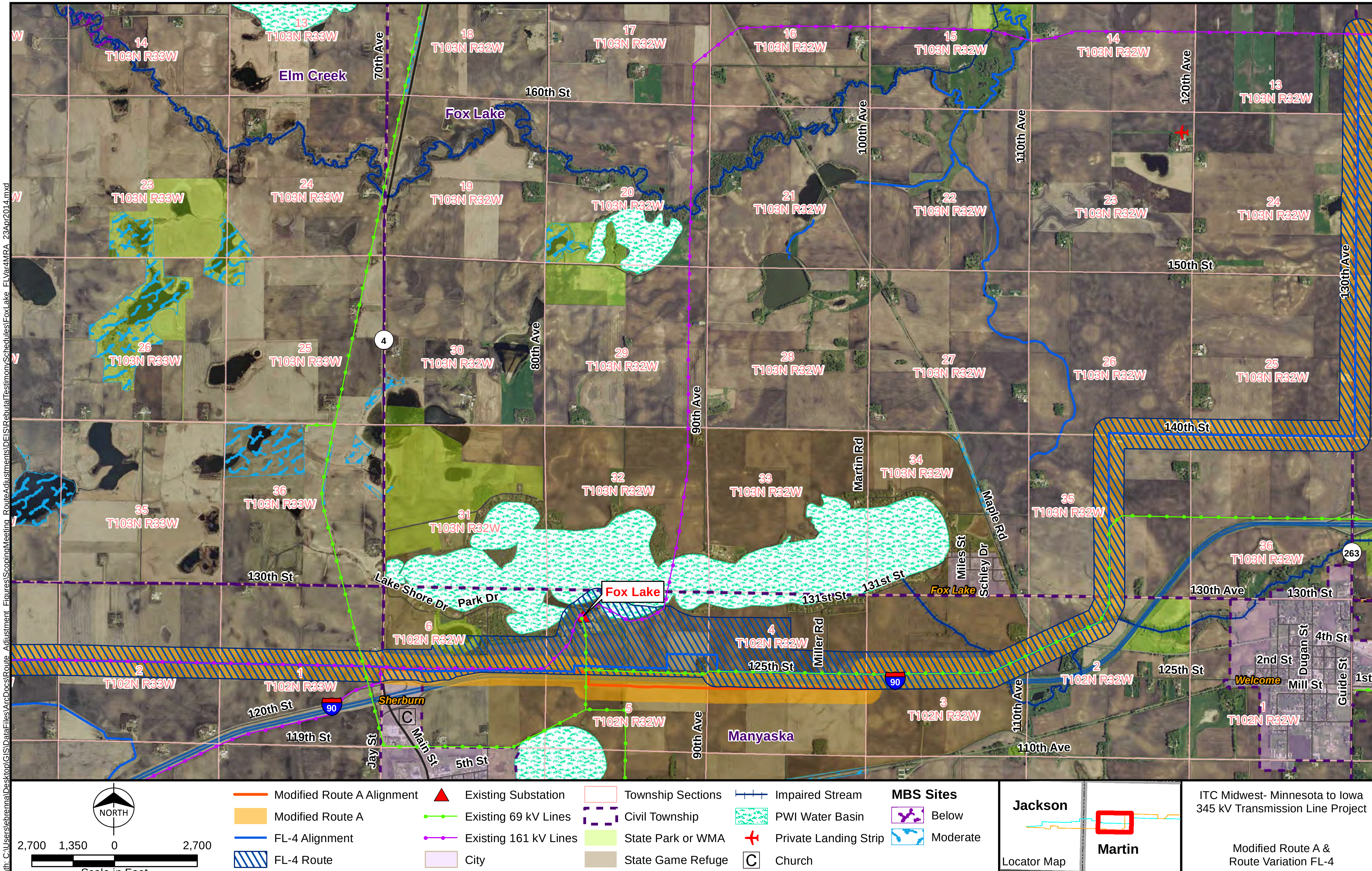
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Existing 69 kV Lines
Existing 161 kV Lines
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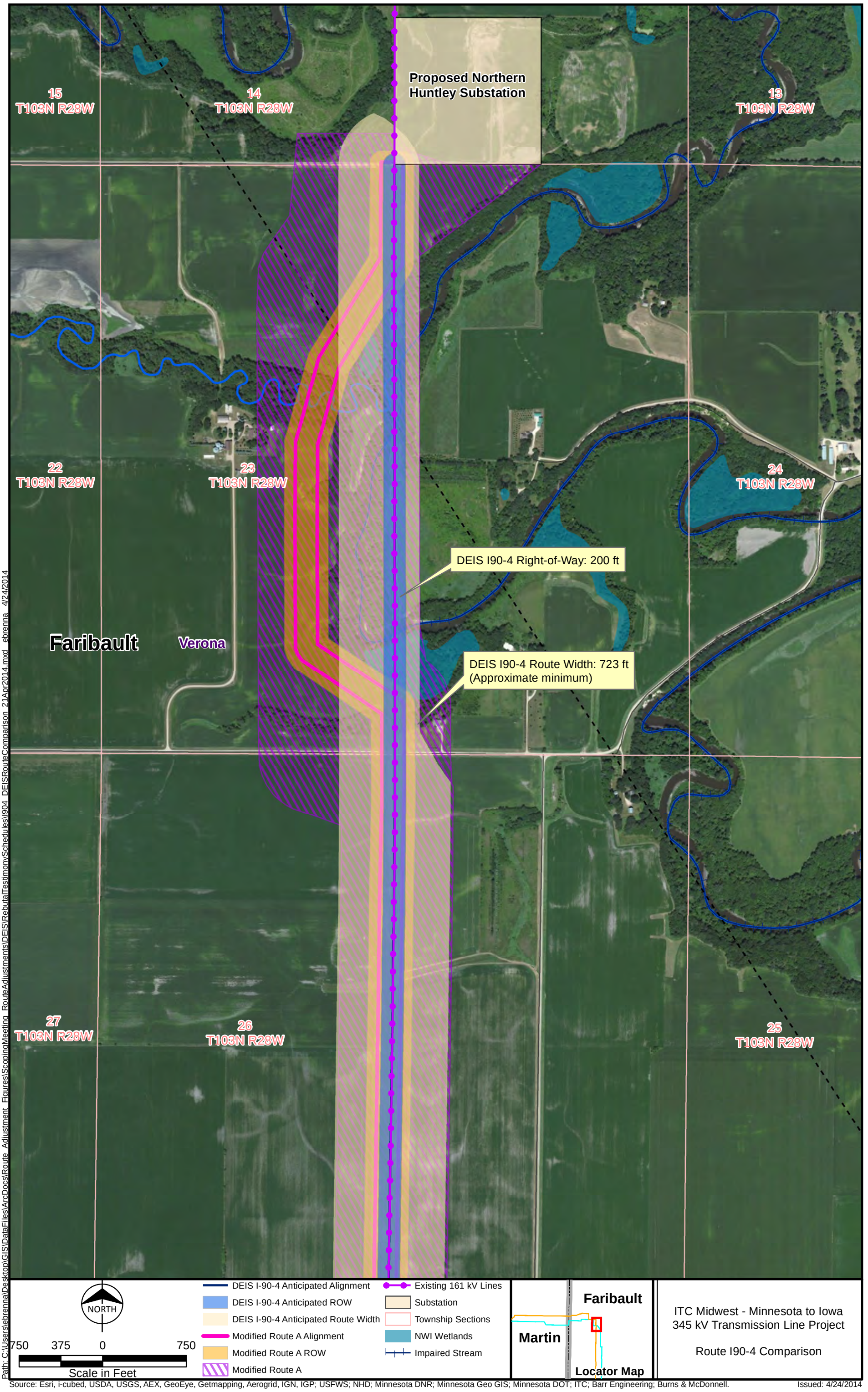

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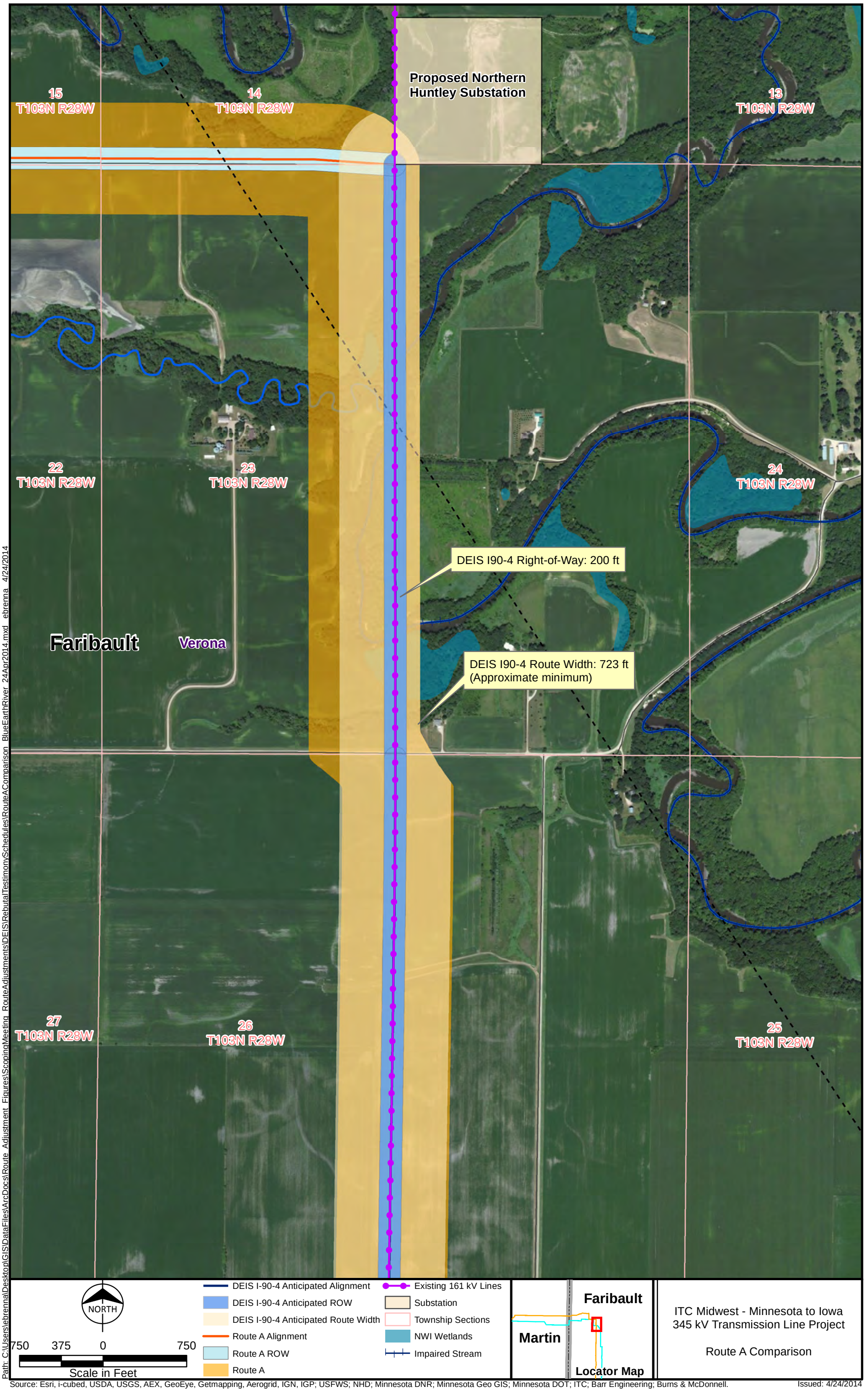

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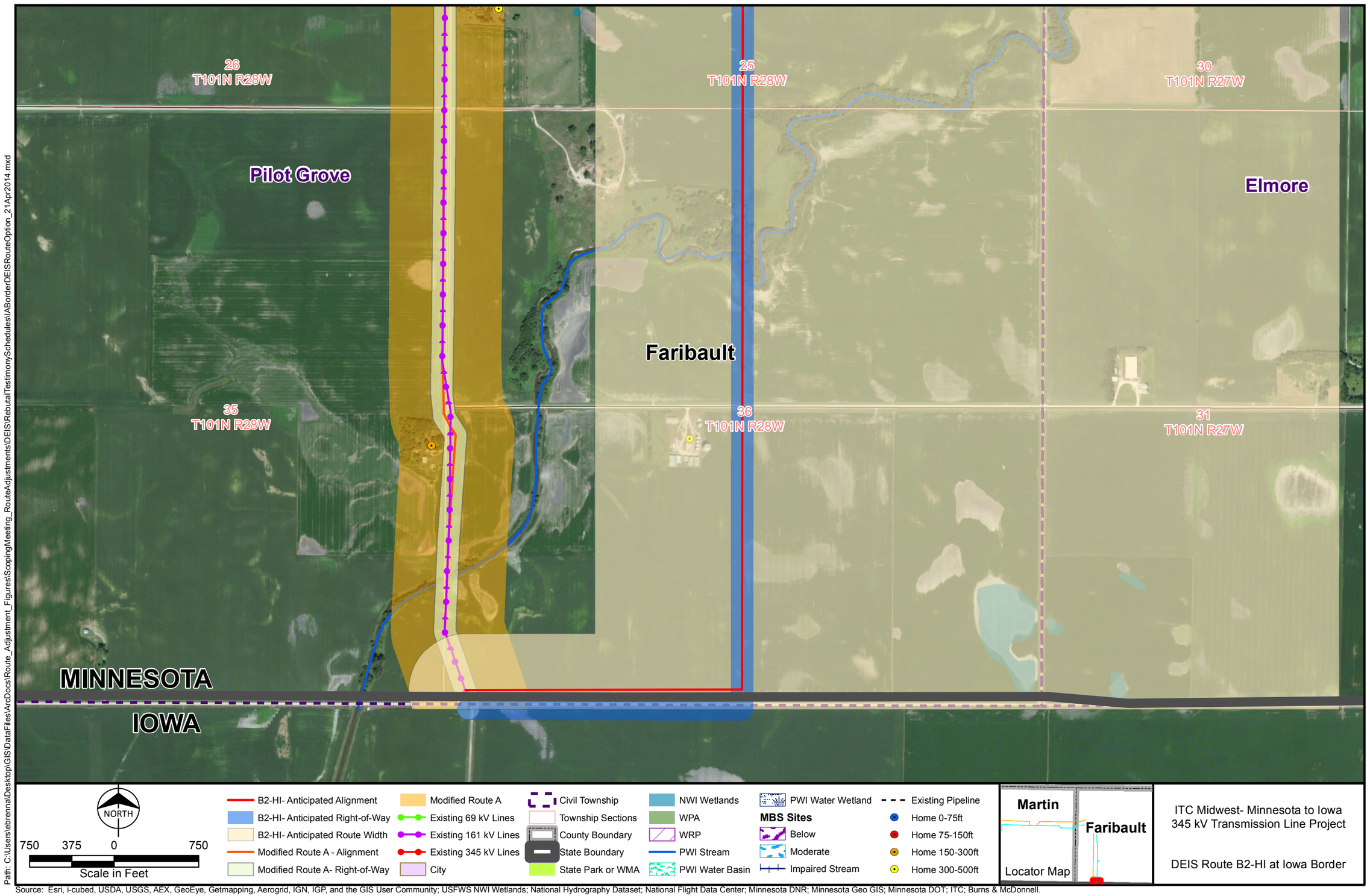

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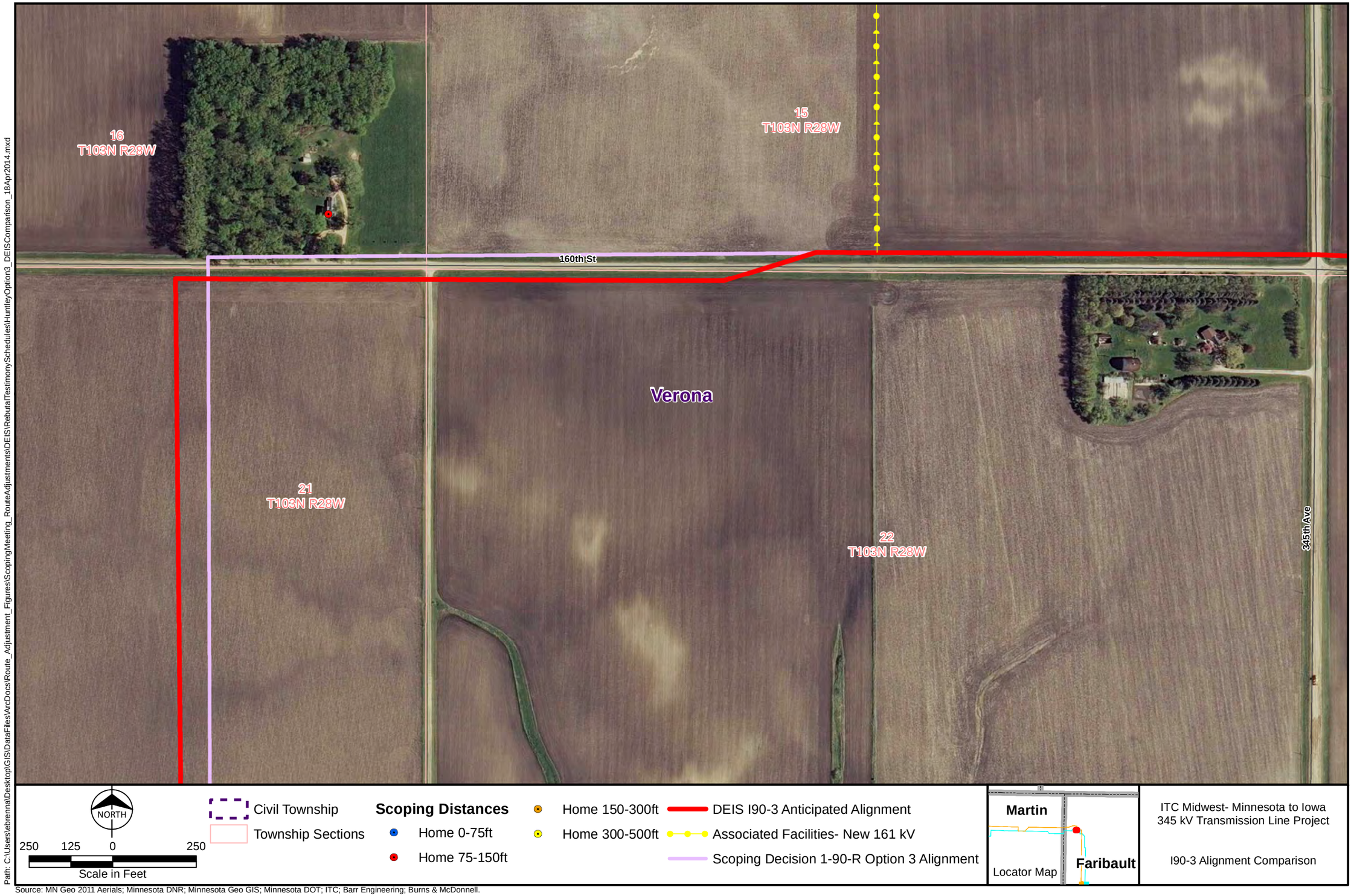

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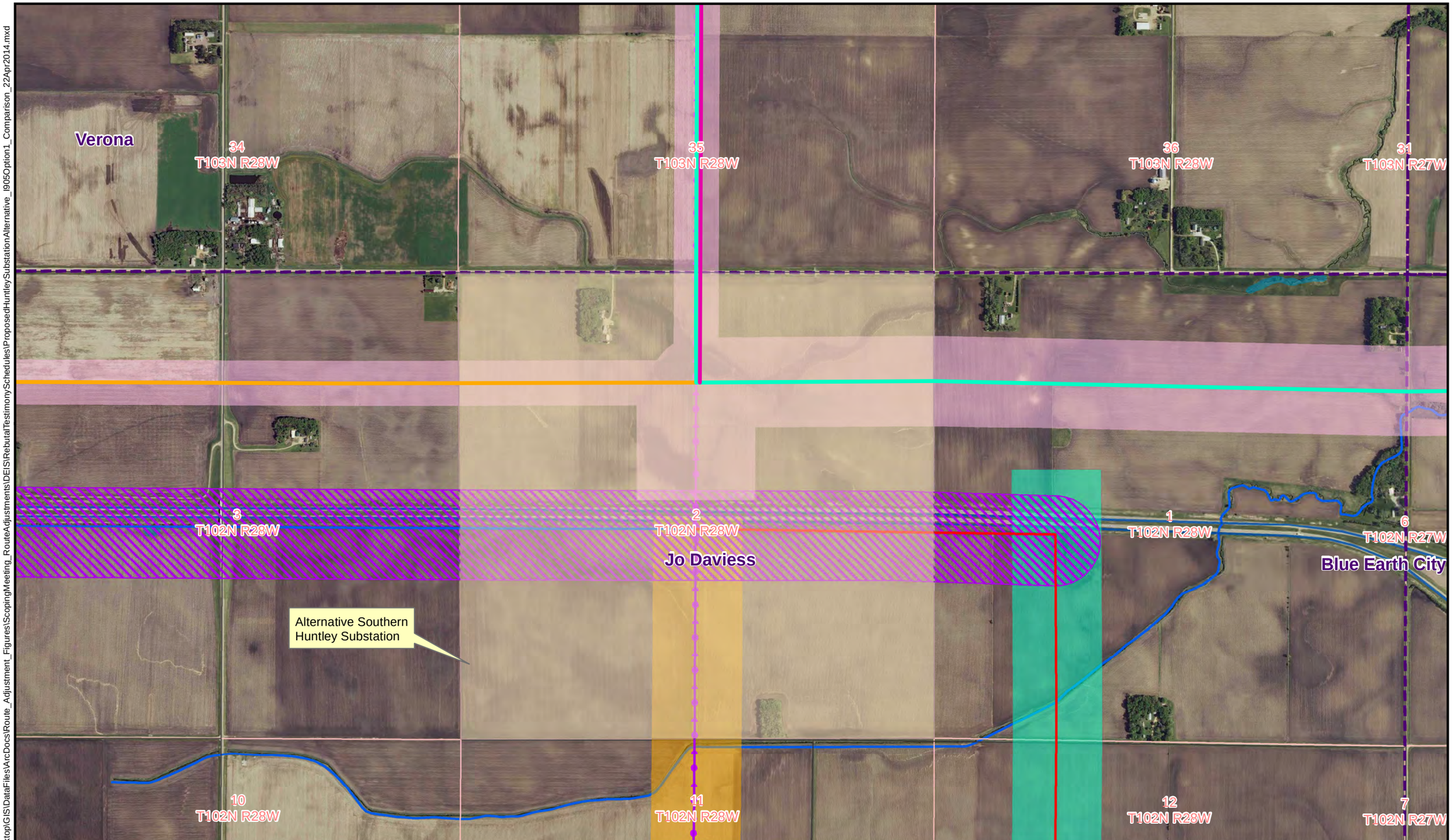
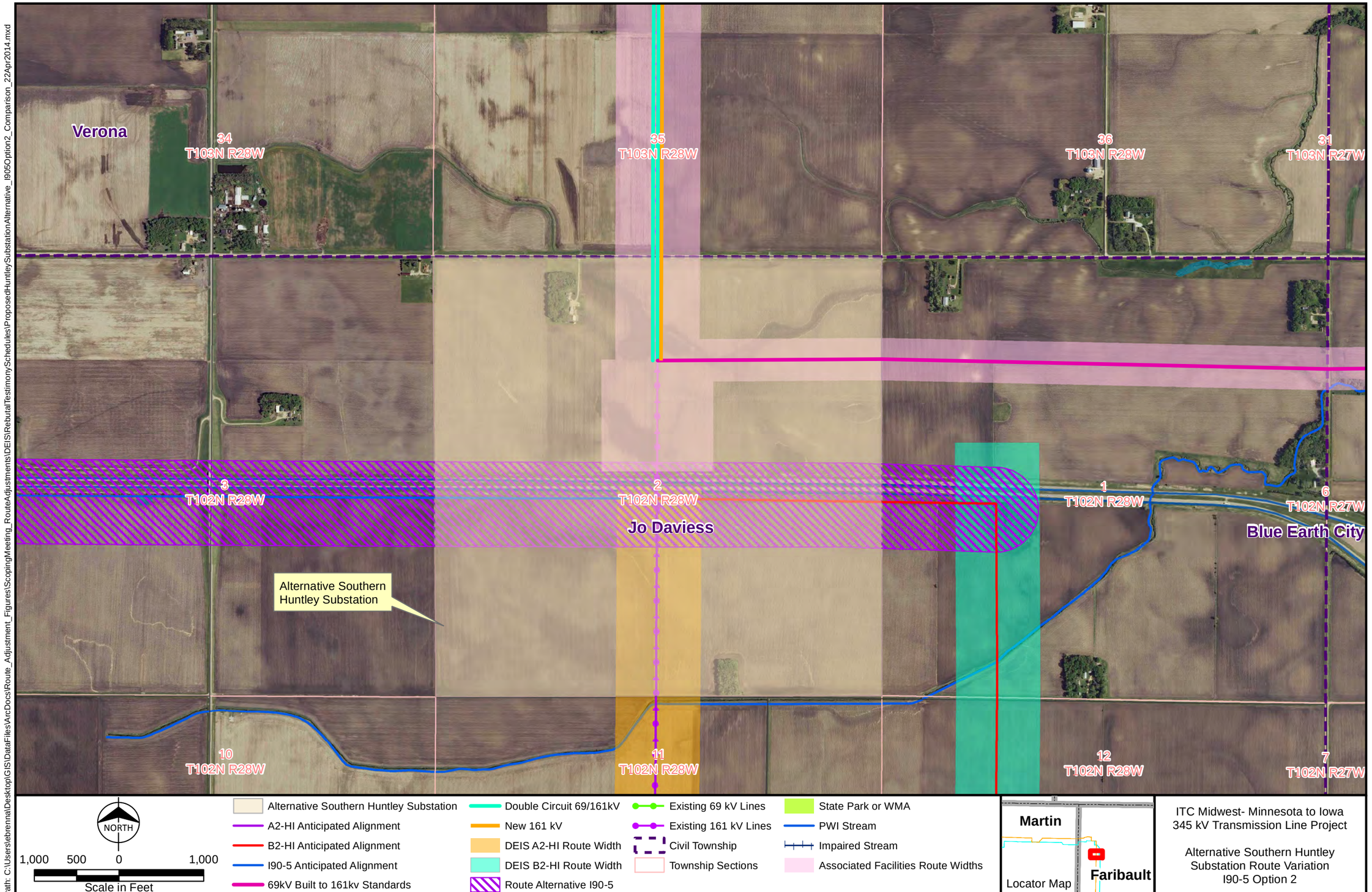


Source: MN Geo 2011 Aerials; USFWS NWI Wetlands; National Hydrography Dataset; National Flight Data Center; Minnesota DNR; Minnesota Geo GIS; Minnesota DOT; ITC; Barr Engineering; Burns & McDonnell.



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Source: MN Geo 2011 Aerials; USFWS NWI Wetlands; National Hydrography Dataset; National Flight Data Center; Minnesota DNR; Minnesota Geo GIS; Minnesota DOT; ITC; Barr Engineering; Burns & McDonnell.

ITC Midwest- Minnesota to Iowa 345 kV Transmission Line Project
Modified Route A Divided Potential Impacts Table

	MRA-LH	MRA-HI
Impacts		
Length (miles)	56.58	15.71
Number of Angles Greater than 30˚	22	13
Cropland in Right-of-Way (acres)	1,228.42	338.21
200ft Right-of-Way Percent Cropland	89.6	88.8
Alignment Length (miles)	56.58	15.71
Route Corridor (acres)	6,897.20	1,948.73
Right-of-Way (acres)	1,371.09	380.73
Corridor Sharing		
Corridor Sharing-Roads (miles)	13.05	3.42
Corridor Sharing- Transmission (miles)	41.91	14.26
Corridor Sharing-Railroad (miles)	0	0
Corridor Sharing-Pipeline (miles)	0	0
No Corridor Sharing (miles)	5.74	1.46
Total Corridor Sharing (miles)	50.84	14.26
Total Corridor Sharing (percent)	89.9	90.8
Homes		
Number of Occupied Homes in Route Corridor	14	9
0-75ft from Alignment Centerline	0	0
75-150ft from Alignment Centerline	2	0
150-300ft from Alignment Centerline	4	4
300-500ft from Alignment Centerline	6	7
0-500ft from Alignment Centerline	12	11
Prime Farmland		
Right-of-Way (acres)	1,371.09	380.73
Prime Farmland within the Right-of-Way (acres)	466.31	107.54
Percent of the 200ft Right-of-Way that Crosses Prime Farmland	34.0	28.2
Prime Farmland if Drained within the Right-of-Way (acres)	729.12	154.95
Percent of 200ft Right-of-Way that Crosses Prime Farmland if Drained	53.2	40.7
Farmland of State Importance within the Right-of-Way (acres)	103.35	74.65
Percent of 200ft Right-of-Way that Crosses Farmland of State Importance	7.5	19.6
Prime Farmland if Protected from Flooding within the Right-of-Way (acres)	10.38	13.22
Percent of 200ft Right-of-Way that Crosses Prime Farmland if Protected from Flooding	0.8	3.5
Right-of-Way Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding (acres)	1,309.16	350.35
Percent of 200ft Right-of-Way Percent Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, Prime Farmland if Protected from Flooding	95.5	92.0
Gap Land Cover		
Right-of-Way Aquatic Environments (acres)	3.49	0.00
Right-of-Way Cropland (acres)	1,228.42	338.21
Right-of-Way Grassland (acres)	127.85	38.11
Right-of-Way Lowland Deciduous Forest (acres)	3.88	2.24
Right-of-Way Non-Vegetated (acres)	0	0
Right-of-Way Shrubland (acres)	0	0
Right-of-Way Upland Conifer Forest (acres)	0	0
Right-of-Way Upland Deciduous Forest (acres)	7.46	1.91
200ft Right-of-Way Percent of Aquatic Environments	0.3	0.0
200ft Right-of-Way Percent of Cropland	89.6	88.8
200ft Right-of-Way Percent of Grassland	9.3	10.0
200ft Right-of-Way Percent of Lowland Deciduous Forest	0.3	0.6
200ft Right-of-Way Percent of Non-Vegetated	0	0
200ft Right-of-Way Percent of Shrubland	0	0
200ft Right-of-Way Percent of Upland Conifer Forest	0	0
200ft Right-of-Way Percent of Upland Deciduous Forest	0.5	0.5
Wetlands		
Right-of-Way (Acres)	1,371.09	380.73
Total Wetlands within the Right-of-Way (acres)	10.89	1.38
Number of Wetlands Crossed by Route Corridor	48	10
Percent of the 200ft Right-of-Way that Crosses Wetlands	0.8	0.4
Forested Wetlands in Right-of-Way (acres)	0.35	0.93
Number of Forested Wetlands Crossed by Route Corridor	7	5
Percent of the 200ft Right-of-Way that Crosses Forested Wetlands	0.0	0.2
PWI and Shallow Lakes		
Number of Stream and River Crossings by Route Alignment	36	16
Number of PWI Stream Crossings by Route Alignment	19	12
Number of PWI Lakes within Route Corridor	1	0
Number of PWI Wetlands within Route Corridor	1	0
Number of PWI Lakes within 200ft Right-of-Way	1	0
Number of PWI Wetlands within 200ft Right-of-Way	0	0
Number of PWI over 900ft Crossed by Route Alignment	0	0
Length (ft) of PWI over 900ft that are Crossed by the Alignment	0	0
Number of Shallow Lakes within Route Corridor	1	0
Number of Shallow Lakes within 1 mile of Route Corridor	6	0

ITC Midwest- Minnesota to Iowa 345 kV Transmission Line Project
Modified Route A Divided Potential Impacts Table

Environmental		
Right-of-Way (Acres)	1,371.09	380.73
Number of MCBS Biodiversity Sites Crossed by Route Corridor	5	1
Number of Metro Significant Resources Areas Crossed by Route Corridor	0	0
Number of WMAs in Route Corridor	0	0
Number of WMAs within 1 mile of Route Corridor	6	0
Number of WMAs within 200ft Right-of-Way	0	0
Number of WMA over 900ft that are Crossed by Right-of-Way	0	0
Lengths (ft) of WMA over 900ft that are Crossed by Right-of-Way	0.00	0.00
Number of SNA within 1 mile of Route Corridor	0	0
Number of WPA within 1 mile of Route Corridor	1	1
Number of State Parks within 1 mile of Route Corridor	0	0
Number of USFWS Lands WRP Easements within 1 mile of Route Corridor	1	0
Number of T & E Species within Route Corridor	1	0
Number of T&E Species within 1 mile of Route Corridor	21	0
Number of Archaeological Sites within 1 mile of Route Corridor	48	21
Number of Historical Sites within 1 mile of Route Corridor	13	5
Number of Alignment Snowmobile Trail Crossings	5	2

Draft EIS Chapter 6.0 Analysis with Modified Route A Included

Figure 1 - Proximity of Homes-Lakefield to Huntley
(Figure 6-1 of Draft EIS)

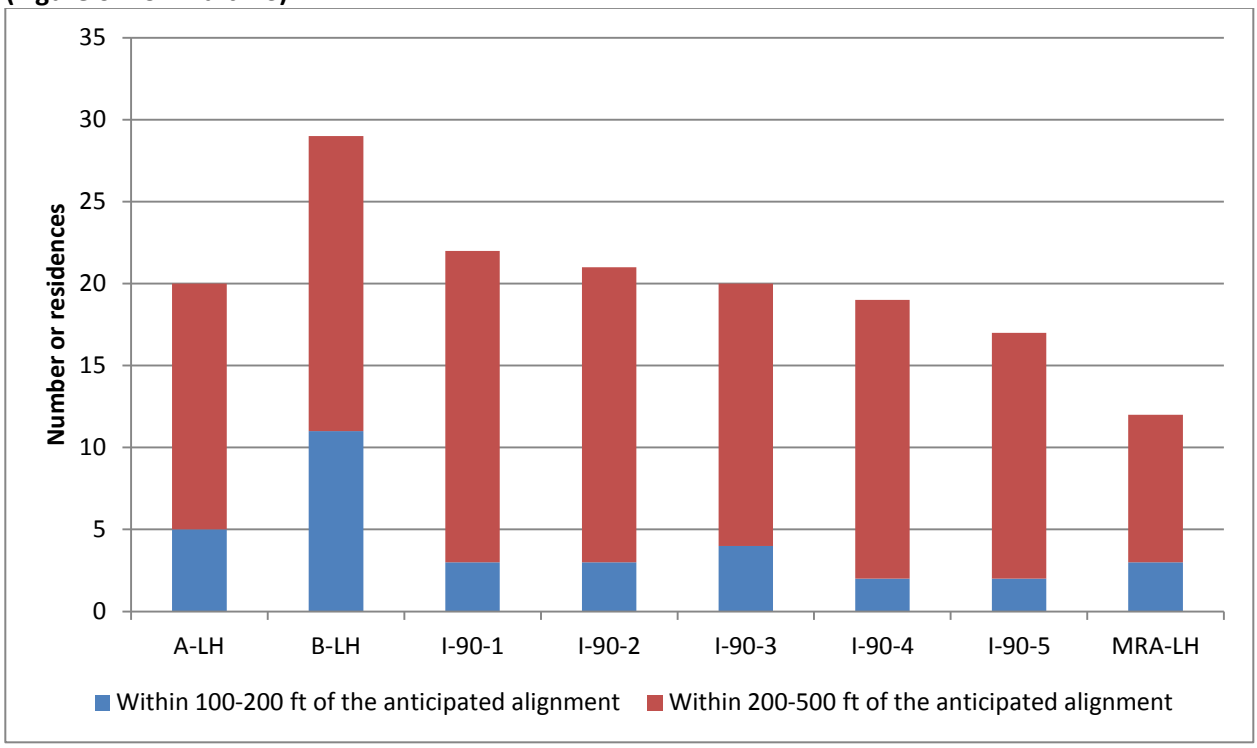


Figure 2 - ROW Sharing-Lakefield to Huntley
(Figure 6-2 of Draft EIS)

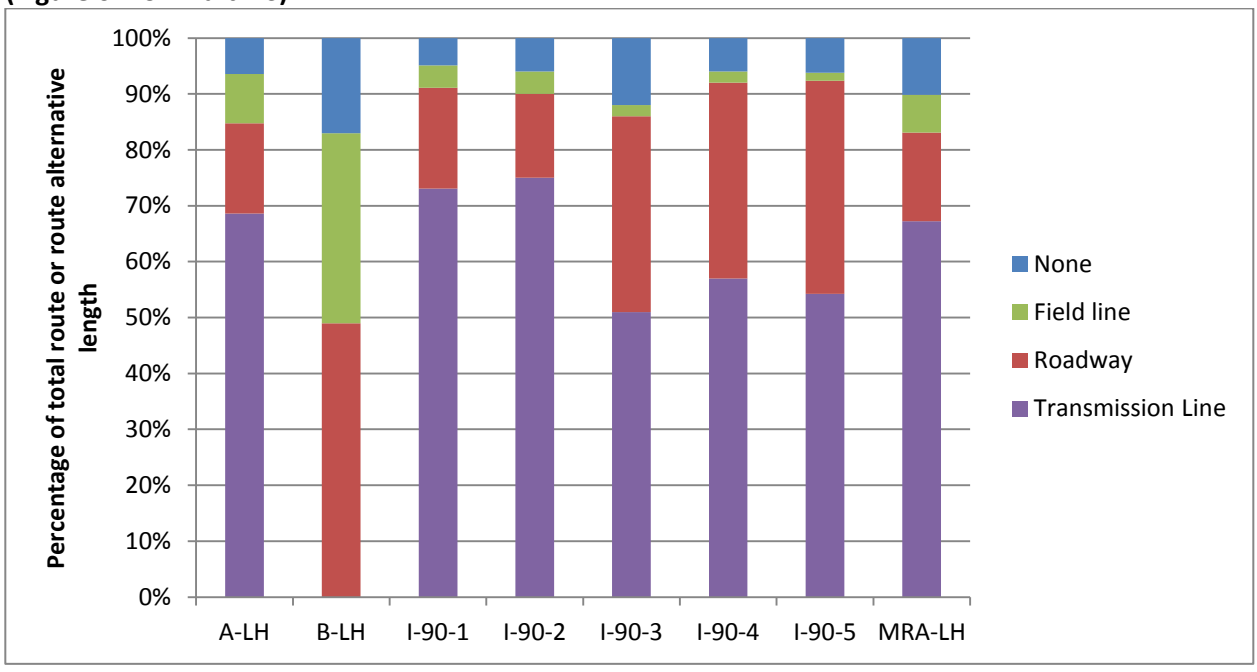


Figure 3 - Farmland Classification-Lakefield to Huntley
(Figure 6-3 of Draft EIS)

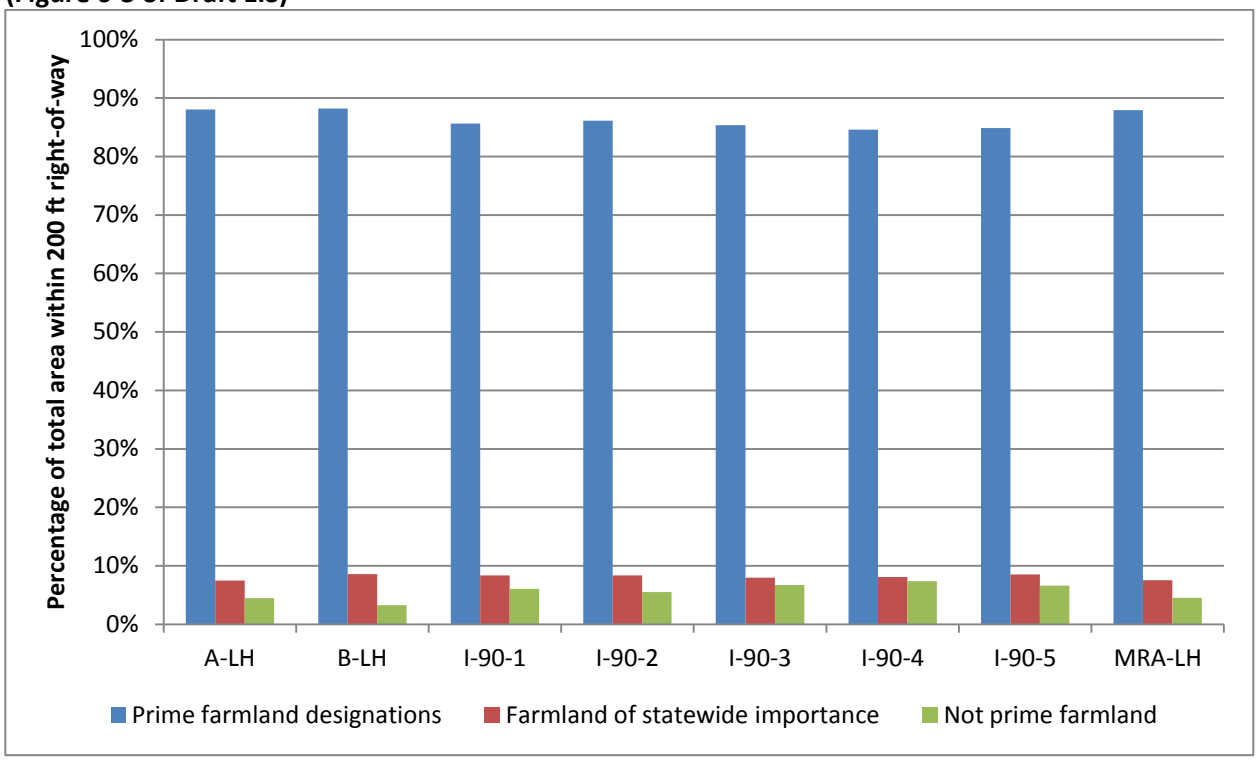


Figure 4 - Watercourse Crossings-Lakefield to Huntley
(Figure 6-5 of Draft EIS)

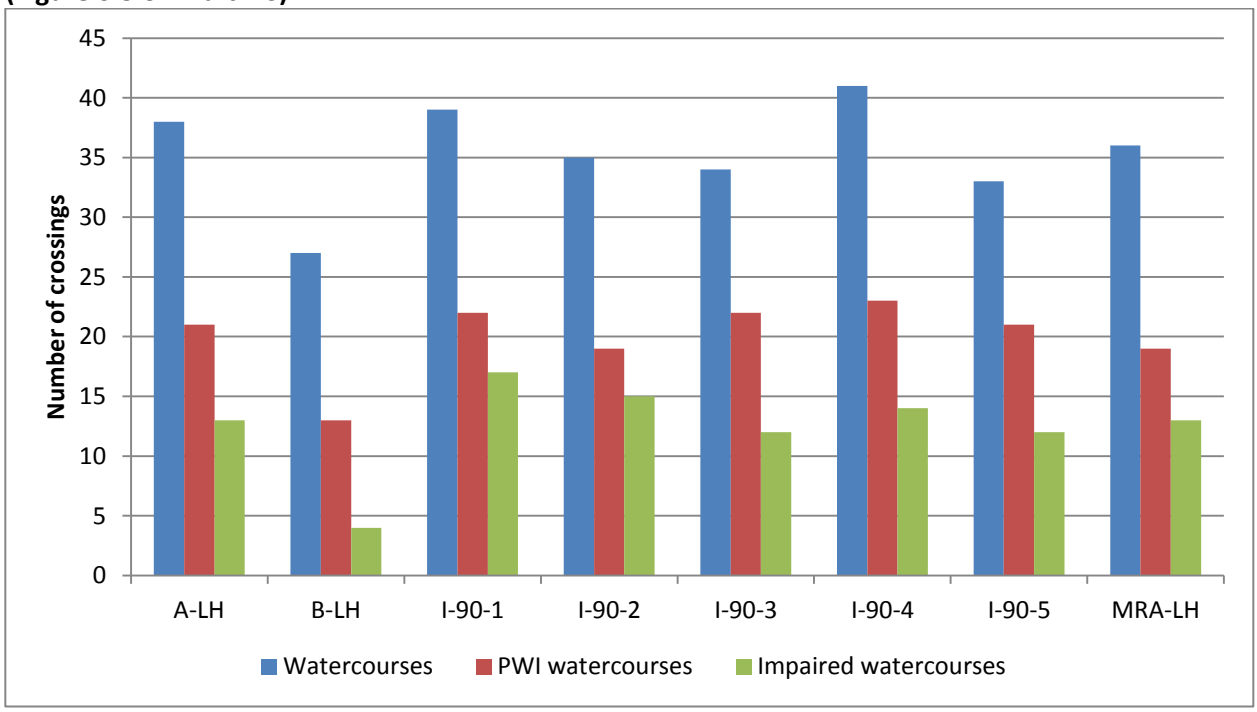


Figure 5 - Wetlands within ROW-Lakefield to Huntley
(Figure 6-7 of Draft EIS)

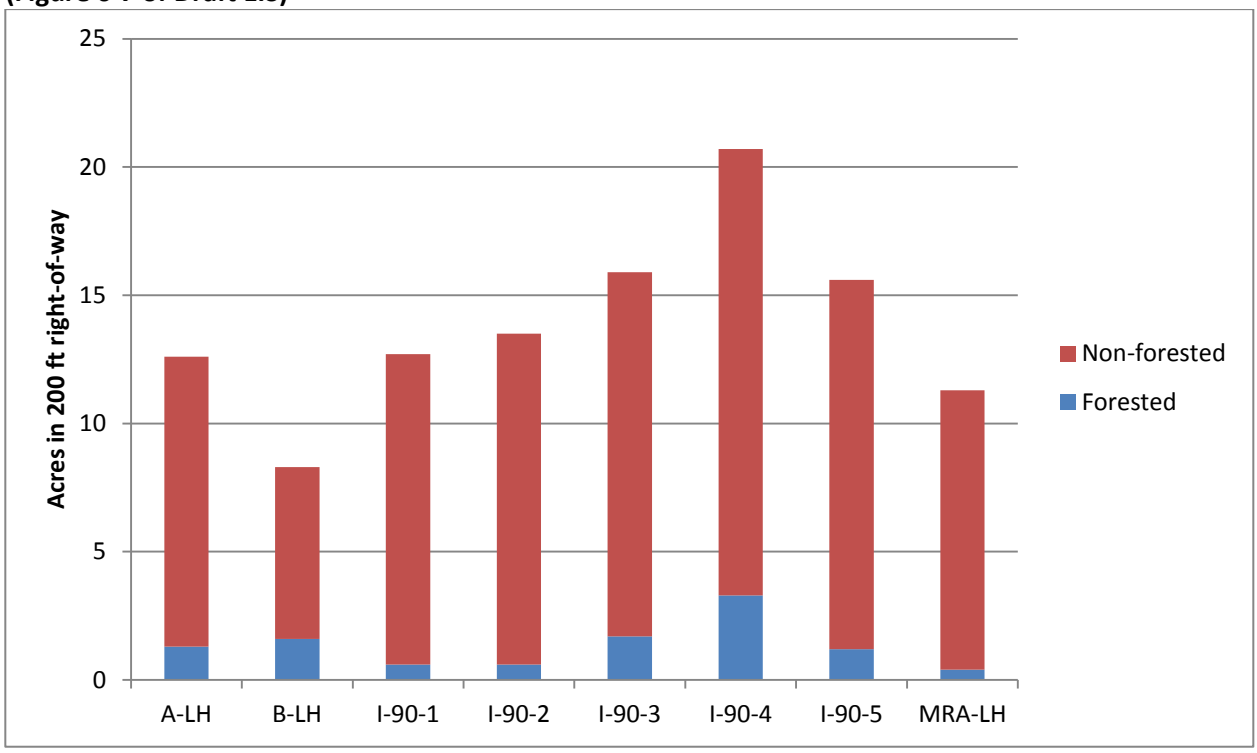


Figure 6 - Rare Plant Communities-Lakefield to Huntley
(Figure 6-9 of Draft EIS

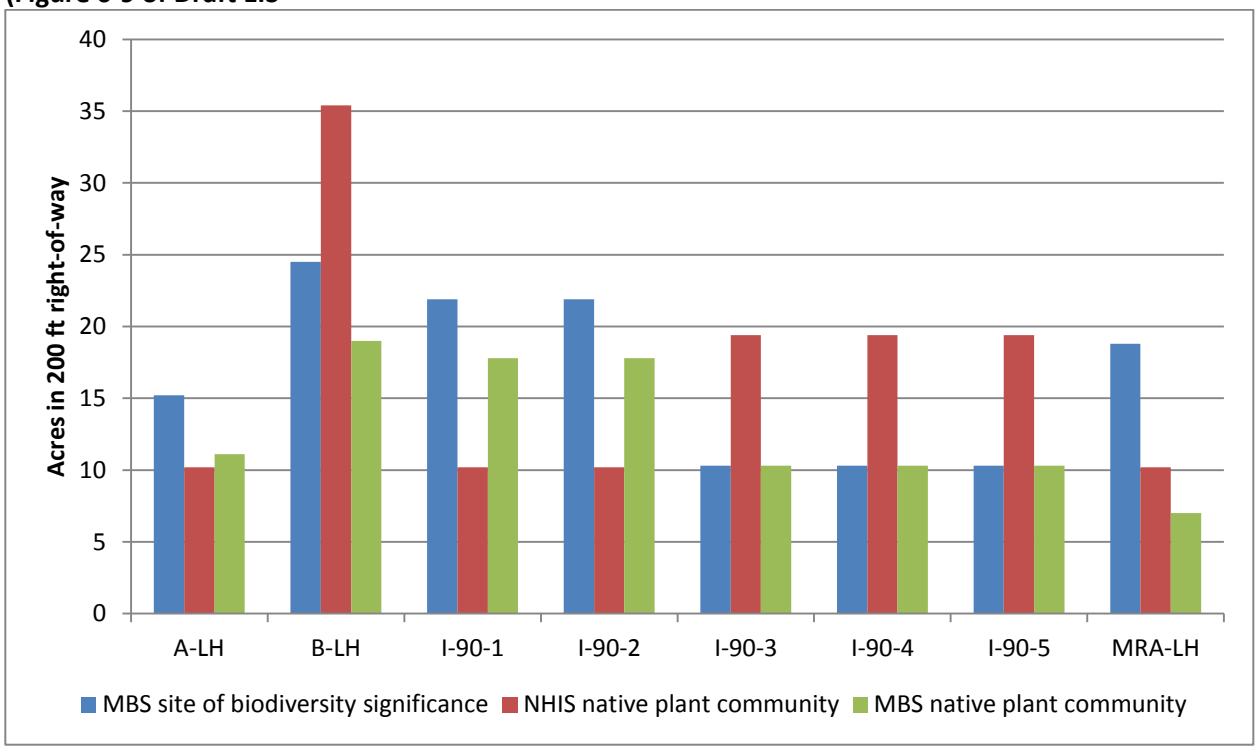


Figure 7 - Proximity of Homes-Jackson Municipal Airport
(Figure 6-11 of Draft EIS)

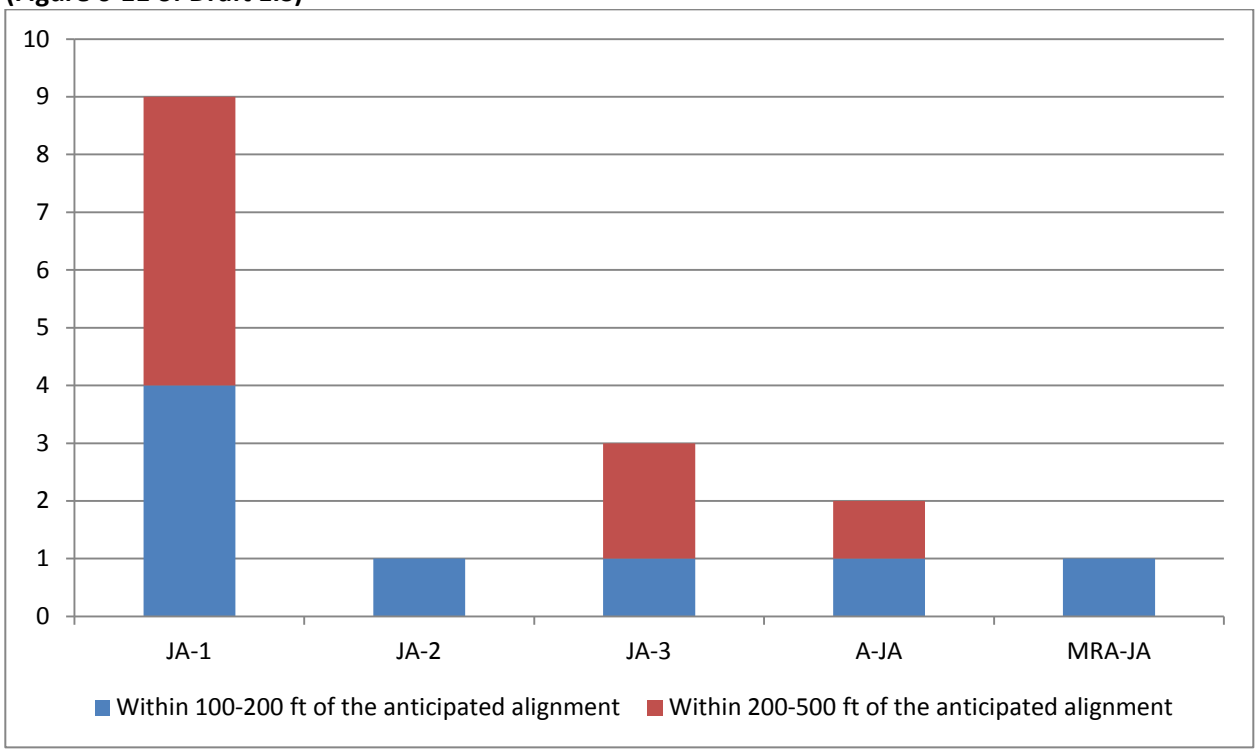


Figure 8 - ROW Sharing-Jackson Municipal Airport
(Figure 6-12 of Draft EIS)

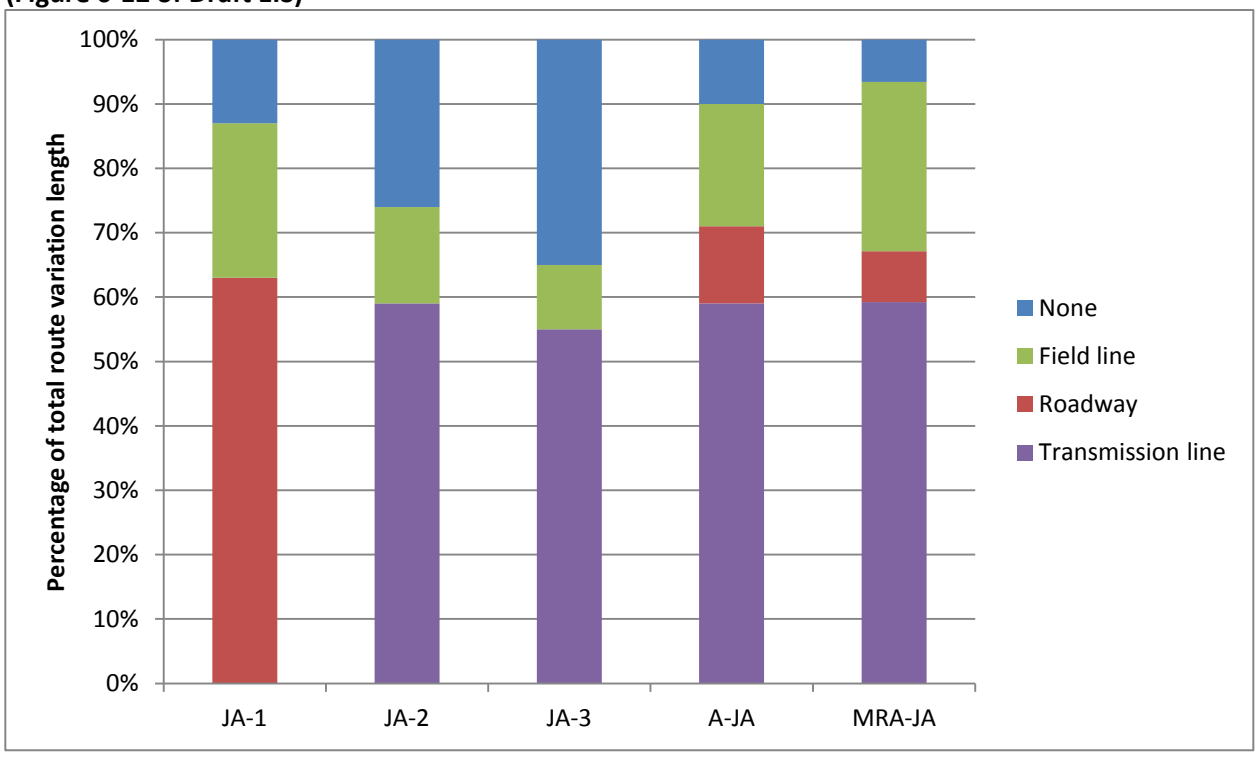


Figure 9 - Farmland Classifications-Jackson Municipal Airport
(Figure 6-13 of Draft EIS)

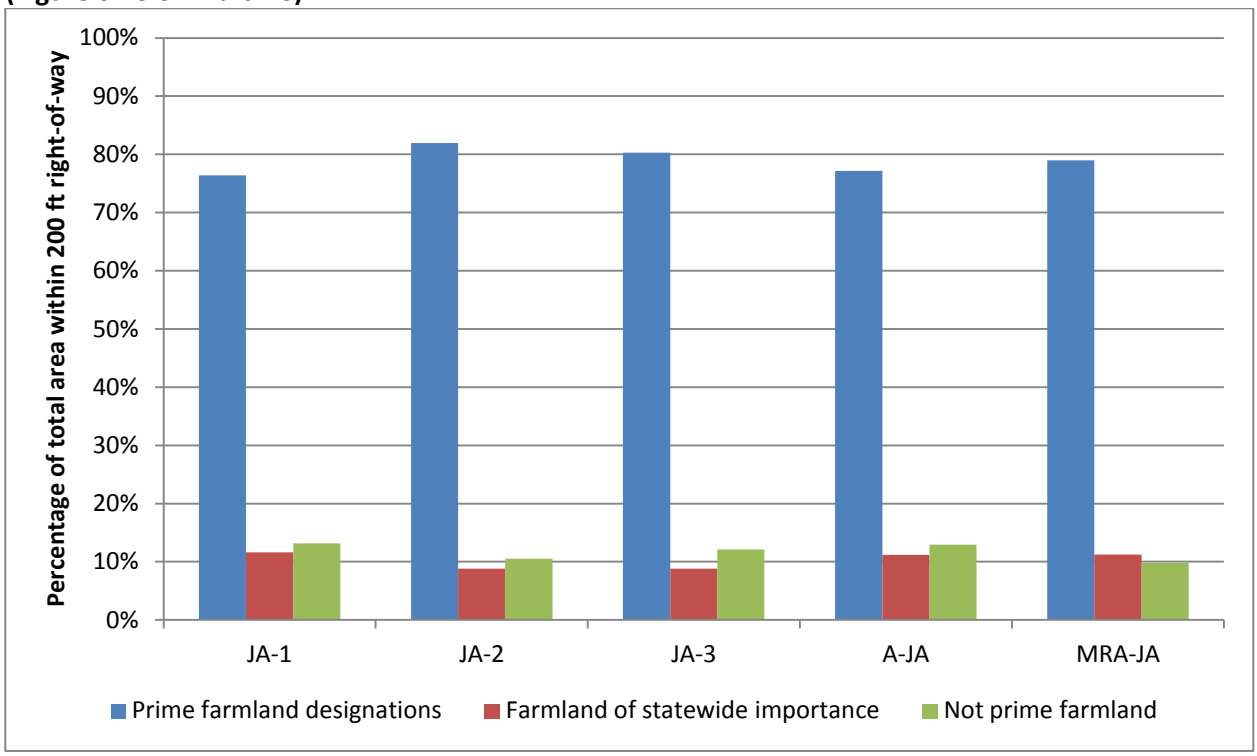


Figure 10 - Watercourse Crossings-Jackson Municipal Airport
(Figure 6-14 of Draft EIS)

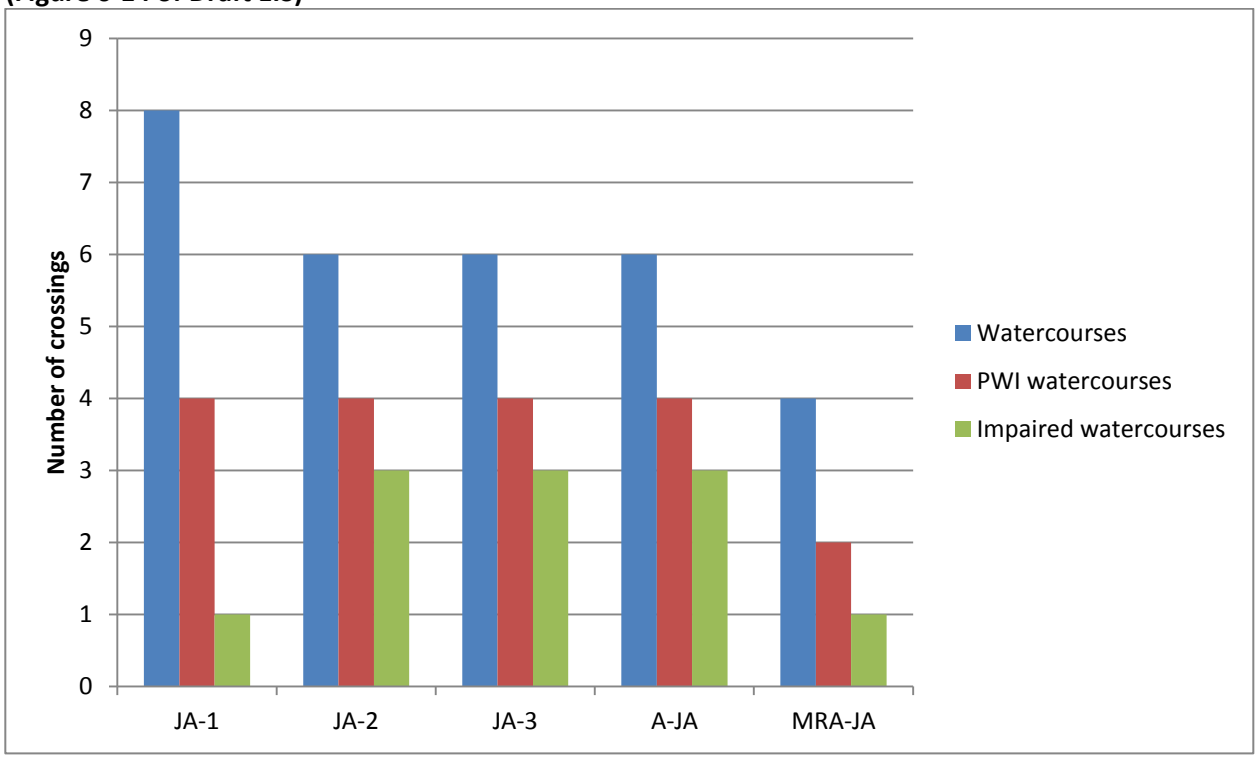


Figure 11 - Wetlands within ROW-Jackson Municipal Airport
(Figure 6-15 of Draft EIS)

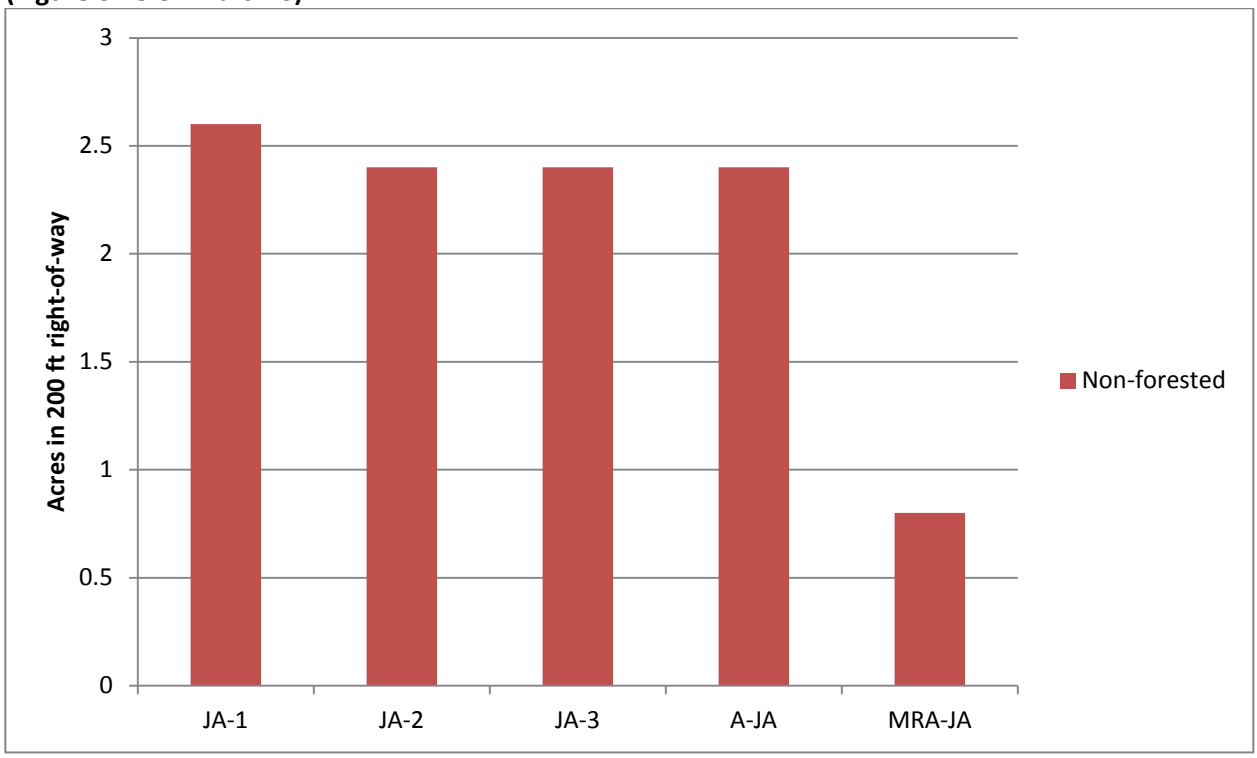


Figure 12 - Rare Plant Communities-Jackson Municipal Airport
(Figure 6-16 of Draft EIS)

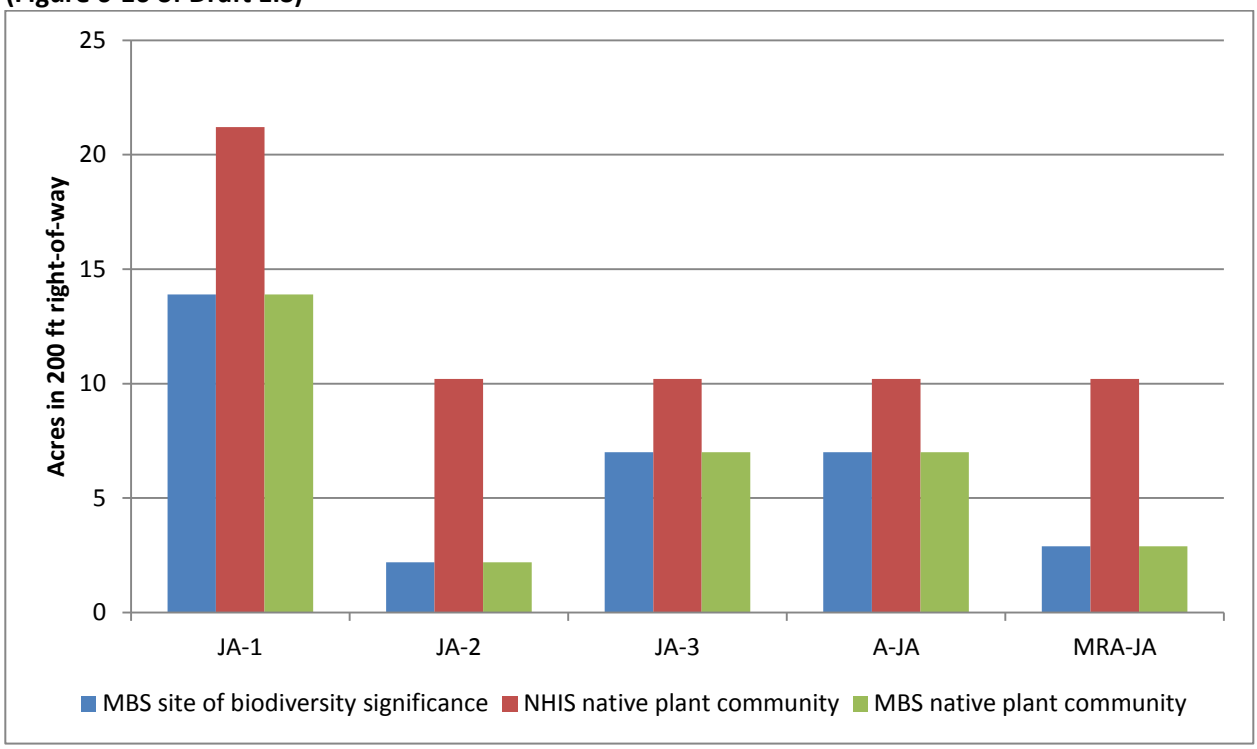


Figure 13 - Proximity of Homes-Fox Lake
(Figure 6-17 of Draft EIS)

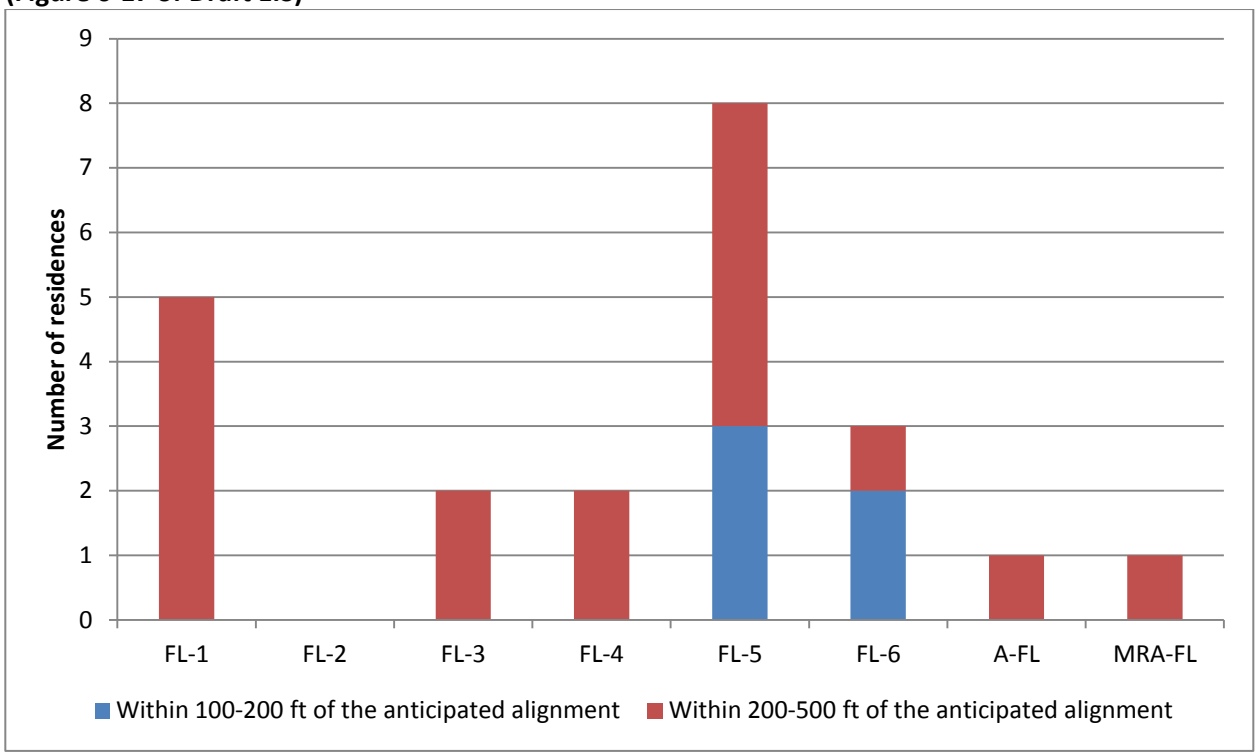


Figure 14 - ROW Sharing-Fox Lake
(Figure 6-18 of Draft EIS)

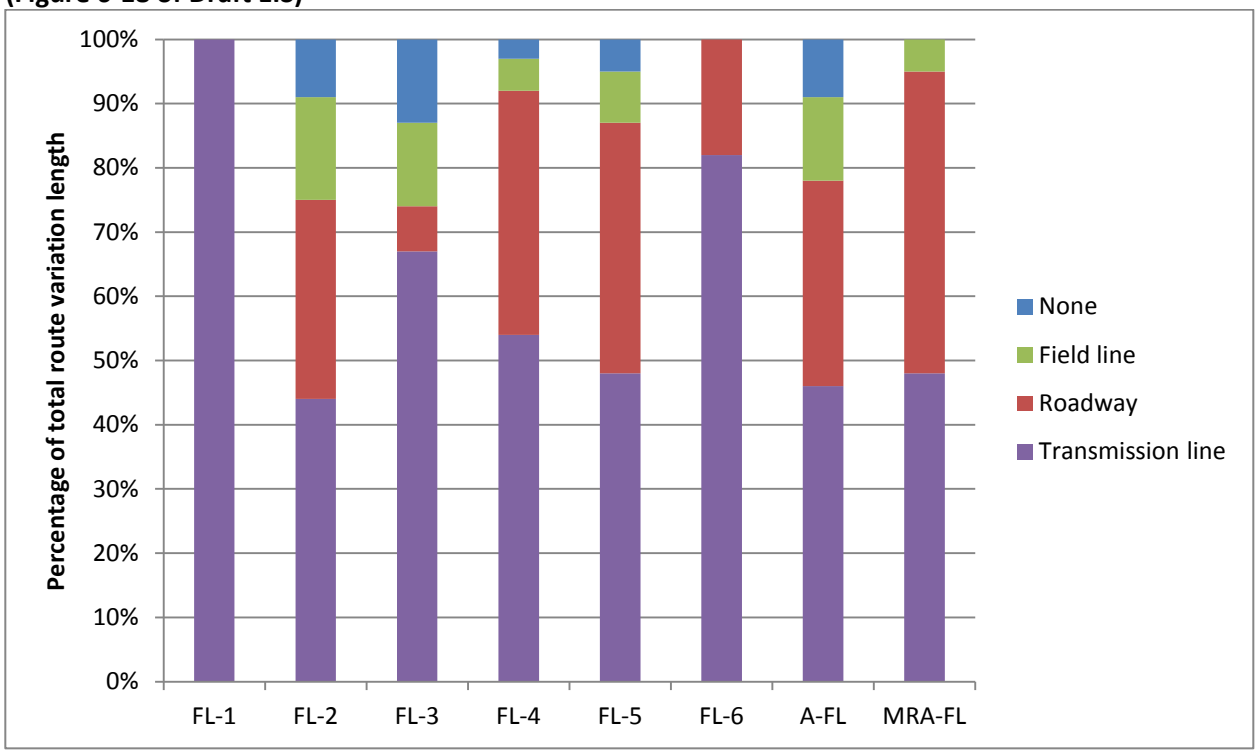


Figure 15 - Farmland Classification-Fox Lake
(Figure 6-19 of Draft EIS)

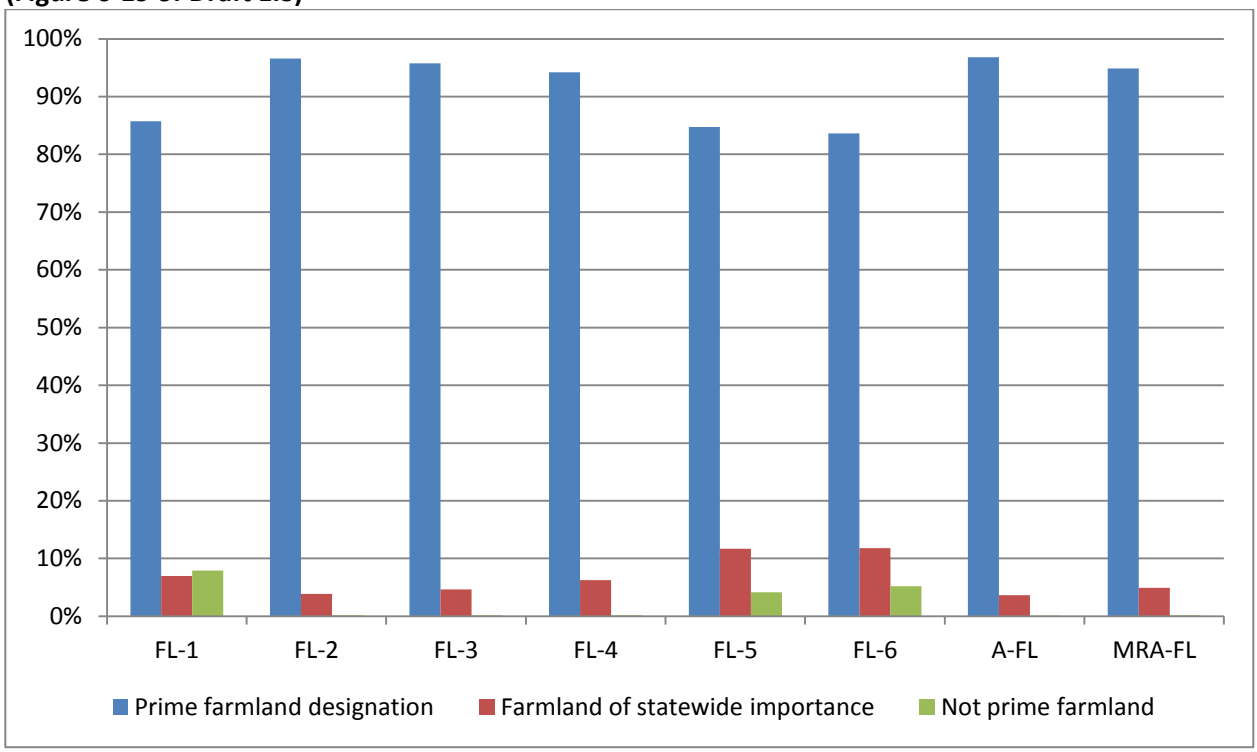


Figure 16 - Watercourse Crossings-Fox Lake
(Figure 6-20 of Draft EIS)

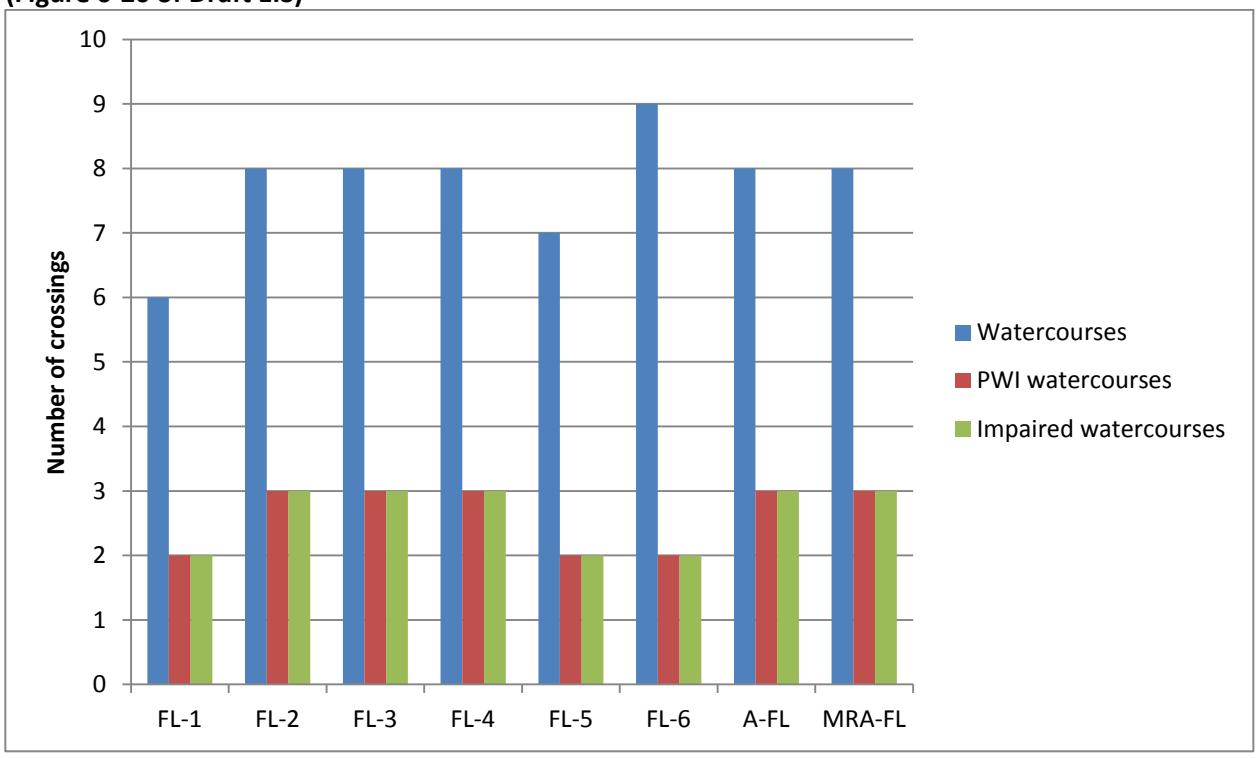
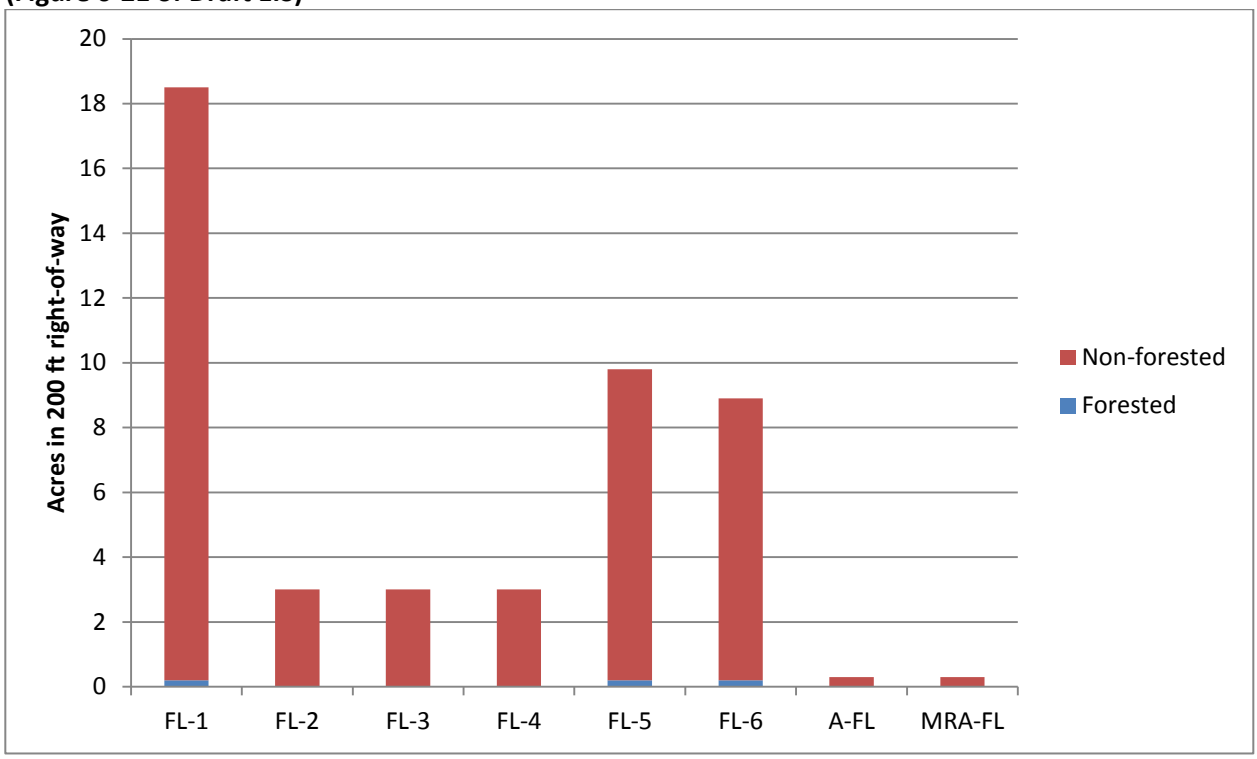


Figure 17 - Wetlands within ROW- Fox Lake*
(Figure 6-21 of Draft EIS)



*FL-1 includes the entire Fox Lake within a 200-foot ROW as a non-forested wetland

Figure 18 - Rare Plant Communities- Fox Lake
(Figure 6-22 of Draft EIS)

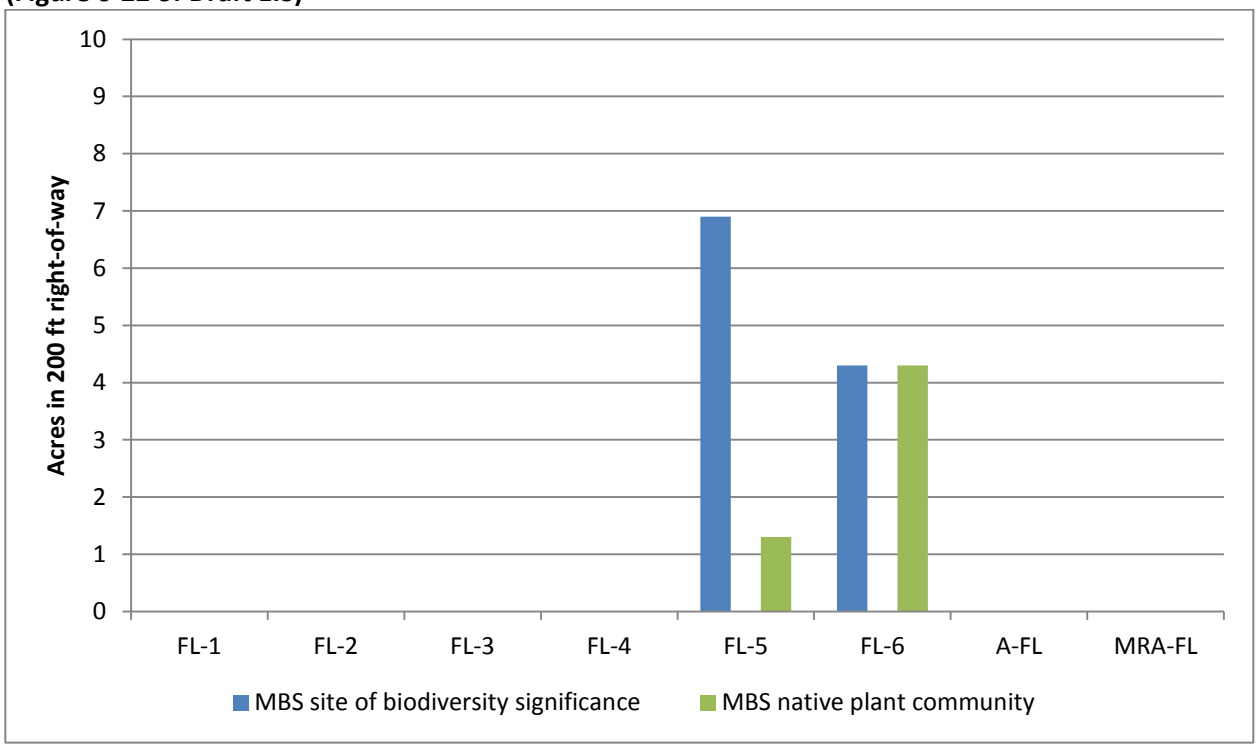


Figure 19 - Proximity of Homes- Lake Charlotte
(Figure 6-23 of Draft EIS)

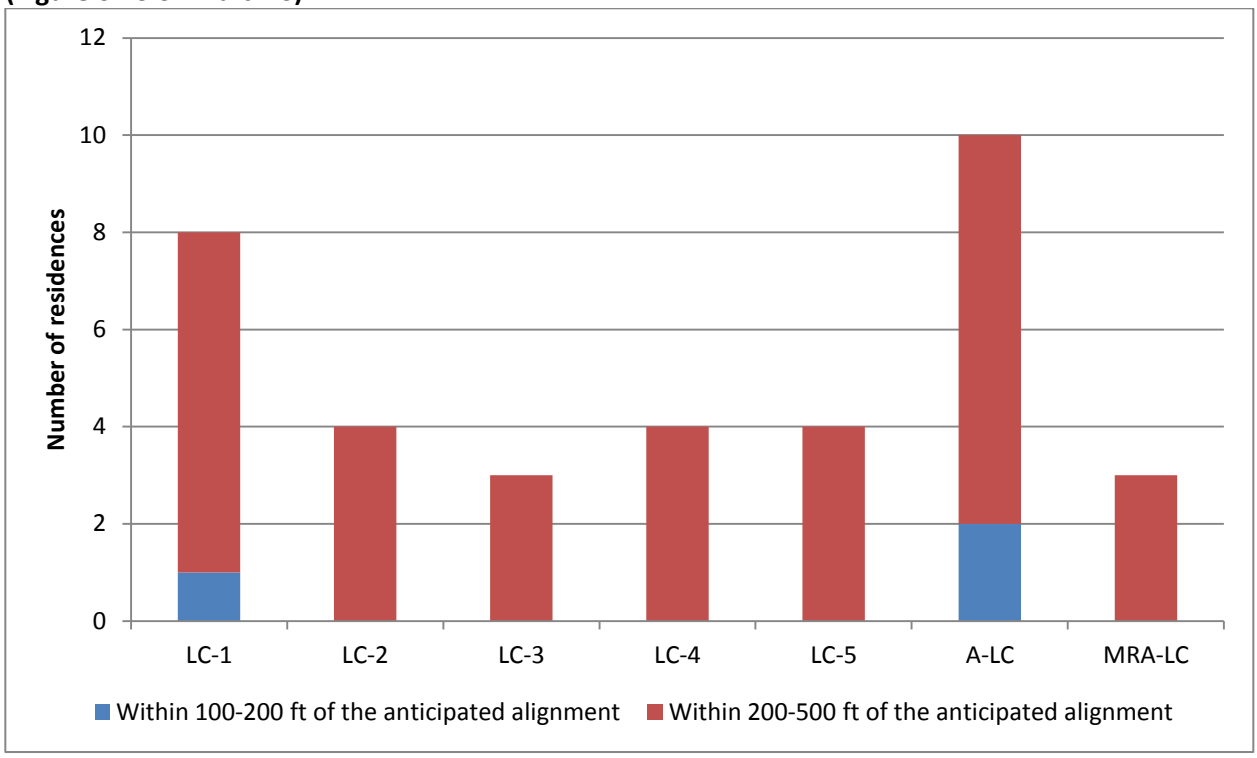


Figure 20 - ROW Sharing- Lake Charlotte
(Figure 6-24 of Draft EIS)

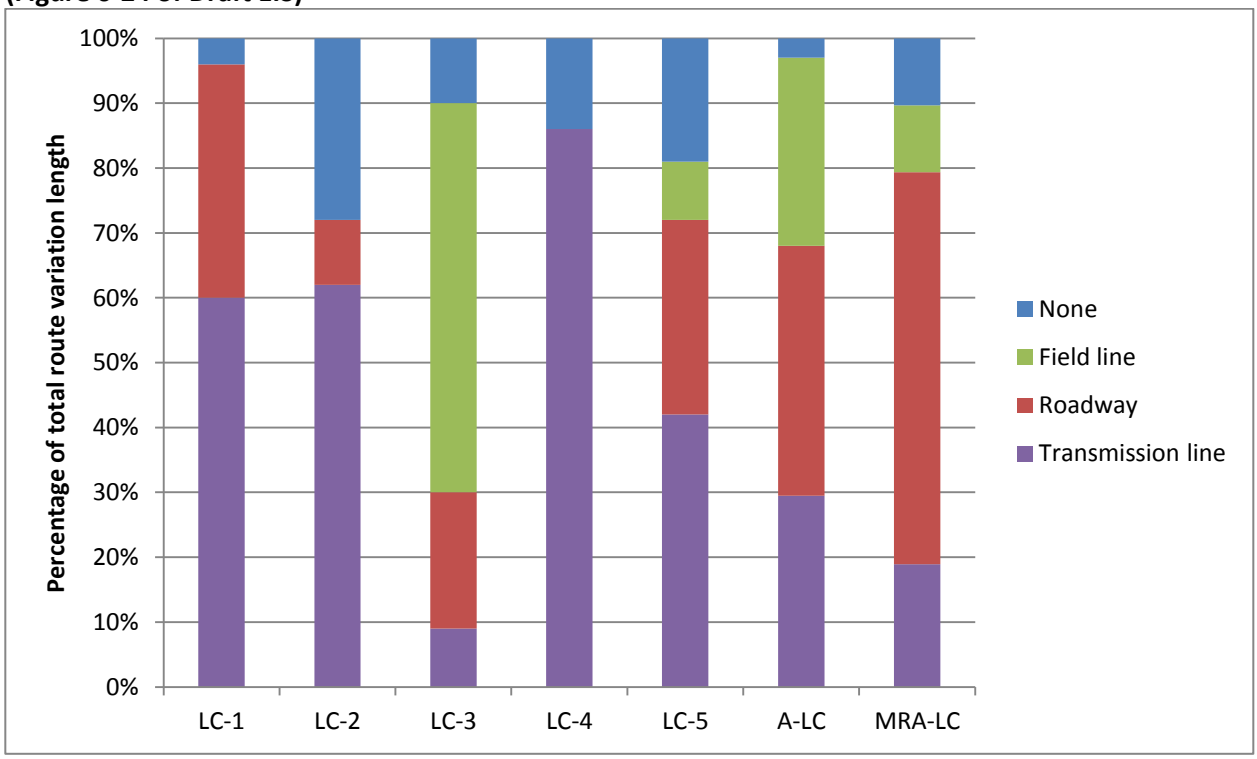


Figure 21 - Farmland Classifications- Lake Charlotte
(Figure 6-25 of Draft EIS)

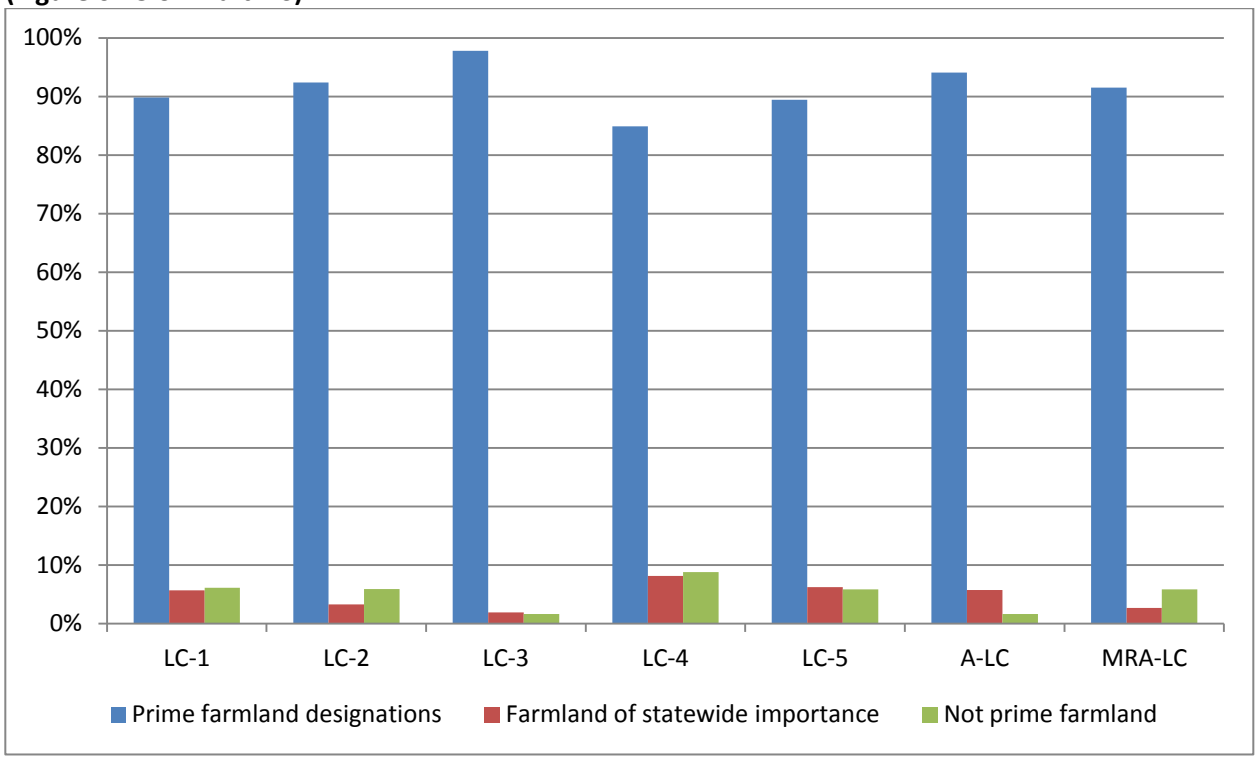


Figure 22 - Watercourse Crossings- Lake Charlotte
(Figure 6-26 of Draft EIS)

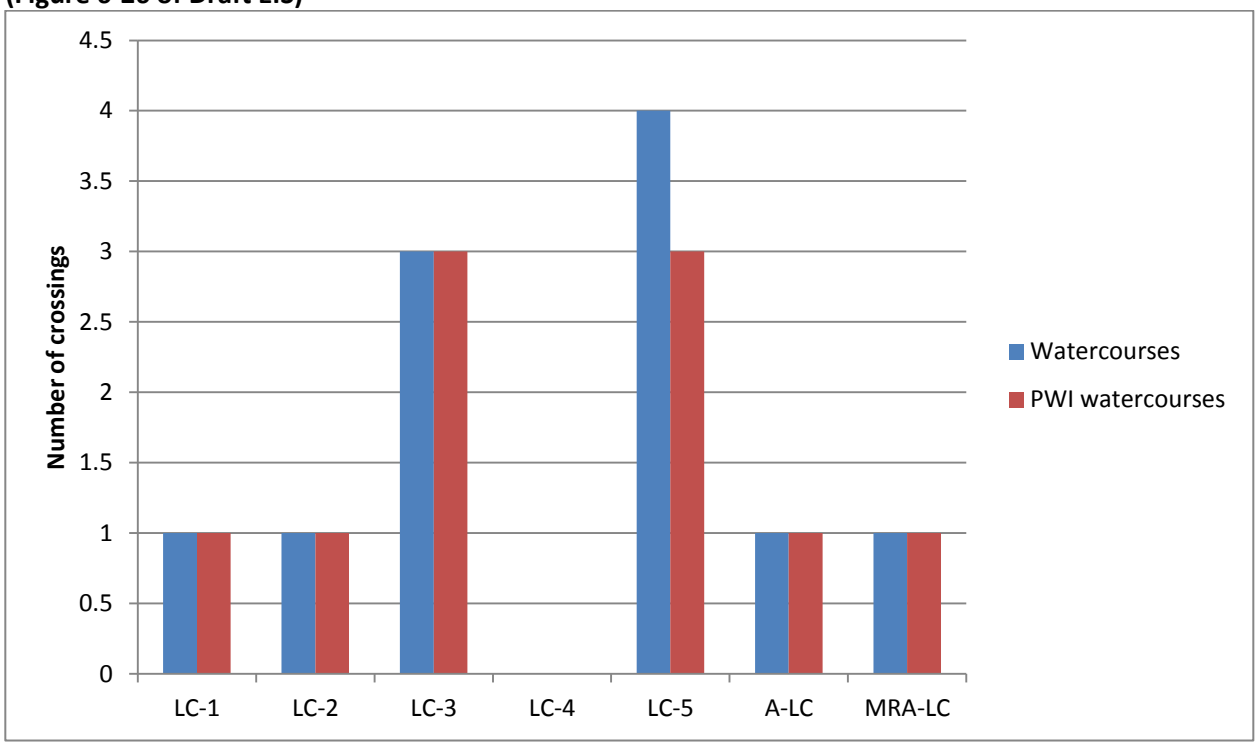
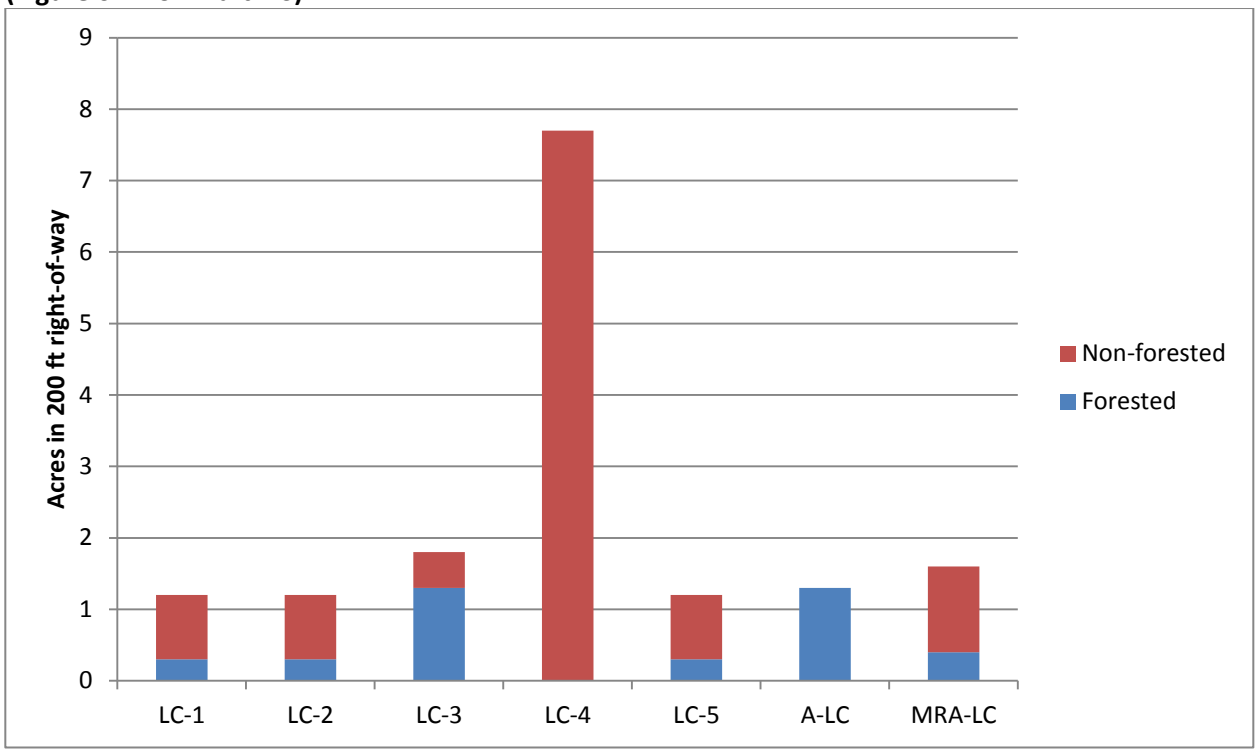
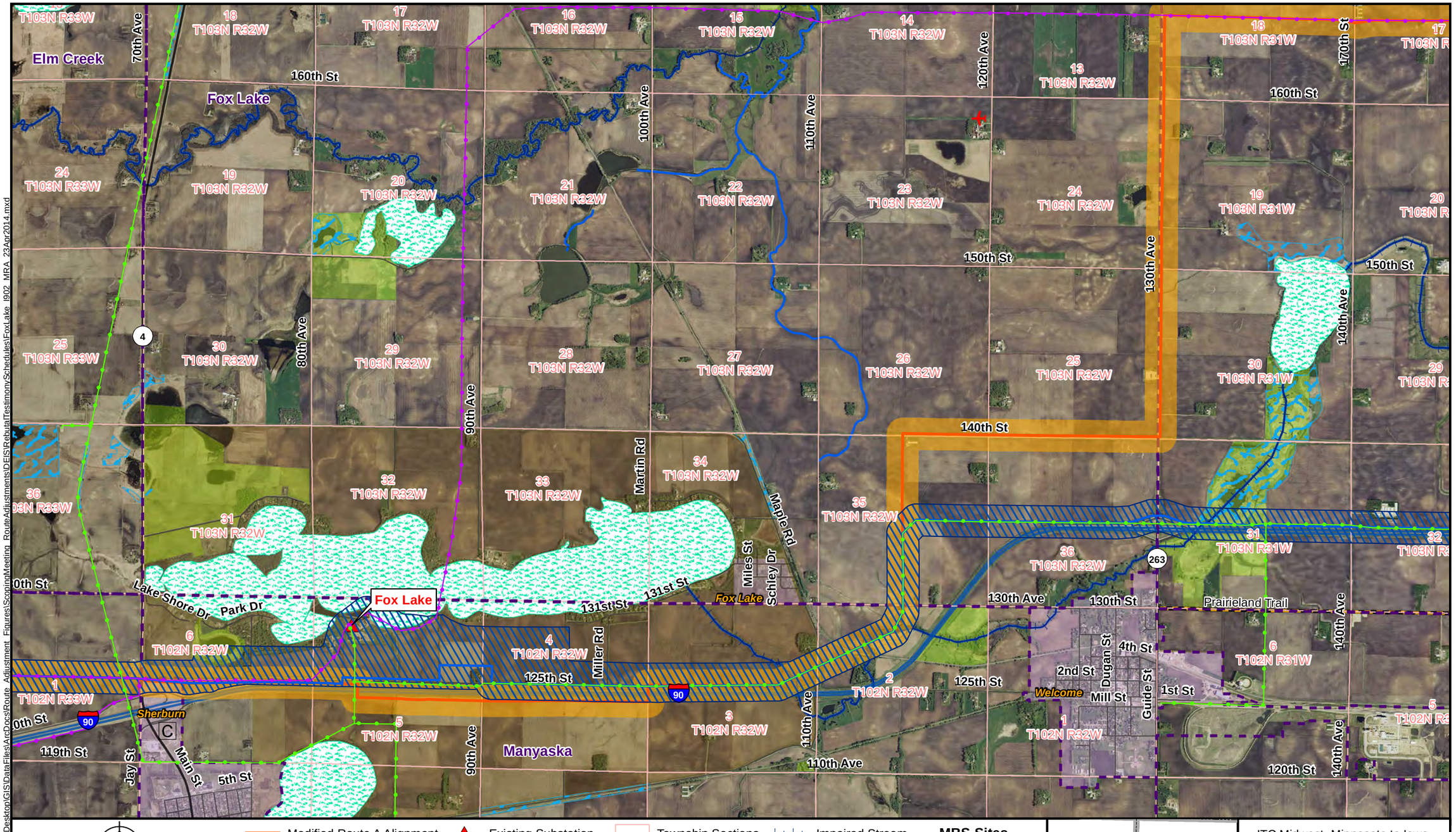


Figure 23 - Wetlands within ROW- Lake Charlotte*
(Figure 6-27 of Draft EIS)



*FL-1 includes the entire Fox Lake within a 200-foot ROW as a non-forested wetland



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Source: MN Geo 2011 Aerials; USFWS NWI Wetlands; National Hydrography Dataset; National Flight Data Center; Minnesota DNR; Minnesota Geo GIS; Minnesota DOT; ITC; Barr Engineering; Burns & McDonnell.

Figure 7-2 Relative Merits of Route Alternatives and Associated Facilities - Lakefield to Huntley

Routing Factor/ Element	A-LH	B-LH	I90-1	I90-2	I90-3	I90-4	I90-5 Option 1	I90-5 Option 2	DEIS Summary	MRA-LH Summary
Human Settlements / Aesthetics	●	■	●	●	▲	●	▲	●	A-LH and I90-2 best utilize existing transmission line ROW. B-LH is near more homes and poorly utilizes existing ROW.	MRA-LH makes use of a comparable amount of total corridor sharing with I90-1 and I90-2. The alternatives along I-90 would have greater corridor sharing with roads than MRA-LH. MRA-LH would impact the fewest residences within 500 feet of the alignment by at least five homes when compared to I90-1 and I90-2. I90-1 and I90-2 would introduce a new transmission corridor along State Highway 15 and portions of I-90 and expand the ROW along I-90 to 200 feet in areas with an existing 161 kV line, such as west of Sherburn. MRA-LH would introduce a new transmission corridor along the south side of I-90 and in Sections 3, 4, and 5 of Fox Lake Township. MRA-LH would rebuild approximately 5.6 miles of 161 kV line to 345 kV/161 kV on double-circuit structures between Fox Lake and Lake Charlotte. MRA-LH would also co-locate approximately four miles of existing 69 kV transmission line on 345 kV/161 kV/69 kV triple-circuit structures, with 2.1 miles along the existing 69 kV centerline. I90-1 and I90-2 would rebuild approximately 13 miles of 69 kV line to 345 kV/161 kV/69 kV on triple-circuit structures between Fox Lake and Lake Charlotte.
Human Settlements / Private Airstrips	■	●	●	●	●	●	●	●	A-LH impacts two private airstrips in Martin County	In comparison to A-LH, MRA-LH does not impact any private airstrips within a half mile of the alignment. There would be no measurable difference between the DEIS route alternatives and MRA-LH with respect to private airstrips.
Land-Based Economies / Agriculture	●	■	▲	●	▲	▲	▲	▲	A-LH uses existing transmission line ROW, which minimizes agricultural impacts. Using I-90 does not mitigate agricultural impacts as well as using transmission line ROW. B-LH proceeds cross country, primarily along roadways and field lines.	MRA-LH would cross fewer new agricultural lands along I-90 compared to the I-90 alternatives, particularly I90-1, I90-3, I90-4, and I90-5, which use a smaller portion of the Route A/existing 161 kV corridor compared to I90-2. One possible configuration for I90-1 and I90-2 would remove approximately 345.9 acres of existing transmission line through agricultural land as a result of removing both lake crossings at Fox Lake and Lake Charlotte. It is unlikely that I90-1, I90-2, I90-3, I90-4, and I90-5 would be able to be constructed along the same centerline as the existing 69 kV transmission line between Fox Lake and Fairmont, MN because of the existing 69 kV transmission line proximity to the MnDOT ROW.
Archaeological and Historic Resources	▲	●	▲	▲	●	▲	●	●	A-LH, I90-1, I90-2 and I90-4 contain known archaeological resources in their ROWs.	As with A-LH, I90-1, I90-2, and I90-4, the route width for MRA-LH contains known archaeological resources in its ROW.

Routing Factor/ Element	A-LH	B-LH	I90-1	I90-2	I90-3	I90-4	I90-5 Option 1	I90-5 Option 2	DEIS Summary	MRA-LH Summary
Natural Environment / Fauna	▲	▲	▲	▲	▲	▲	▲	▲	All routing options have the potential to~~would~~ impact avian species through collisions with conductors. Impacts could be mitigated by the use of bird flight diverters near lakes and watercourses.	MRA-LH is not proposed to remove the existing 161 kV crossings at Fox Lake and Lake Charlotte. MRA-LH is, however, proposed to be constructed on 345 kV/161 kV double-circuit and 345 kV/161 kV/69 kV triple-circuit structures, where applicable, to allow relocation of the 161 kV line from the lakes to the new structures if warranted. MRA-LH is proposed to reduce the footprint of the transmission line across the Des Moines River and remove the existing 161 kV line from the Blue Earth River corridor south of the Proposed Northern Huntley Substation , resulting in a reduced potential impact to species that utilize these habitats
Use or Paralleling of Existing ROWs	●	■	●	●	▲	●	▲	●	Route B-LH makes the least use of existing ROW. I90-3 and I90-5 have associated facilities that use existing ROW only in part.	MRA-LH makes use of existing ROWs similar to A-LH. The associated facilities for MRA would follow existing transmission ROWs, although it would be expanded from its current width to a maximum of 250 feet. Associated facilities for I90-5 Option 1 would introduce new transmission ROW through Prescott, Verona, Jo Davies, and Blue Earth townships. Associated facilities for I90-5 Option 2 would result in one new transmission ROW through Blue Earth and Jo Davies townships.
Electrical Systems Reliability	●	●	●	●	●	■	●	■	I90-4 and I90-5 Option 2 negatively impact electrical systems reliability.	MRA-LH would not negatively impact electrical systems reliability.

Figure 7-3 Relative Merits of Route Variations - Jackson Municipal Airport

Routing Factor/ Element	JA-1	JA-2	JA-3	A-JA	Summary	DEIS Issues	MRA-JA Summary
Human Settlements / Aesthetics	■	●	▲	▲	JA-2 is near fewer homes and better utilizes existing transmission line ROW. JA-1 is near the most number of homes, is relatively longer, and would create two transmission line ROWs.	JA-2 crosses through the center of several fields to the north of 820th Street and uses a limited amount of existing transmission line ROW.	MRA-JA would be the shortest variation north of Jackson Municipal Airport (7.6 miles). MRA-JA would use additional span length and pole placement to reduce the presence of transmission line in the southeast corner of Section 3 of Des Moines Township. MRA-JA would increase proximity of the line to a residential well and hog confinement buildings along 820th Street when compared to A-JA.
Land-Based Economies / Agriculture	▲	●	▲	▲	JA-2 best utilizes existing transmission line ROW. A-JA utilizes roadway ROW but impacts a well and associated animal housing units.		MRA-JA addresses concerns with A-JA regarding the well and housing units. MRA-JA would result in a slight increase in new ROW across agricultural land in Sections 1 and 2 of Des Moines Township to avoid proximity concerns with the Jackson Municipal Airport. MRA-JA has the second smallest acreage of cropland in the right-of-way, behind JA-1.
Natural Environment / Fauna	▲	●	▲	▲	JA-2 is furthest from flora and fauna along the Des Moines River.		MRA-JA responds to MnDNR comments regarding reducing the transmission line footprint though the Des Moines River corridor and accommodating a perpendicular crossing of the Des Moines River.
Use or Paralleling of Existing ROWs	●	●	▲	●	A-JA best utilizes existing ROWs. JA-1 utilizes roadway ROW.		Similar to A-JA, MRA-JA utilizes the existing 161 kV transmission ROW and the roadway ROW along 820th Street while addressing landowner concerns along this road. MRA-JA maximizes the use of existing ROWs by using these ROWs approximately 67% of its length.

Figure 7-4 Relative Merits of Route Variations - Fox Lake

Routing Factor / Element	FL-1	FL-2	FL-3	FL-4	FL-5	FL-6	A-FL	Summary	MRA-FL Summary
Human Settlements / Aesthetics	●	●	▲	▲	▲	●	▲	FL-2 and A-FL are near relatively fewer homes, but both introduce a new transmission line ROW. FL-1 and FL-6 best utilize existing transmission line and roadway ROW.	With the exception of FL-2, MRA-FL would have the lowest number of residences within the route corridor (one residence) when compared to the other Route Variations. FL-3 and FL-4 would place a new transmission line on three sides of the residence in Section 5 of Fox Lake Township. Both MRA-FL, A-FL, and FL-2 would avoid this residence by placing the new 345 kV transmission line on the south side of I-90. In addition, MRA-FL would remove the existing 69 kV line for a portion of the north side of I-90 and relocate it to the south side, eliminating the presence of the existing transmission line near the residence in Section 5 of Fox Lake Township.
Human Settlements / Private Airstrips	●	■	■	●	●	●	■	FL-2, FL-3 and A-FL impact a private airstrip in Fox Lake Township.	MRA-FL would relocate the transmission line from Section 23 in Fox Lake Township to the east along 130th Avenue.
Land-Based Economies / Agriculture	●	▲	▲	▲	▲	●	▲	FL-1 and FL-6 best utilize existing ROW, thus minimizing agricultural impacts. Along FL-1, H-frame structures would be replaced with single pole structures.	In order to avoid residential proximity and MnDOT ROW issues to the north, MRA-FL would place a new transmission ROW through agricultural land on the south side of I-90. To provide access to the outside edge of the fields with large equipment, MRA-FL is proposed to be located 100 feet from the MnDOT ROW. East of Fox Lake, MRA-FL would be located primarily along existing transmission and roadway ROW, limiting potential impacts to agricultural activities
Natural Environment / Fauna	▲	▲	▲	▲	▲	▲	▲	Avian impacts could be mitigated for all routing options by the use of bird flight diverters. FL-1 would require specialty structures for crossing Fox Lake; the design of these structures could minimize avian impacts.	MRA-FL would avoid the Four Corners and Fox Lake WMAs and, along with FL-2, would represent the alternative farthest from avian habitat associated with the surrounding WMAs and Fox Lake State Game Refuge, resulting in a decreased likelihood of collision issues for avian species that utilize these habitats.
Use or Paralleling of Existing ROWs	●	▲	▲	▲	▲	●	▲	FL-1 and FL-6 utilize existing transmission line and roadway ROW for their entire lengths.	MRA-FL would result in a new transmission corridor on the south side of I-90, but would utilize existing transmission and roadway ROW east of Fox Lake. MRA-FL would also co-locate the existing 69 kV line currently on the north side of I-90 to the south side with the 345 kV line on 345 kV/161 kV/69 kV triple-circuit structure, creating one transmission ROW.345/161/69 kV line.

Figure 7-5 Relative Merits of Route Variations - Lake Charlotte

Routing Factor / Element	LC-1	LC-2	LC-3	LC-4	LC-5	A-LC	Summary	MRA-LC Summary
Human Settlements / Aesthetics	●	▲	●	●	▲	▲	LC-3 is near relatively fewer homes. LC-1 and LC-4 best utilize existing transmission line and roadway ROW.	As with LC-3, MRA-LC has the fewest residences within the route width (3) compared to the other Lake Charlotte Route Variations. MRA-LC would make use of existing transmission and roadway ROWs along 160th Street and would co-locate the existing Great River Energy 69 kV line that parallels 160th Street in Sections 19 and 20 of Rutland Township on 345 kV/161 kV/69 kV triple-circuit structures.
Human Settlements / Private Airstrips	▲	▲	●	▲	●	▲	LC-1, LC-2, LC-4 and A-LC may impact an airstrip in Rutland Township.	As with LC-5 and LC-3, MRA-LC would avoid proximity concerns with the airstrip in Section 18 Rutland Township.
Land-Based Economies / Agriculture	●	▲	▲	●	▲	▲	LC-1 and LC-4 best utilize existing ROW, thus minimizing agricultural impacts. Along LC-4, H-frame structures would be replaced with single pole structures.	MRA-LC would extend through Section 13 of Fraser Township using field lines and extend eastward making use of roadway ROW along 160th Street for a majority of its length, limiting agricultural impacts compared to those alternatives such as A-LC and LC-3 that would create a new transmission ROW across agricultural land.
Natural Environment / Fauna	▲	▲	▲	▲	▲	▲	Avian impacts could be mitigated for all routing options by the use of bird flight diverters. LC-4 would require specialty structures for crossing Lake Charlotte; the design of these structures could minimize avian impacts.	MRA-LC would likely reduce potential for avian interference compared with LC-4 which crosses the lake. MRA-LC would make use of an existing transmission ROW at the southern edge of Lake Charlotte. MRA-LC would increase the height of structures from the existing 69 kV structures. This may result in potential for additional collision concerns with avian species; this would be minimized through the use of bird diverters along this portion of the line.
Use or Paralleling of Existing ROWs	●	▲	■	●	▲	▲	LC-1 and LC-4 best utilize existing transmission line and roadway ROW. LC-3 shares less than 30 percent of its length with transmission line and roadway ROW.	As with LC-5, MRA-LC would follow existing transmission and roadway ROWs along 160th Street and the existing Great River Energy 69 kV line that parallels 160th Street. A small portion would follow a field line between 160th Street and the existing 161 kV transmission line near State Highway 15.