

7.6 Lake Marion Substation to Hampton Substation

7.6.1 Description of Segment Alternatives

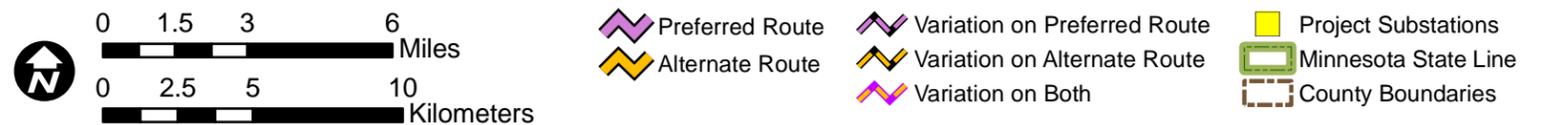
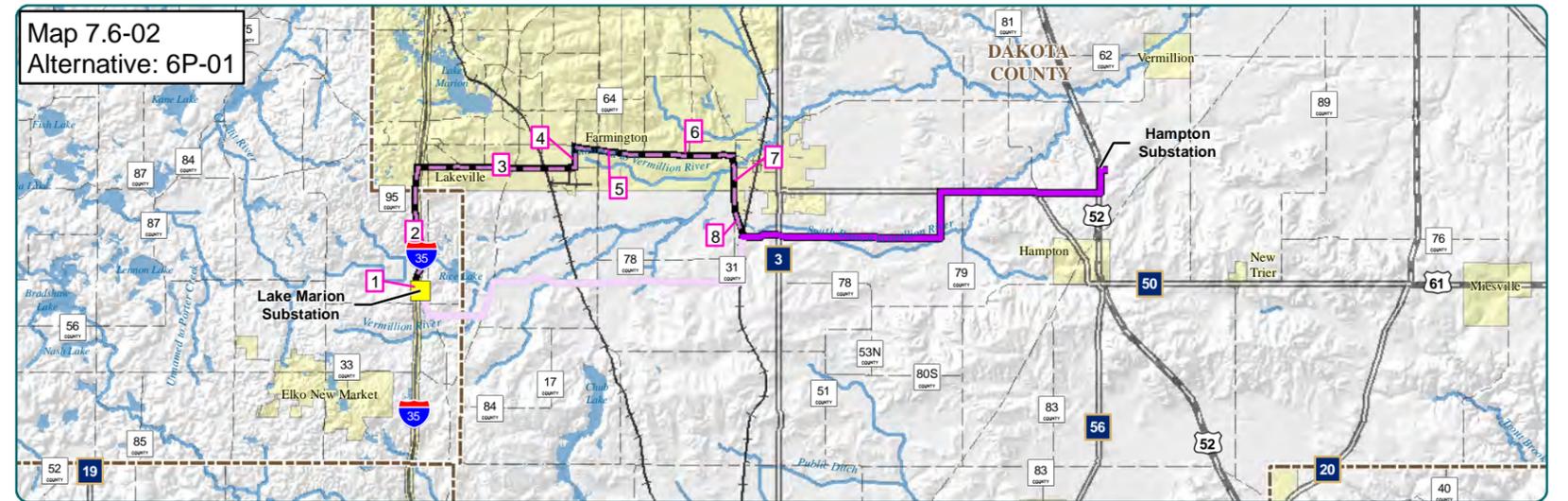
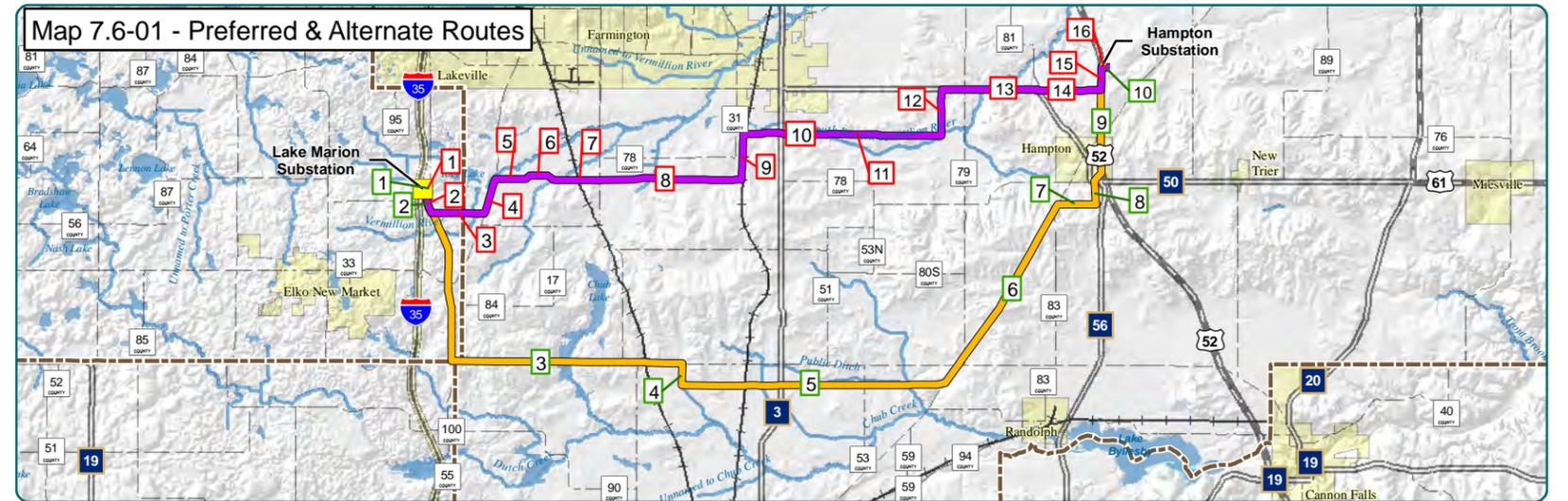
Segment 6 (Lake Marion to Hampton) begins at the Lake Marion Substation northeast of Elko New Market and ends at the proposed Hampton Substation area north of the City of Hampton. Within Segment 6 there are 12 route alternatives that were suggested during the public comment period. Eight of the route alternatives (6P-01 thru 6P-08) are variations on the Preferred Route and four of the route alternatives (6A-01 thru 6A-04) are variations on the Alternate Route. There are also three alignment alternatives within Segment 6 that were suggested during the public comment period.

The Preferred and Alternate Routes, all route alternatives and alignment alternatives are described in Section 7.6.1. Section 7.6.4 is an analysis and comparison of impacts by the Preferred and Alternate Routes and all suggested route alternatives.

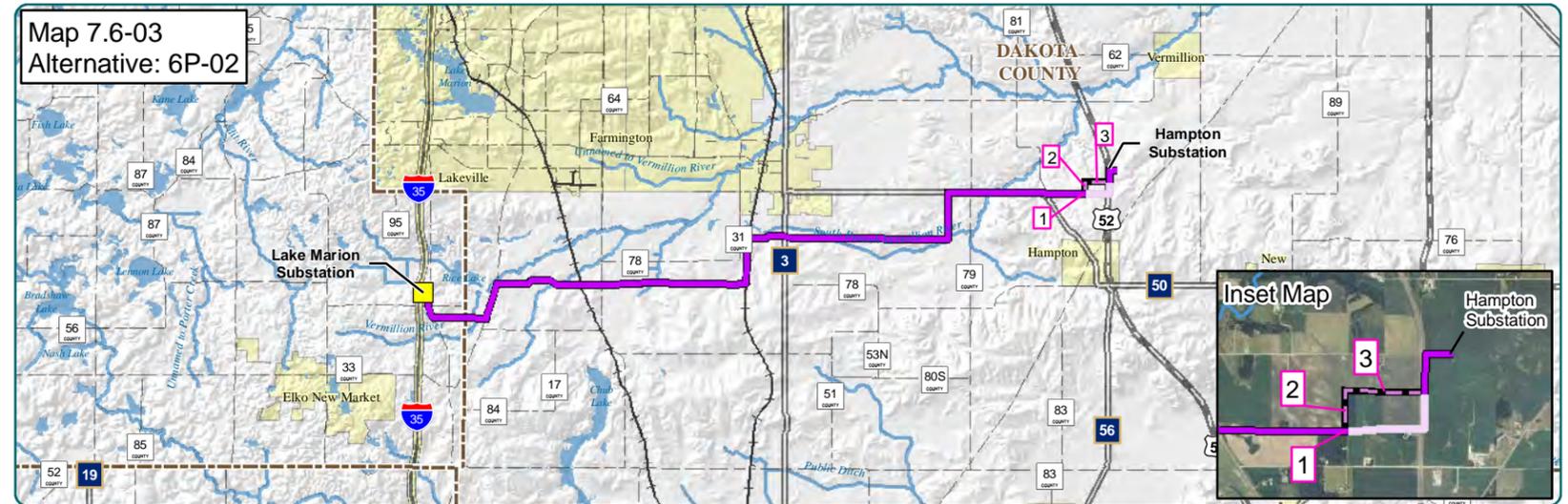
Lake Marion to Hampton (Preferred Route)		
Turn by Turn	Distance (miles)	Comments
1	From the Lake Marion go east following field lines to Pillsbury Ave.	0.1
2	Turn south following Pillsbury Ave.	0.5
3	Turn east following field lines	1.1
4	Turn northeast following Dodd Blvd./Cnty Hwy 9 to 240th St.	0.8
5	Turn east following 240th St.	0.7
6	Turn northeast then east and then southeast following field lines around north side of homes	0.7
7	Turn east following 240th St.	1.0
8	Continue east following field lines and an existing pipeline	3.2
9	Turn north following an existing pipeline and railroad ROW	1.0
10	Turn east following field lines	1.8
11	Continue east following 230th St.	2.5
12	Turn north following field lines	1.0
13	Turn east following TH 50	2.1
14	Continue east following field lines	1.4
15	Turn north following U.S. Hwy 52	0.5
16	Turn east and enters the Proposed Hampton Sub area	0.2

Lake Marion to Hampton (Alternate Route)			
Turn by Turn	Distance (miles)	Comments	
1	From the Lake Marion go east following field lines to Pillsbury Ave.	0.1	
2	Turn south following Pillsbury Ave. to Cnty Hwy 86	4.0	This section of the route is 2,800 feet wide to allow for flexibility in routing along Pillsbury Avenue.
3	Turn east following Cnty Hwy 86	5.0	This route width returns to the 1,000 feet. Crosses the south edge of the Chub Lake WMA.
4	Turn south following field lines	0.5	
5	Turn east following field lines and an existing pipeline to Cnty Hwy 47	5.8	
6	Turn northeast following Cnty Hwy 47	4.5	
7	Turn east following field lines	0.8	
8	Turn north and northeast following field lines to U.S. Hwy 52	0.8	
9	Turn north through the east side of Hampton following U.S. Hwy 52	2.5	
10	Turn east and enter the Proposed Hampton Substation area	0.2	

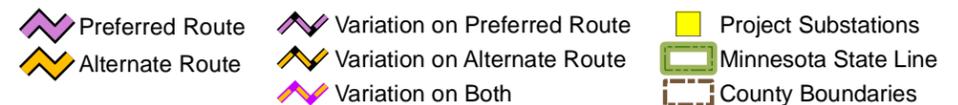
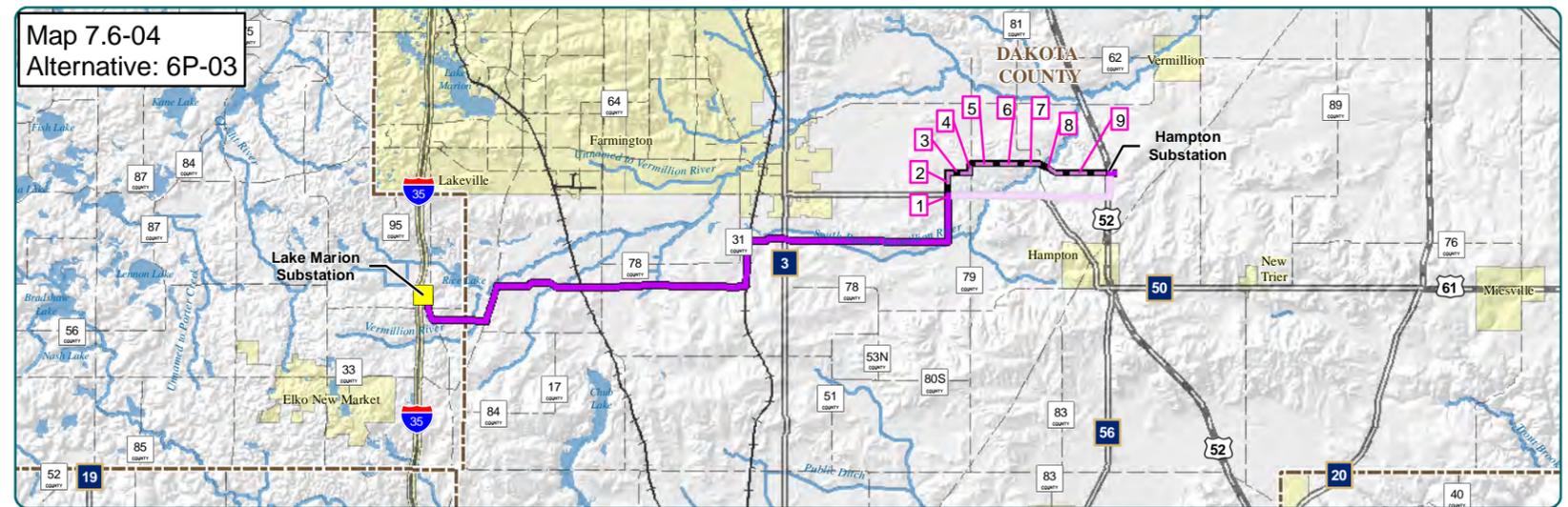
Lake Marion to Hampton (6P-01)			
Turn by Turn	Distance (miles)	Comments	
1	From the Lake Marion Sub go west cross-country to west side of I-35	0.1	Crosses I-35
2	Turn north following I-35 on the west side	2.8	
3	Turn east following 215th St W.	3.4	
4	Turn north following Hamburg Ave to Lakeville Blvd.	0.5	
5	Turn east following Lakeville Blvd.	1.5	
6	Continue east on 212th St. W. to Denmark Ave	2.0	
7	Turn south following Denmark Ave.	1.3	
8	Continue southeast cross country to the preferred route	0.5	Connects with preferred route



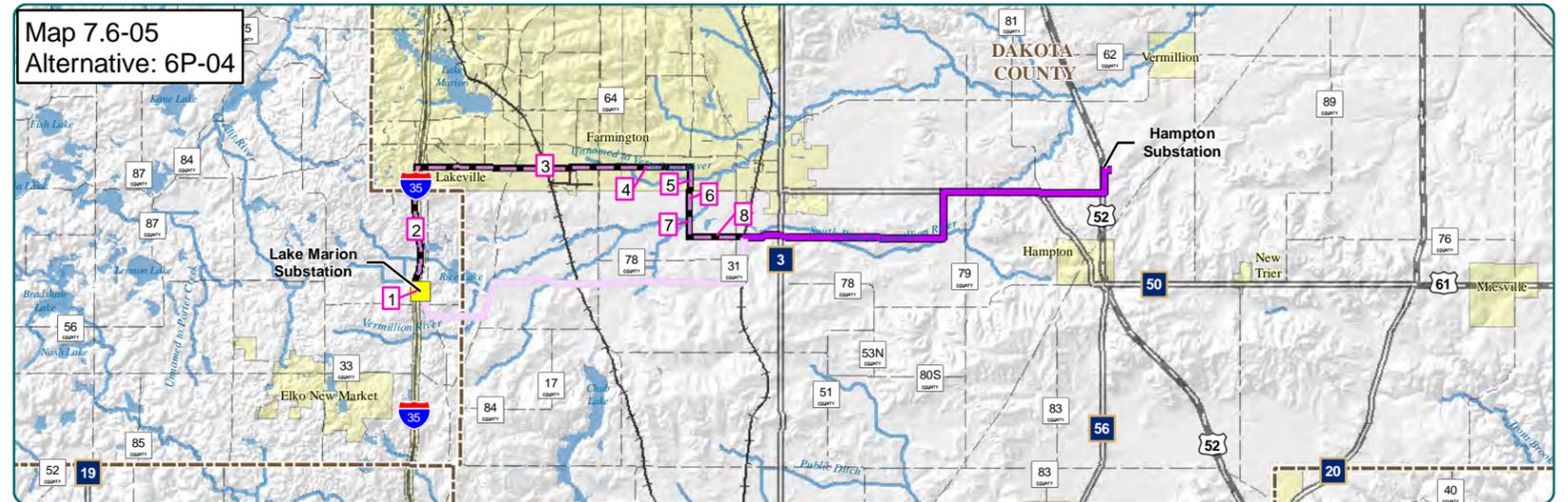
Lake Marion to Hampton (6P-02)		
Turn by Turn	Distance (miles)	Comments
1 Follow the preferred route until field line 1/2 mile west of U.S. Hwy 52		
2 Turn north at field line	0.25	
3 Turn east at field line to preferred route	0.5	Connects with preferred route



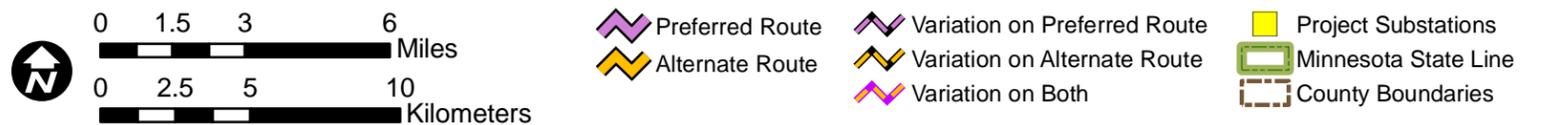
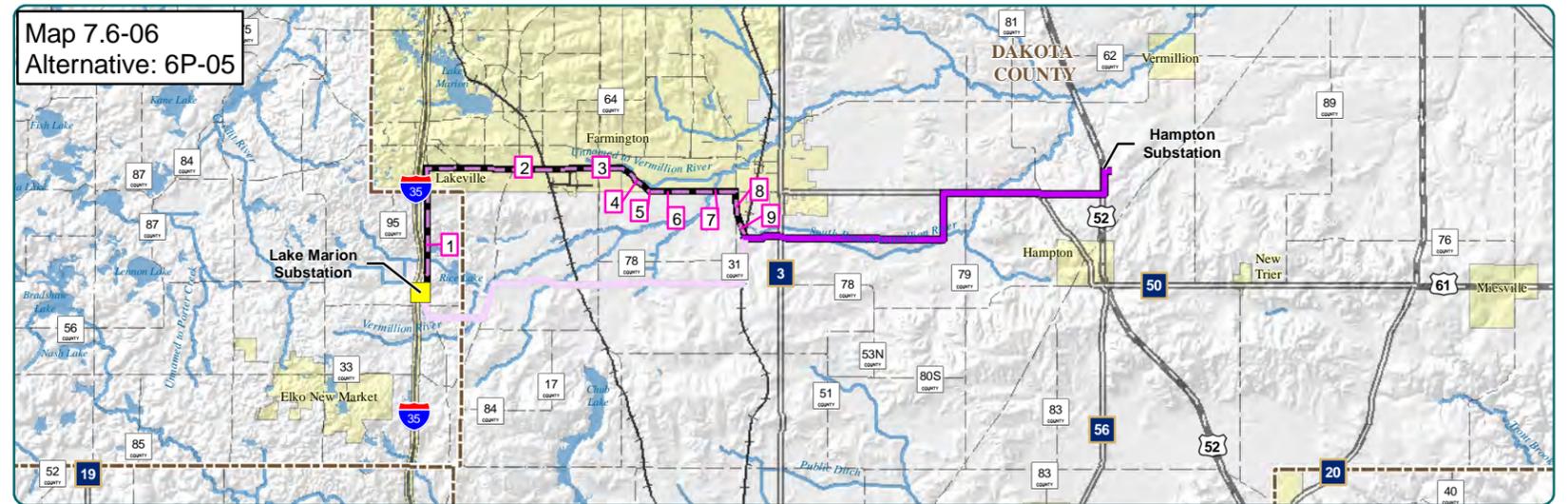
Lake Marion to Hampton (6P-03)		
Turn by Turn	Distance (miles)	Comments
1 Follow the preferred route until 1/2 mile west of Blaine Ave. E		
2 From 220th St. E continue north following field line	0.5	
3 Turn east following field line to Blaine Ave. E	0.5	
4 Turn north following Blaine Ave. E.	0.2	
5 Turn east following field line	0.5	
6 Continue east cross-country	0.5	
7 Continue east following field line to Darson Ave.	0.5	
8 Turn southeast cross-country to 215th St. E	0.4	
9 Turn east following 215th St. E. to the preferred route.	1.2	Connects with preferred route



Lake Marion to Hampton (6P-04)			
	Turn by Turn	Distance (miles)	Comments
1	From the Lake Marion Sub go west cross-country to west side of I-35	0.1	
2	Turn north following I-35 on the west side	2.8	
3	Turn east following 215th St W. to Cedar Ave.	4.0	
4	Continue east following field lines	2.0	
5	Turn south following field lines to Essex Ave.	0.5	
6	Continue south following Essex Ave.	0.5	
7	Continue south following field lines	0.5	
8	Turn east following field lines to the preferred route	1.2	Crosses Denmark Ave and connects with preferred route



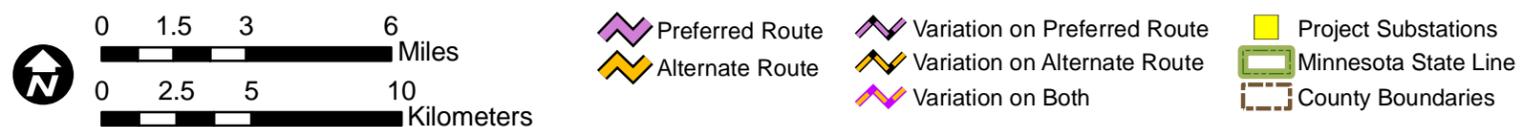
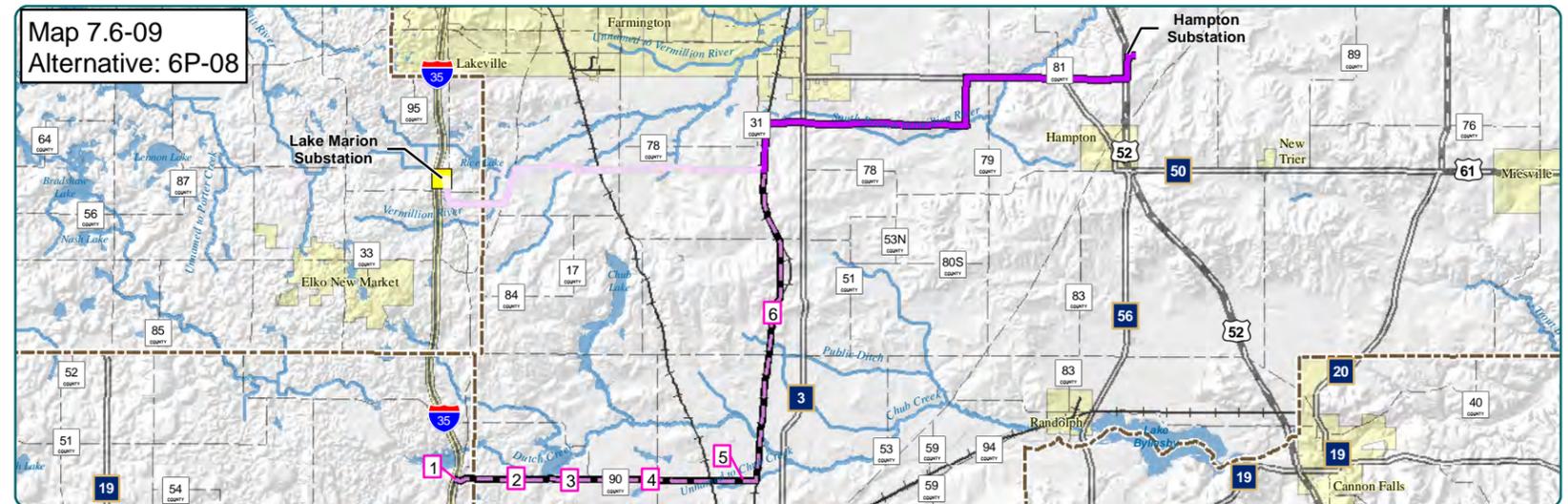
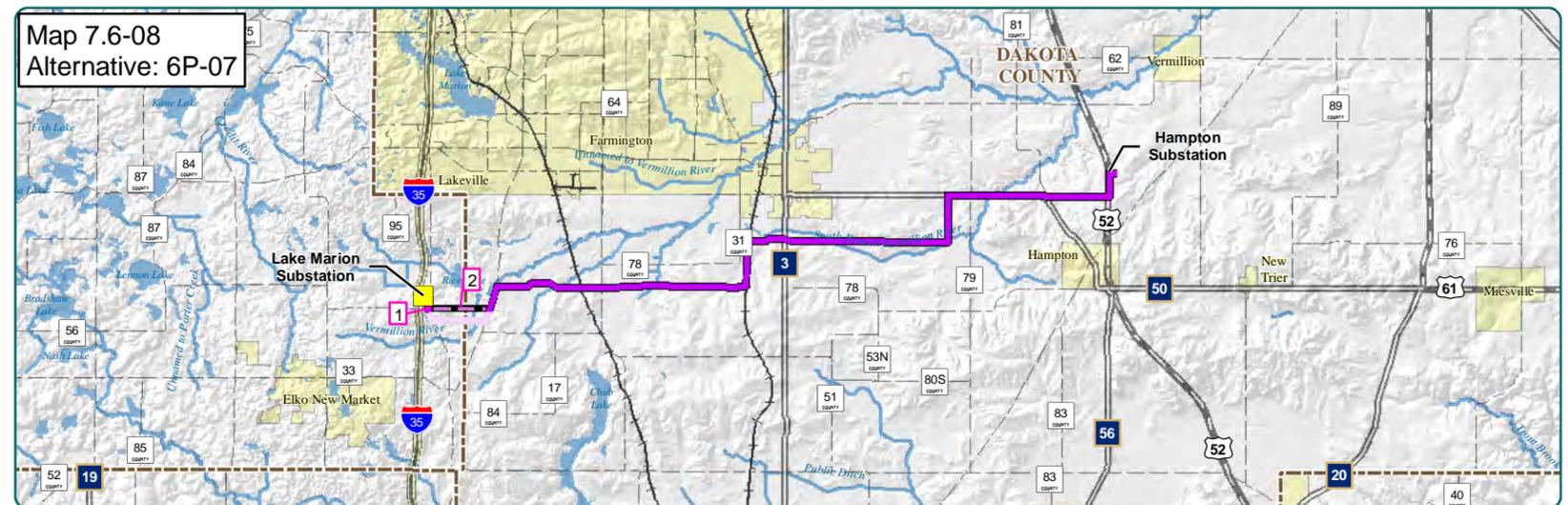
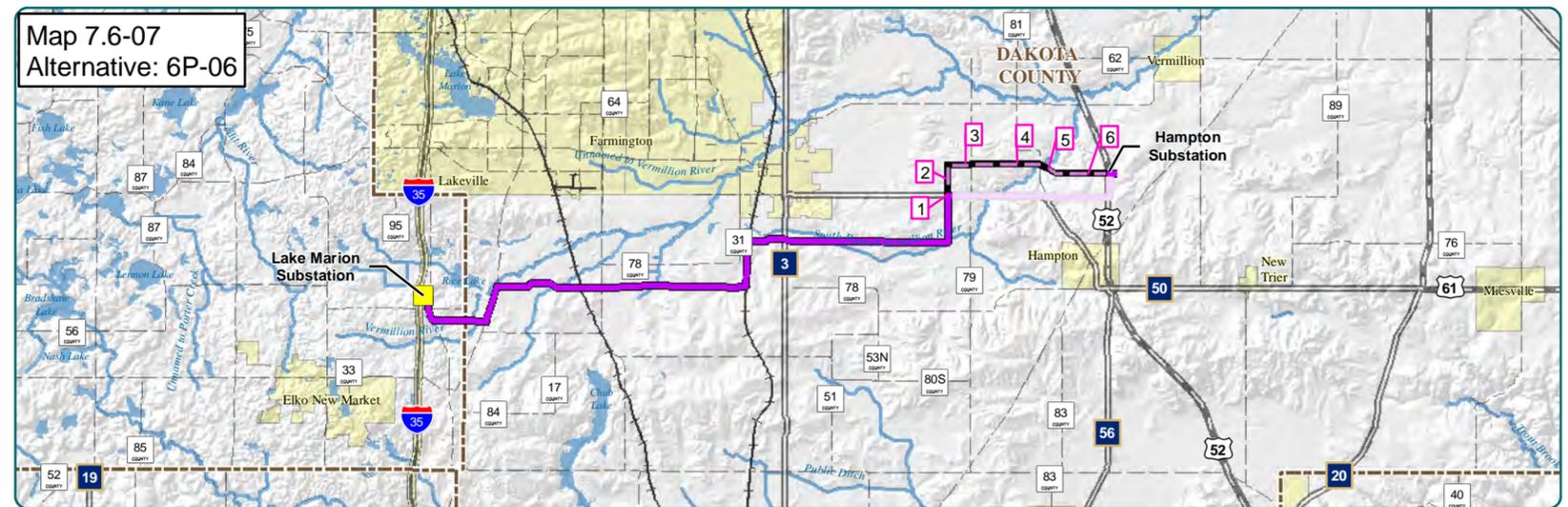
Lake Marion to Hampton (6P-05)			
	Turn by Turn	Distance (miles)	Comments
1	From the Lake Marion Sub go north following Pillsbury Ave. to 215th St. W.	2.7	
2	Turn east following 215th St. W. to Cedar Ave.	3.8	
3	Continue east following field lines	0.5	
4	Turn southeast cross-country	0.8	
5	Turn east cross-country	0.1	
6	Continue east following field lines to Ash St.	0.9	
7	Continue east following Ash St. to Denmark Ave.	1.0	
8	Turn south following Denmark Ave.	0.5	
9	Turn southeast cross-country to the preferred route	0.5	Connects with preferred route



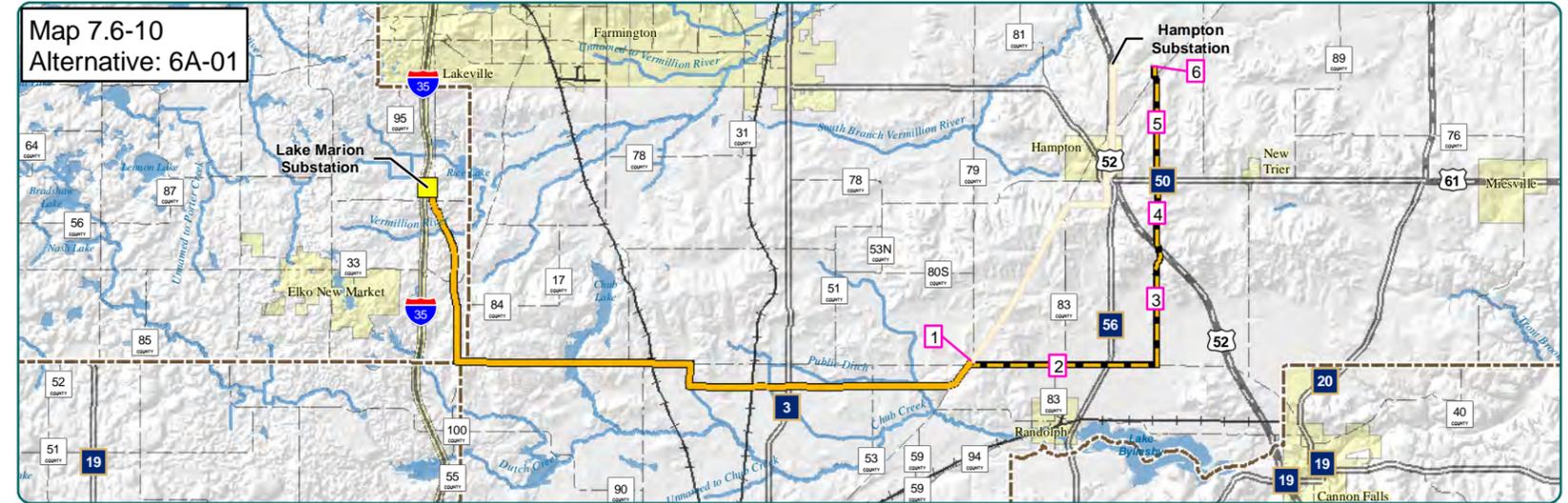
Lake Marion to Hampton (6P-06)			
Turn by Turn	Distance (miles)	Comments	
1	Follow the preferred route until 1/2 mile west of Blaine Ave. E		
2	From 220th St. E continue north following field line	0.7	
3	Turn east following field line	1.0	
4	Continue east cross-country to Darson Ave.	1.0	
5	Turn southeast cross-country to 215th St. E	0.4	
6	Turn east following 215th St. E. to the preferred route.	1.2	Connects with preferred route

Lake Marion to Hampton (6P-07)			
Turn by Turn	Distance (miles)	Comments	
1	Follow the preferred route until 245th St. E.		
2	From Pillsbury Ave turn east following 245th St. E. to the preferred route	1.3	Connects with preferred route

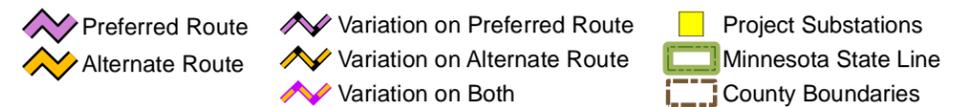
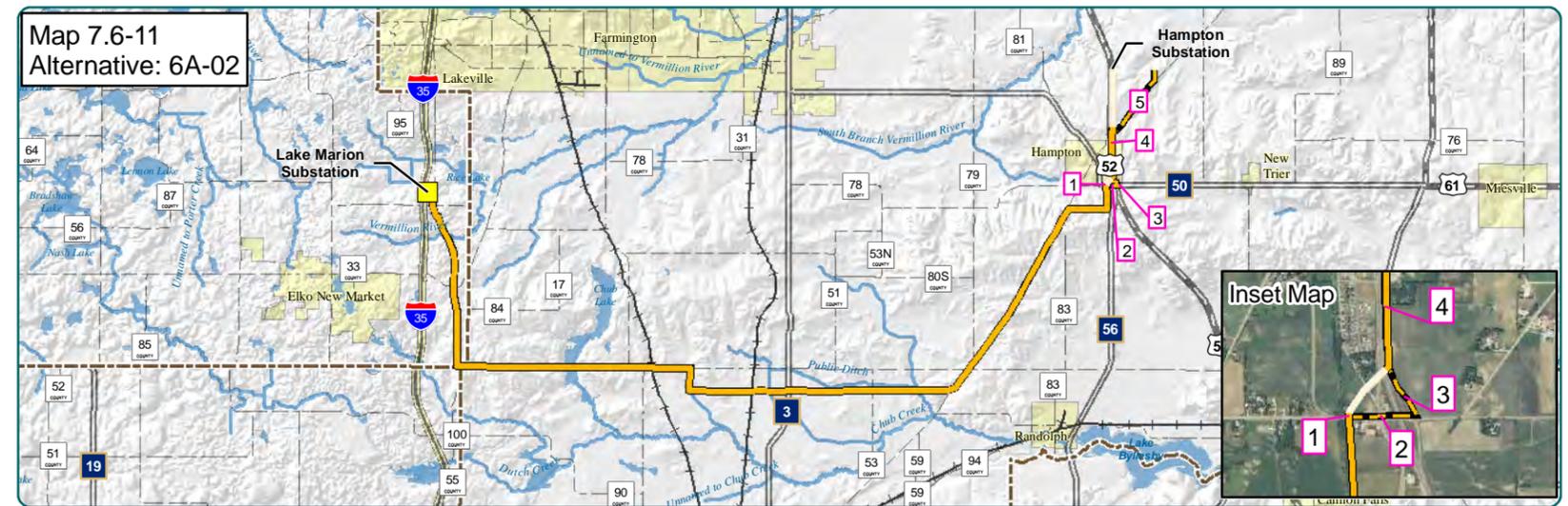
Lake Marion to Hampton (6P-08)			
Turn by Turn	Distance (miles)	Comments	
1	From the proposed southern Lake Marion Substation go east following field lines	0.9	
2	Continue east cross-country	0.8	
3	Continue east following field lines to 307th St. W.	1.3	
4	Continue east following 307th St. W.	2.5	
5	Continue east cross-country	1.1	
6	Turn north following an existing 69 kV line to the preferred route	6.9	Connects with preferred route



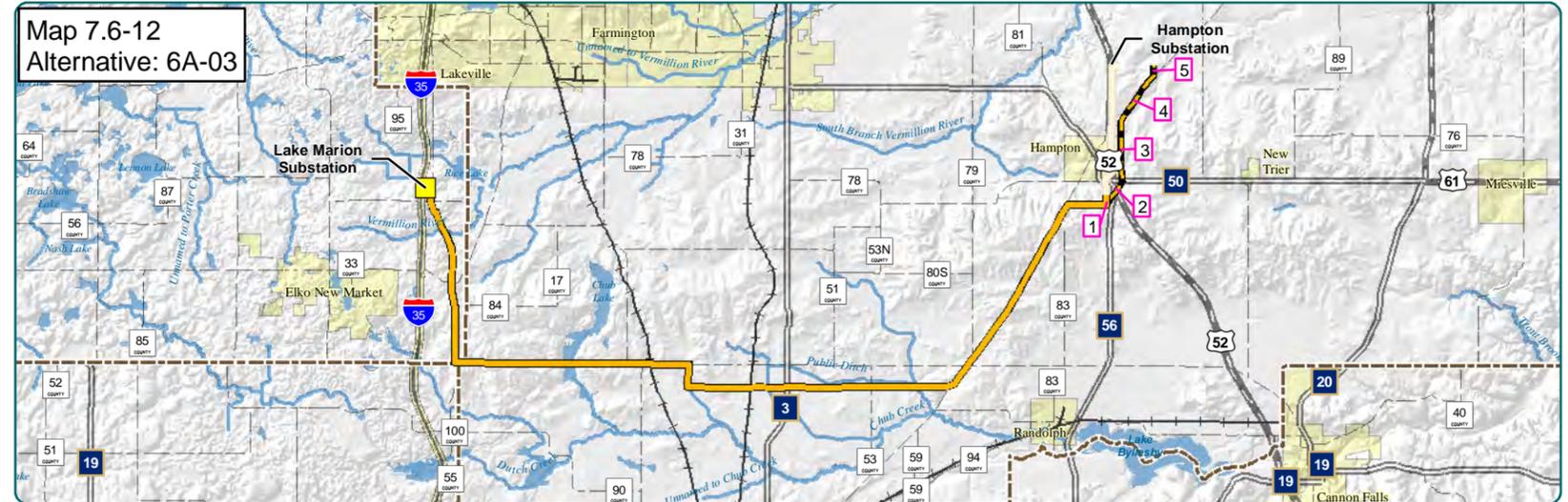
Lake Marion to Hampton (6A-01)		
Turn by Turn	Distance (miles)	Comments
1 Follow the alternate route until 280th St. East		
2 Turn east following 280th St E to Fischer Ave.	4.0	
3 Turn north following Fischer Ave. to U.S. Hwy 52	2.5	
4 Continue north following field line	2.9	Crosses U.S. Hwy 52
5 Continue north cross-country	0.5	
6 Continue north following field line	0.3	Continues to proposed Hampton Substation



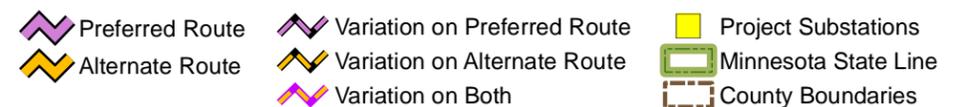
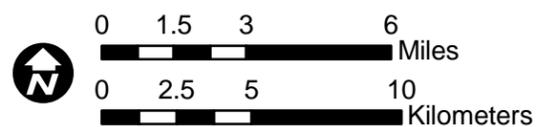
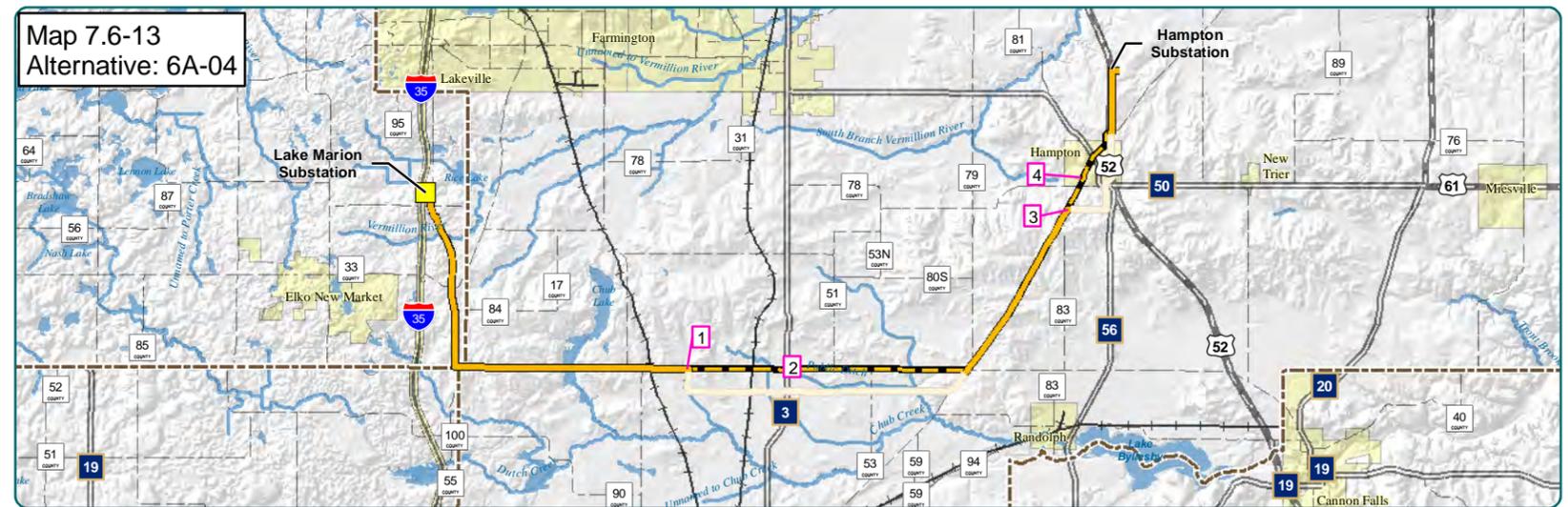
Lake Marion to Hampton (6A-02)		
Turn by Turn	Distance (miles)	Comments
1 Follow the alternate route until 240th St. East		
2 Turn east following 240th St East to the east side of U.S. Hwy 52	0.25	Crosses U.S. Hwy 52
3 Turn north following U.S. Hwy 52 to Northfield Blvd.	1.2	
4 Turn northeast following Northfield Blvd.	1.5	
5 Turn north following field line.	0.2	Continue to proposed Hampton Substation



Lake Marion to Hampton (6A-03)			
Turn by Turn	Distance (miles)	Comments	
1	Follow the alternate route until just north of Lewiston Boulevard.		
2	Head northeast cross-country to 240th St. E.	0.6	Crosses U.S. Hwy 52
3	Turn north at 240th St. Cross-country to Northfield Blvd.	1.3	
4	Turn northeast following Northfield Blvd	1.2	
5	Turn north following field line.	0.2	Continue to proposed Hampton Substation



Lake Marion to Hampton (6A-04)			
Turn by Turn	Distance (miles)	Comments	
1	Follow the alternate route until 1/3 mile east of Fairgreen Ave.		
2	Continue east following 280th St. W. to Cnty Hwy 47 (Northfield Boulevard)	0.5	Connects with proposed alternative route
3	Follow the alternate route until 1/2 mile south of 240th St. E.		
4	Continue northeast following Northfield Blvd. to U.S. Hwy 52	2.0	Connects with proposed alternative route



7.6.1.1 Alignment Alternatives

Segment 6 has three alignment alternatives that were suggested during the public comment period.

1) Route: Alternate (Inset #1)

Description: Run the line north of the model aircraft runway

Purpose: Maintains safety margin from the north end of the runway system.

2) Route: Preferred (Inset #2)

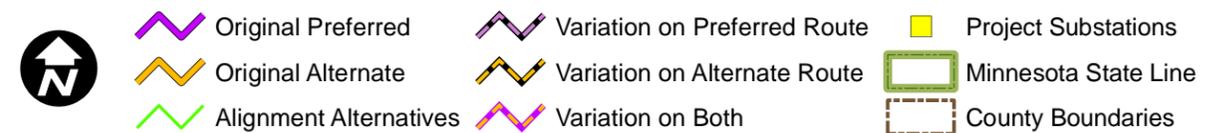
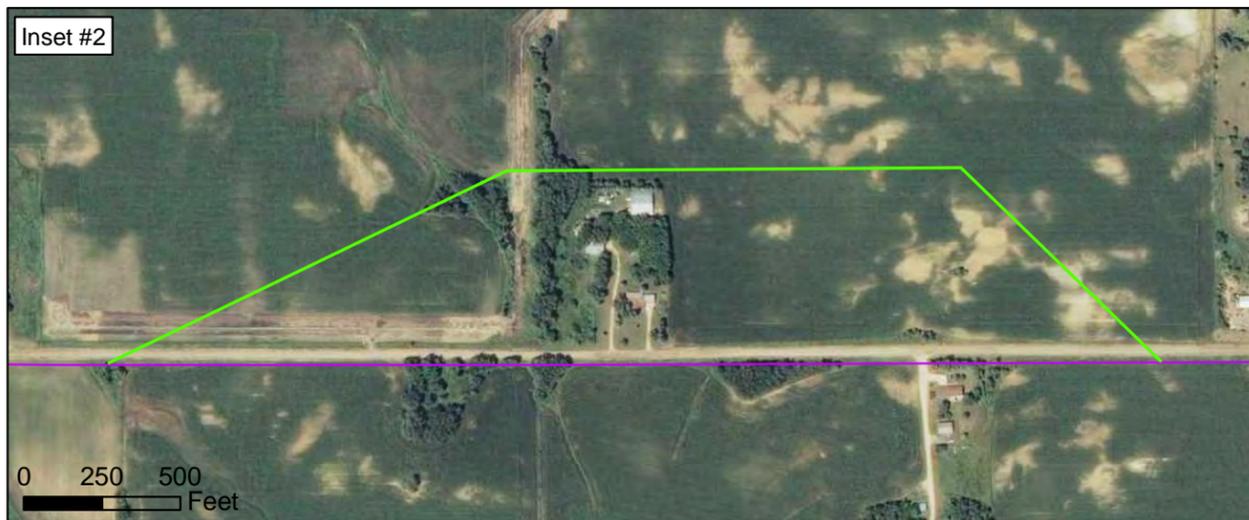
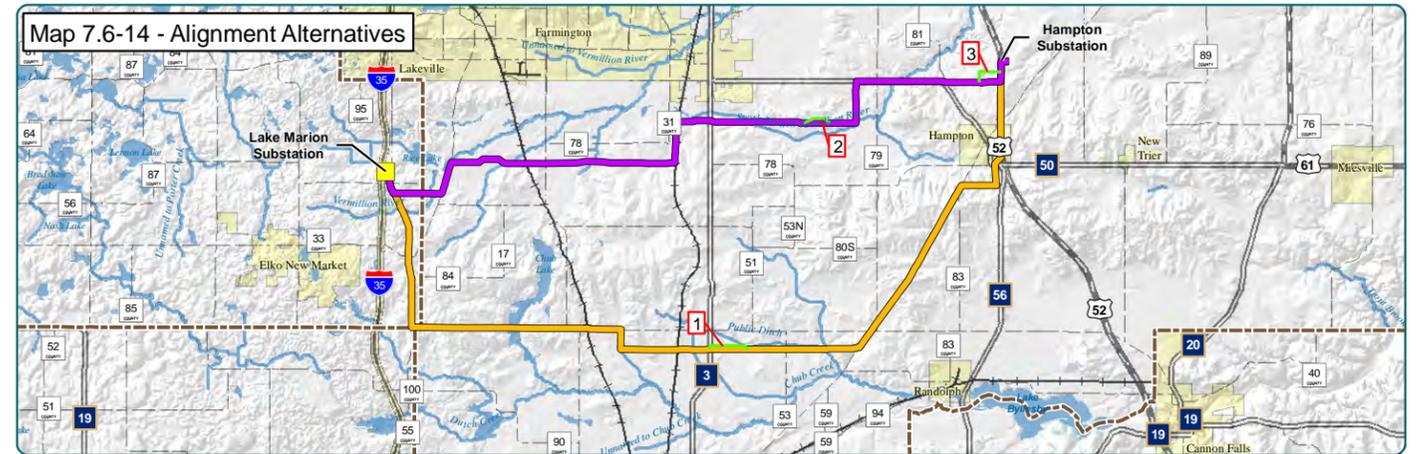
Description: Jog the line north of 230th St. (behind the houses) west of Annette Ave.

Purpose: Helps avoid three houses including one that is less than 90 feet from the road.

3) Route: Preferred (Inset #3)

Description: Turn north ¼ of a mile just east of Coates Blvd. Then turn east along field line for ½ of a mile.

Purpose: to avoid a home, and to make farming the field easier by following the field line.



7.6.2 Environmental Setting—Lake Marion Substation to Hampton Substation

This segment of the route extends from the existing Lake Marion Substation to a proposed new substation north of Hampton. According to the ECS, eastern Scott and Dakota counties are located in the Oak Savanna Subsection of the Eastern Broadleaf Forest Province. The Oak Savanna subsection is distinguished by rolling plains over till and bedrock with oak openings rather than forested areas, due to frequent fires on the adjacent southern prairies. Elevations along this section of this segment of the route range from 867 feet to 1,143 feet AMSL, with the highest elevations in the west and the lowest near the Cannon River.

Pre-settlement vegetation was primarily bur oak savannas with areas of tallgrass prairies. The primary present-day use of the land along this segment of the route is agriculture; few remnants of native vegetation are present (DNR 2008). Many of the wetlands have been drained and most of the smaller watercourses have been channelized to increase the acreage of land available for agricultural production. Urban development is beginning to encroach on the northern border of the farming communities in this area. The primary crops in the area are corn and soybeans.

With the exception of Northfield, the majority of the communities near the Project area are small agriculture-based communities, including Eureka Township, Hampton, Hampton Township, and Castle Rock Township. Urban development is beginning to encroach on the northern border of the area’s communities. The City of Farmington is also located in the Project area and has seen a large population increase within the past 20 years. Northfield is near several of the proposed route alternatives and is a level two regional trade center that is defined as a secondary wholesale retail center (Casey 1999).

7.6.3 Socioeconomic Setting—Lake Marion Substation to Hampton Substation

The Preferred Route runs by the outskirts of the south Metro Area in a low population density area. The Alternate Route is further south of the Metro Area but runs through the town of Hampton before connecting to the Hampton Substation. The Preferred Route and Alternate Route cross parts of Scott and Dakota Counties. The primary industries for Scott and Dakota Counties include “Educational, Health & Social Services,” Manufacturing, Retail Trade, “Professional, Scientific, Management,” and “Finance, Insurance, Real Estate.” Table 7.6.3-1 shows the differences in population, minority population percentage, and median age across the counties spanned by this segment of the Project.

Table 7.6.3-1. Socioeconomic stats in Scott and Dakota Counties

County	2008 Population	Total Minority Population	Minority Population Percentage	Median Age
Scott	128,937	17,664	13.7	34
Dakota	392,755	58,520	14.9	36

Source: U.S. Census Bureau

7.6.4 Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

The analysis of segment alternatives includes the following:

- Human settlement
- Public health and safety
- Air quality
- Interference
- Property values
- Archaeological and historic resources
- Land use compatibility
- Land based economics
- Transportation and public services
- Recreation
- Water resources
- Flora and fauna
- Rare and unique natural resources/critical habitat

See Section 6 for a general overview of the potential impacts to the resources listed above and a summary of the mitigation measures that would be utilized to minimize impacts to these resources. General overview maps are present throughout Section 7; however, more detailed maps are provided in Appendix A.

7.6.4.1 Human Settlement—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

Impacts to human settlement have been assessed by looking at a variety of factors including noise, aesthetics, proximity to structures, displacement, tree groves and windbreaks, existing utilities, and domestic water well installation and maintenance. Section 6.1 provides detailed discussion of each of these potential impact areas.

The extent to which particular route alternatives may impact these features is primarily linked to the proximity of the proposed route alternatives to human settlement areas. Aesthetic impacts to humans, for example, are expected to be greatest where the line is located nearest to human settlement features such as homes, businesses, schools, daycares, hospitals, churches and cemeteries. If the transmission line is in close proximity to human settlement areas, other features of these areas could also be impacted. For example, tree groves and wind breaks are frequently established to protect homes and other structures. Therefore, the potential for impacts to tree groves and wind breaks may be closely correlated with the proximity of the line to homes.

Displacement impacts are also dependent upon the proximity of the transmission line to homes. For electrical safety code and maintenance reasons, utilities would not generally allow residences or other buildings within the actual ROW easement for an HVTL.

Because of the close correlation between the extent to which particular route alternatives may impact human settlement and the proximity of the proposed route alternatives to homes and

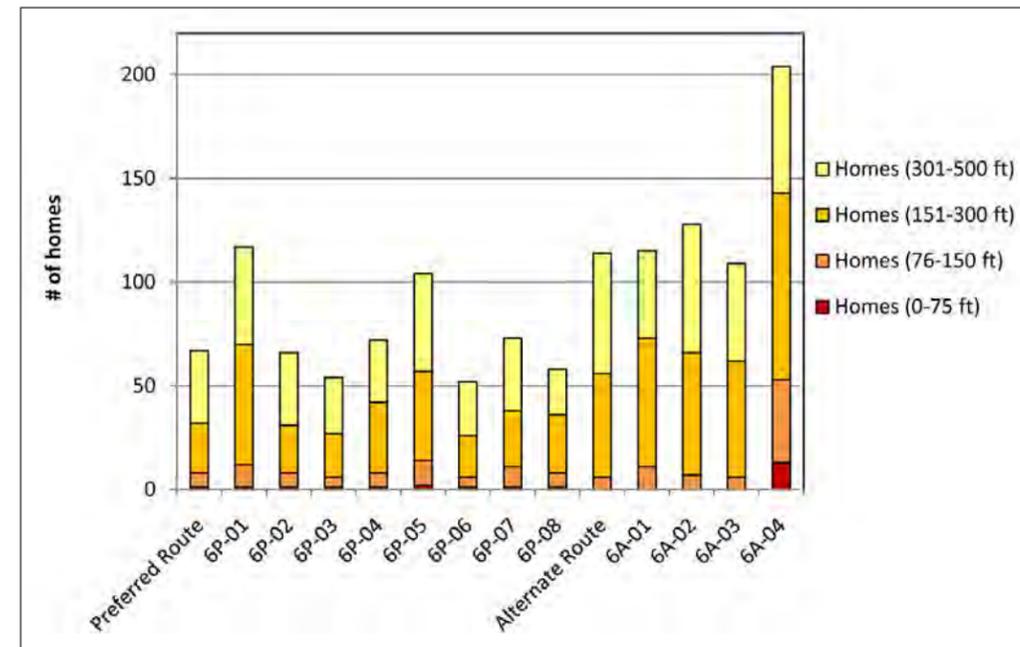
other human settlement features like schools, churches, cemeteries, nursing homes and hospitals, this impact summary focuses on the proximity of the proposed route alternatives to these features. For each alternative, pinch points, or narrow areas where human settlement impacts would be difficult to avoid, have also been identified.

Proximity to homes, schools, churches, cemeteries, nursing homes and hospitals for each of the proposed alternatives for the route segment from Lake Marion Substation to Hampton Substation (shown in Map 7.6-15 and Appendix A) is summarized in Figures 7.6.4.1-1 to 7.6.4.1-2.

Figure 7.6.4.1-1 compares the number of homes within 75 feet, 150 feet, 300 feet, and 500 feet of the centerline of each route alternative in this segment.

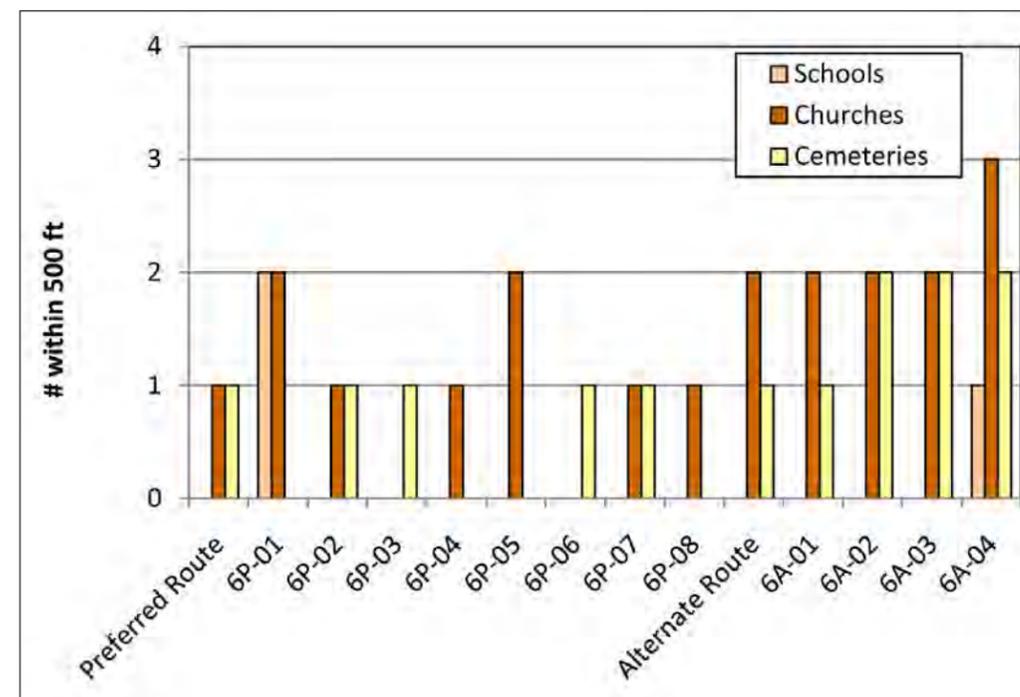
Total house counts for this line segment are notably higher than house counts for the portions of the Project located further to the west. At 54 homes, proposed route alternative 6P-06 has the fewest homes within 500 feet of the proposed centerline. Several proposed route alternatives, however, have greater than 100 homes within 500 feet of the proposed route centerline. Proposed route alternative 6A-04 has 205 homes within 500 feet of the proposed centerline. Route alternatives based on the Preferred Route generally have a lower total house count, but each of these route alternatives has at least one house within the 150-foot ROW. No houses are located within the ROW of the Alternate Route and proposed route alternatives 6A-01, 6A-02 and 6A-03. Proposed route alternative 6A-04 has a total of 13 houses within the 150-foot ROW.

Figure 7.6.4.1-1. Proximity of homes along each proposed route alternative



Source: Field survey observations, comments from project public meetings and aerial photograph interpretation by HDR. 12/29/08, updated by Barr 7/21/09

Figure 7.6.4.1-2. Proximity of other human settlement features along each proposed route alternative



Source: Schools: Minnesota Department of Education 09/18/2008 (Published by LMIC)

Churches and Cemeteries: Field survey observations, comments from project public meetings and aerial photograph interpretation by HDR. 12/29/08, updated by Barr 7/21/09

A number of narrow areas that have been identified along the route alternatives where homes, other buildings or tree groves are located close to the road and may be within the ROW of the line unless the route is aligned on the side of the road opposite these features. South and west of Farmington, along the Preferred Route and associated route alternatives, a house is located within 75 feet of the proposed centerline, but could be avoided if the line were moved to the opposite side of the road. In other areas, houses or structures are located along both sides of the road and impacts would be difficult to avoid.

Along proposed route alternative 6A-04 south of Lakeville there are two locations where homes are located on either side of the line and could not be avoided. A similar pinch point is encountered where proposed route alternative 6A-04 cuts through Hampton.

Figure 7.6.4.1-2 compares the number of schools, churches and cemeteries for each of the proposed alternatives for the route segment. No nursing homes or hospitals are located within 500 feet of any proposed route centerline along this segment

Mitigation

General mitigation measures to minimize impacts to human settlement are discussed in Section 6.1. Within this route segment, impacts to human settlement can be managed through choosing a route that minimizes the proximity of the line to homes as well as minimizing the total number of homes located within the Project route width. In this route segment route alternative 6P-06 has the fewest homes within the 1000-foot route width.

South and west of Farmington, along the Preferred Route and all variations of this route,

a house is located within 75 feet of the proposed centerline, but it may be possible to simply move the line to the opposite side of the road to mitigate impacts. Mitigation of purely visual impacts would require undergrounding of the line or routing the line around or behind this home. Along proposed route alternative 6A-04 south of Lakeville where homes are located on either side of the line and along proposed route alternative 6A-04 where the proposed line cuts through Hampton, mitigation would involve undergrounding the line, compensation for structures that must be moved.

Section 7.6.4.2 Public Health and Safety— Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

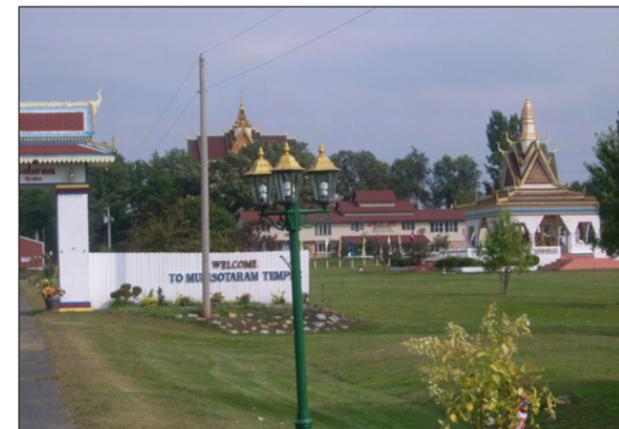
Public health and safety impacts associated with this Project are not anticipated. Any perceived risk of health impacts from electric and magnetic fields is likely to be correlated with the proximity of human dwellings to the proposed line. Information on the proximity of homes to each proposed route alternative within this route segment is provided in Section 7.6.4.1.

A narrow area along proposed route alternative 6A-04

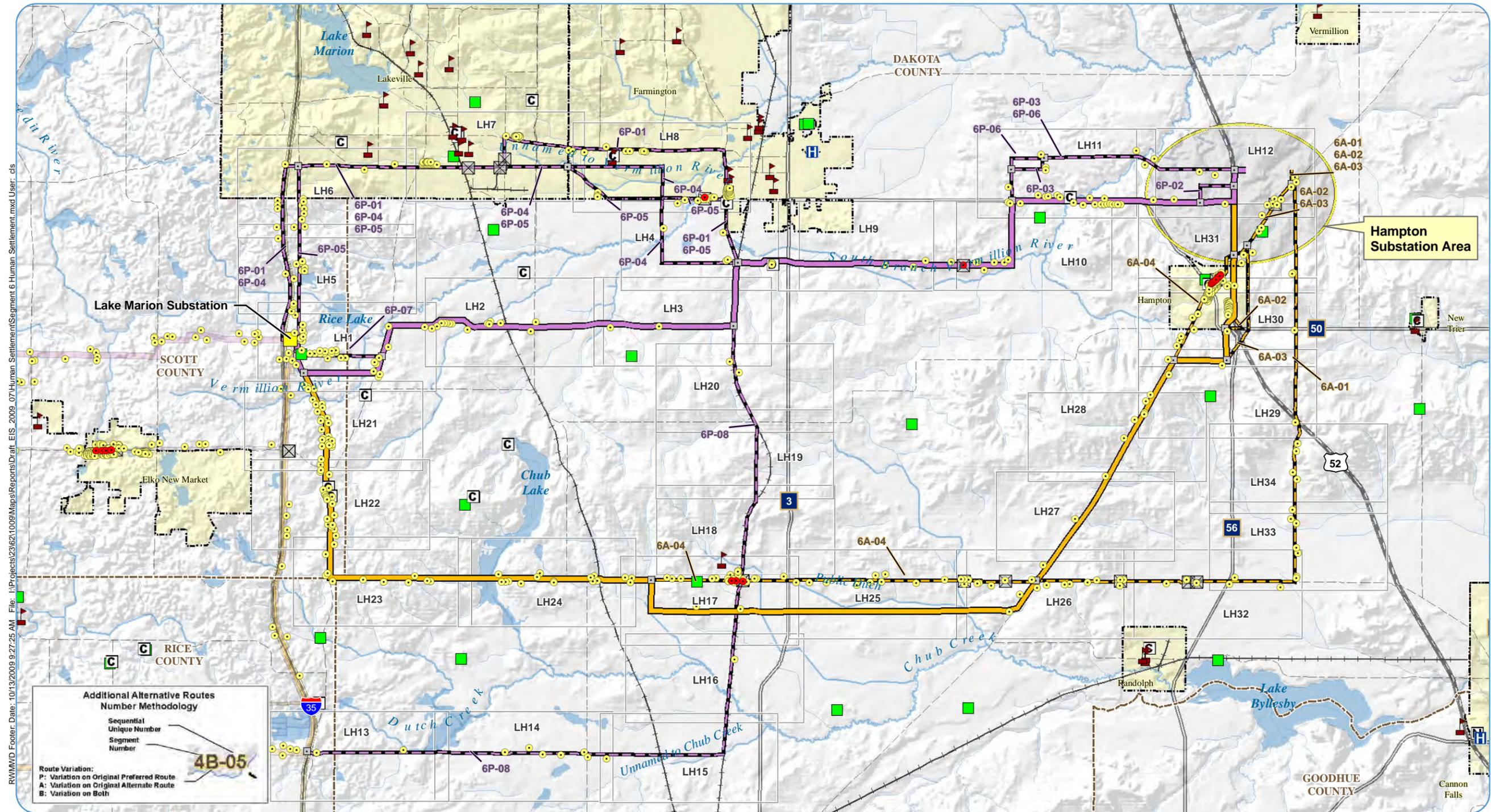


Source: Barr photograph, 2009

The Preferred Route passes near a Buddhist temple on 220th Street near Hampton



Source: Barr photograph, 2009



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Additional Alternative Routes Number Methodology

Sequential Unique Number
Segment Number

4B-05

Route Variation:
 P: Variation on Original Preferred Route
 A: Variation on Original Alternate Route
 B: Variation on Both

SL1 Appendix A Map Index

0 0.75 1.5 3 4.5 Miles

0 2 4 Kilometers

For detailed maps refer to Appendix A
 Refer to Appendix B for information on data sources

Original Alignments	Project Substations	Hospitals
Preferred Route	Proposed Substation Areas	Nursing Homes
Alternate Route	Preferred	Observed Day Cares
Additional Alternative Routes	Alternate	Schools
Variation on Preferred Route	County Boundaries	Churches
Variation on Alternate Route	Residences within 75 Feet of Alternatives	Cemeteries
Variation on Both	Residences within 500 Feet of Alternatives	Tribal Land
	Narrows	

Map 7.6-15
 Human Settlement Map
 Segment 6, Lake Marion Substation
 to Hampton Substation Area

Source: Refer to Appendix B for information on data sources

Section 7.6.4.3 Air Quality—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

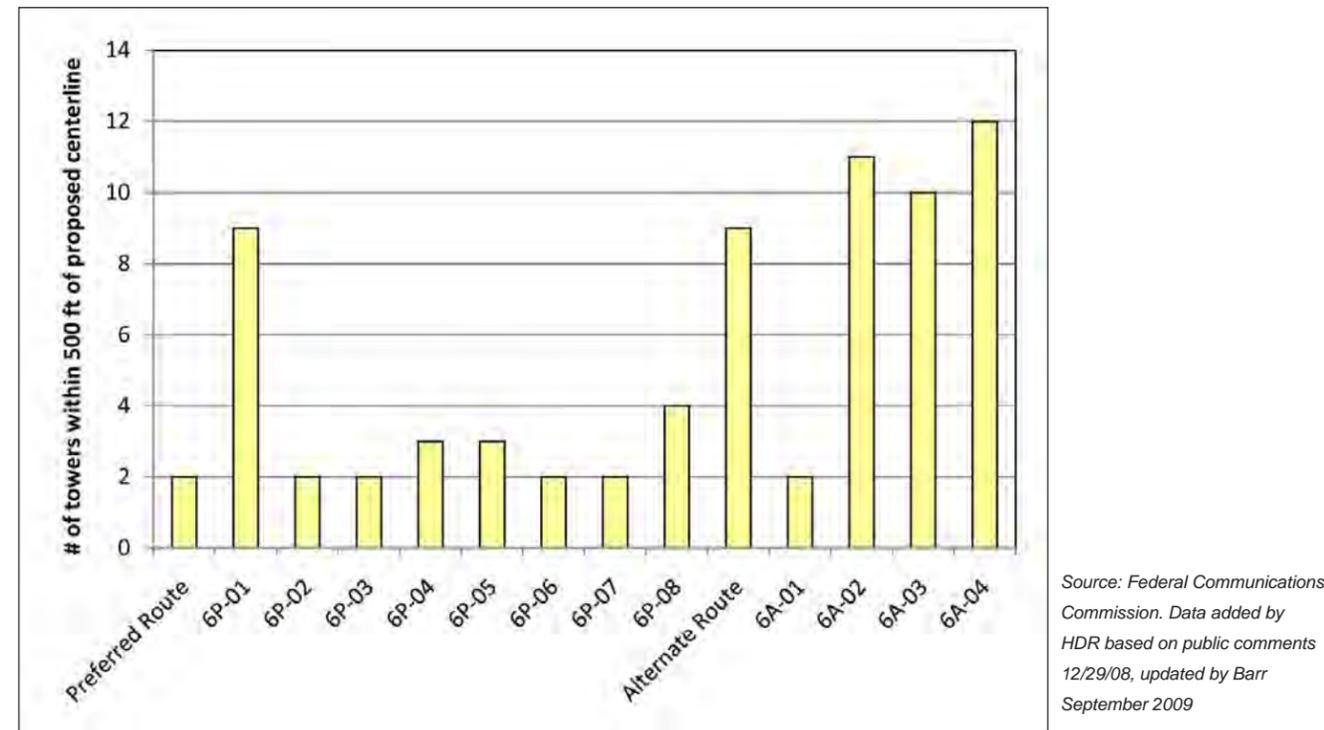
Detailed discussion of potential air quality impacts are provided in Section 6.3. Potential air quality impacts are primarily associated with the production of small amounts of ozone and oxides of nitrogen in the air surrounding transmission line conductors and the potential release of small amounts of SF₆ during operation and maintenance of certain electrical substation equipment. These features do not vary notably between the proposed route alternatives in this segment. Thus, the nature of impacts to air quality are not expected to vary notably from one route alternative to the next. The operation of the proposed transmission line would not create any potential for the concentration of these pollutants to exceed existing air quality standards.

Section 7.6.4.4 Interference—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

The nature of impacts related to interference, are not likely to vary notably between route segments or route alternatives. Impacts are expected to be greatest very close to the line for AM radio reception and very minor for all other types of reception. The placement of structures may also result in interference. Structure placement would be coordinated so as not interfere with microwave communication corridors.

Figure 7.6.4.4-1 shows the number of communication towers within 500 feet of the proposed centerline for each route alternative in the Lake Marion Substation to Hampton Substation segment.

Figure 7.6.4.4-1. Number of towers within 500 feet of proposed centerline for each proposed route alternative



Section 6.4 provides an overview of potential impacts from interference and outlines general steps that would be taken to mitigate impacts from interference.

Section 7.6.4.5 Property Values—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

Impacts to property values are a concern of many residents near existing or proposed transmission lines. Research assessing the relationship between property value and proximity to transmission lines suggests that the presence of a transmission line is one of several factors that interact to affect the value of a particular property. Since property value is influenced by many other factors that may vary widely from one property to the next and that may vary over time and across

different regions, the results of current research is limited. Current studies have been unable to provide detailed quantitative assessments of how transmission lines may impact property values at the scale necessary to provide insight in comparing property value impacts across proposed route alternatives within this section or across this Project.

7.6.4.6 Historical and Archaeological Resources—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

Within the Lake Marion Substation to Hampton Substation segment, available SHPO records have been used to identify known archaeological resources, historical structures and historic landscapes within one-half mile on either side of the proposed centerline for each route alternative. In order to protect information about the specific location of certain resources that may be vulnerable to unauthorized removal of artifacts or other unauthorized disturbances, SHPO records only provide a township, range and section for certain resources. If any part of one of these identified areas is within one-half mile of a proposed route centerline, it has been assumed that the resource is potentially within the relevant area. Due to the uncertainty about the exact location of certain SHPO identified resources, total impacts have been characterized in terms of the total number of sites potentially within one-half mile of the route centerline.

Within the SHPO records, particular consideration is given to historical and archaeological resources listed on the National Park Service’s NRHP as these locations have been identified as critical national resources and are protected by the *National Historic Preservation Act of 1966*.

Potential Historical and Archaeological resource impacts for each of the proposed alternatives for the route segment from Lake Marion Substation to Hampton Substation (shown in Map 7.6-16 and Appendix A) are summarized in Figures 7.6.4.6-1 and 7.6.4.6-2.

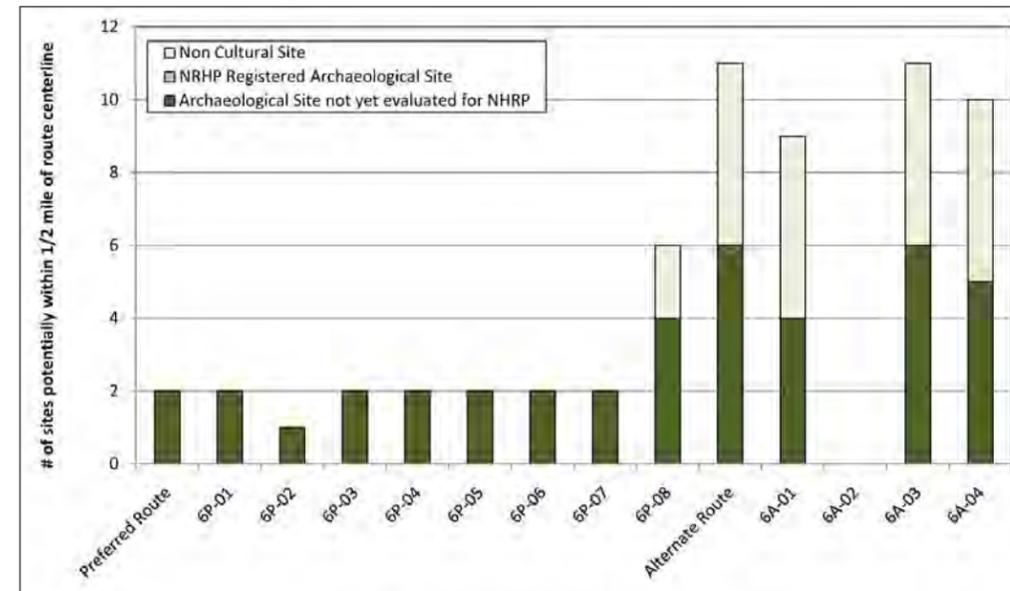
Figure 7.6.4.6-1 compares the number of archaeological sites within one-half mile on either side of the proposed centerline for each route alternative in this segment.

No NRHP registered archaeological sites are located within one-half mile of any route alternative’s centerline in this segment. None of the archaeological sites potentially located within one-half mile of the centerline have been evaluated for eligibility for listing on the NRHP and thus, these sites have not been evaluated for significance. Route alternative 6A-02 does not have any archaeological sites within one-half mile of the centerline. The route alternatives with the most sites within the one-half mile of the centerline are the Alternate Route and proposed route alternative 6A-03, with a total of 6 archaeological sites.

Figure 7.6.4.6-2 compares the number of historical architectural sites within one-half mile on either side of the proposed centerline for each route alternative in this segment.

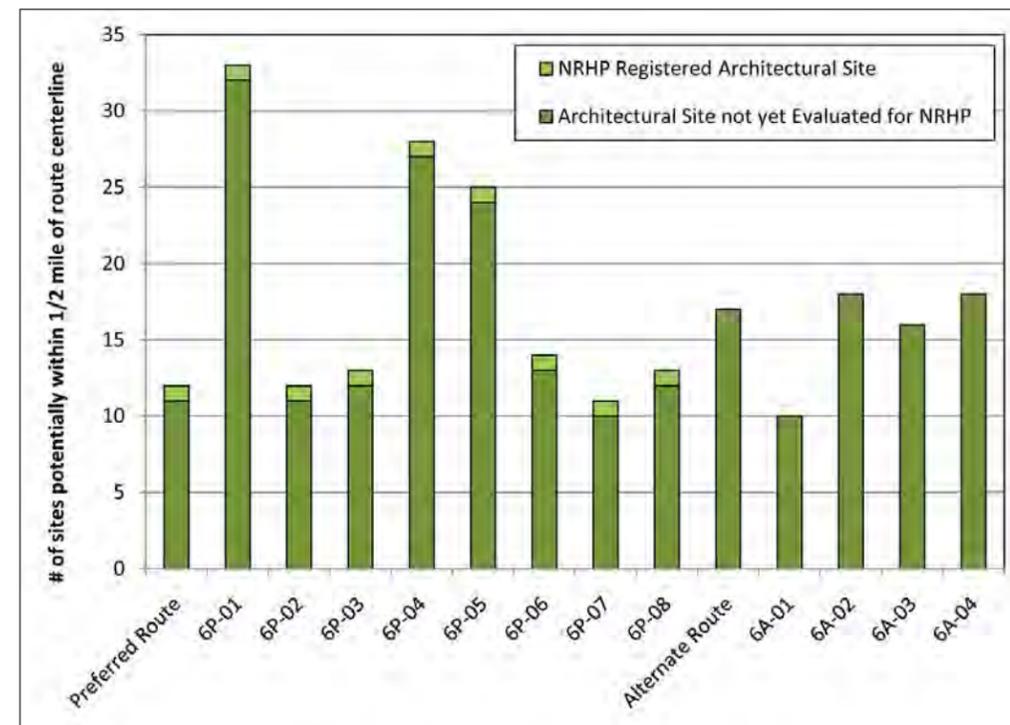
The Dakota County Fairgrounds Horticulture Building (site DK-CRK-001), is an NRHP registered site located within one-half mile of the centerline of the majority of the proposed route centerlines. The only route alternatives that do not include this site within one-half mile of their proposed centerlines are the Alternate Route and the associated route alternatives. Aside from this site, all other architectural sites potentially located within the one-half mile of the route have not been evaluated for eligibility for listing on the NRHP. With a total of 10 sites, 6A-01 has the fewest sites located within one-half mile of its centerline. With a total of 33 sites, 6P-01 has the most sites located within one-half mile of its centerline.

Figure 7.6.4.6-1. Number of archaeological sites along proposed route alternatives



Source: SHPO

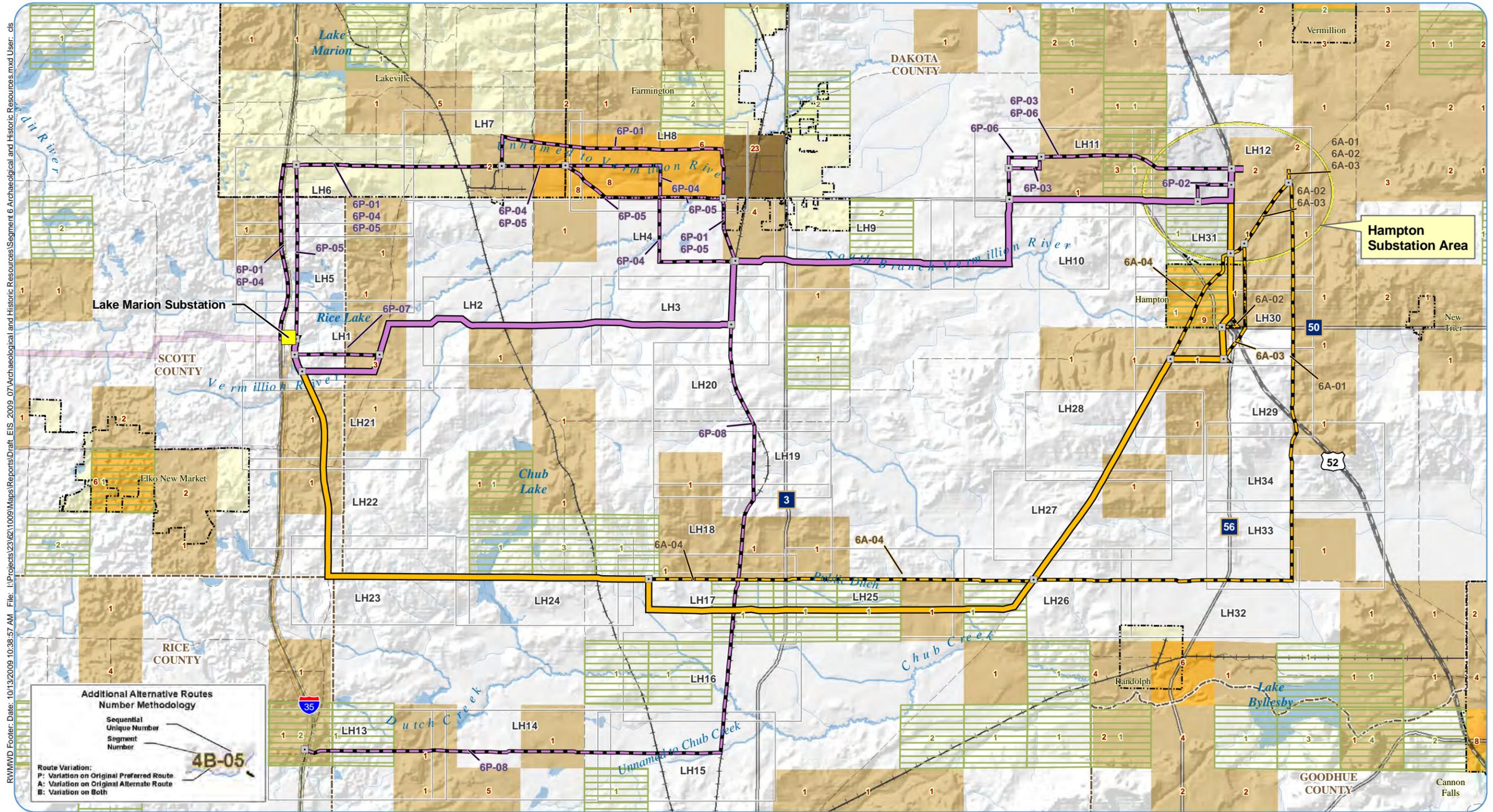
Figure 7.6.4.6-2. Number of historical architectural sites along proposed route alternatives



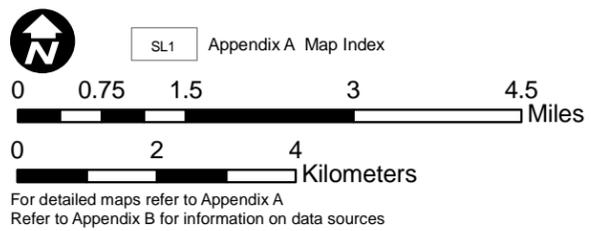
Source: SHPO

Mitigation

Project planning and engineering efforts would strive to avoid any sites within the proposed route width for each alternative. Route alternative 6P-02 has the fewest archaeological sites potentially within one-half mile of the route centerline. Route alternative 6A-01 has the fewest historical architectural sites potentially within one-half mile of the route centerline. At this time it is not clear which route would have the fewest actual impacts on archaeological or historical resources or what the magnitude of the impacts since a complete assessment of all sites for NRHP status has not been completed. Specific mitigation plans cannot be made until a complete assessment of these sites has been made. For any resources within the route width, once the Project ROW is accessible, the Applicants, as indicated in the RPA, would sponsor an archaeological investigation to locate these sites and provide a report to the OES and SHPO on the existing conditions, site management recommendations, and efforts, if known, to avoid, minimize, or treat impacts related to construction and maintenance of the Project. Planning specific mitigation measures Mitigation would entail compensating for the losses of properties that are eligible for listing on the NRHP. The Applicants have also indicated that they may invite other parties (particularly Native American tribes and other state and federal permitting or land management agencies) to assist in the development of the avoidance, minimization, or treatment measures. Section 6.6 provides an overview of potential impacts to archaeological and historical resources and outlines general steps that would be taken to mitigate impacts to these resources. Specific mitigation plans cannot be made until the steps described above have been completed.



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- Original Alignments
- Preferred Route
- Alternate Route
- Additional Alternative Routes
- Variation on Preferred Route
- Variation on Alternate Route
- Variation on Both
- Project Substations
- Proposed Substation Areas
- Preferred
- Alternate
- County Boundaries
- Archaeological Sites

 - 1 - 5
 - 6 - 10
 - 11 - 15

- Historical Sites

 - 1 - 5
 - 6 - 20
 - >20

Map 7.6-16
Archaeological & Historic Resources Map
Segment 6, Lake Marion Substation
to Hampton Substation Area



Source: Refer to Appendix B for information on data sources

7.6.4.7 Land Use Compatibility—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

Impacts to current land use can be caused by activities associated with transmission line development. These impacts may range from temporary construction impacts to permanent impacts introduced where structure and line placement disturb current land uses or future land use plans. Current land use and zoning and available plans for future development have been evaluated in order to assess the compatibility of the proposed route alternatives with these land uses.

Current land cover types along the 150 foot right of way (ROW) for each route alternative in this route segment have been reviewed and are summarized in Figure 7.6.4.7-1.

In Dakota County, most of the proposed route alternatives are located on or adjacent to land guided for and in use as agricultural land (crop, pasture or grassland) as well as some areas in single family rural residential use. A number of the alternatives, however, traverse more intensive land uses. These route alternatives are addressed in greater detail below.

In Lakeville, route alternative 6P-01 crosses over or is adjacent to land guided for office park, parks, warehouse/light industrial, industrial and commercial use. It also is near the Airlake Airport. As this route alternative passes through Farmington, it crosses over or is adjacent to land guided for agricultural, park/open space, commercial and industrial use. This segment is also adjacent to small areas guided for low, medium and high density residential uses. Proposed route alternative 6P-05 follows a similar

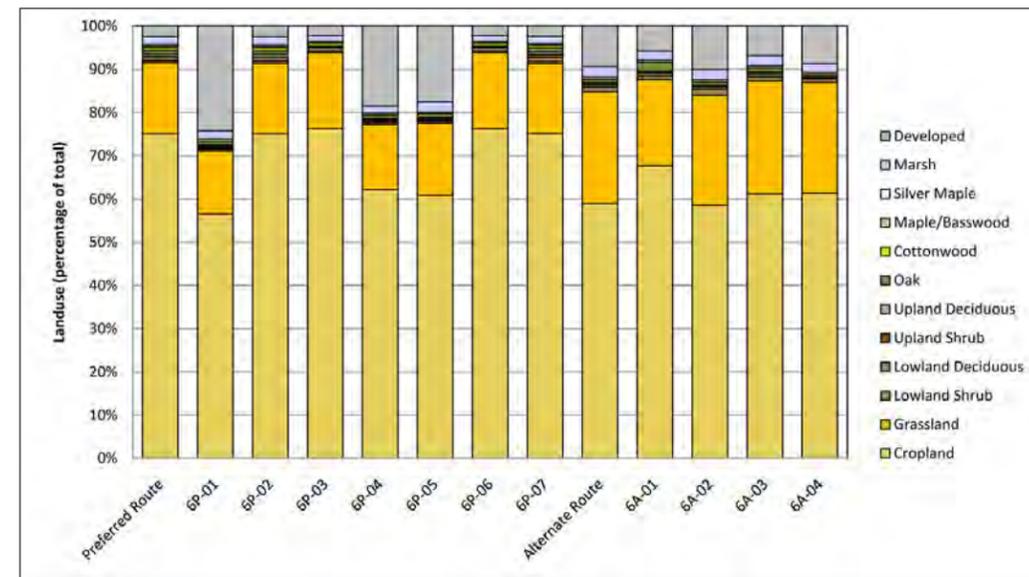
route but runs adjacent to the southern border of Farmington. Route alternative 6P-05 is adjacent to more land guided for medium and high density residential than route alternative 6P-01, but it does not run adjacent to land guided for low density residential. Proposed route alternative 6P-04 is similar to 6P-05, but is adjacent to less land guided for medium and high density residential uses in Farmington.

The Alternate Route and associated route alternatives run adjacent to the Chub Lake WMA. Both the Alternate Route and the 6A-02 route alternative run through the City of Hampton and adjacent to residential and commercial uses within the US 52 ROW corridor. Route alternative 6A-04 runs through the center of Hampton and adjacent to existing residential and commercial land uses.

Transmission lines may affect agricultural land use in this segment by the amount of land removed from productive use by the footprint of each tower. Tower placement may also affect the operation of irrigation equipment if present as well as crop spraying operations. Stray voltage and cattle may be a compatibility concern.

Single pole towers would be the primary tower type used for the Project and they use relatively little land compared to other tower types. Transmission towers and lines also change the visual quality of views within the agricultural landscape, however, due to the relatively low population densities and small numbers of travelers along most route alternatives, this potential impact does not affect many people. Impacts during tower construction may include the potential for destruction of crops within the grading/construction zoning and the compacting of soils by construction equipment and activities.

Figure 7.6.4.7-1. Land cover types along each route alternative



Source: DNR, Department of Forestry 06/06/2002

The major impact on residential areas, such as the Farmington and Hampton areas may include changes to viewsheds for some properties and potential minor noise impacts during construction for properties in close proximity to the transmission line.

Individual property values may be negatively affected depending on proximity to, and views of, the transmission line. Impact on property values varies depending on a range of other factors including current market conditions, proximity and access to open space, commercial services and community services such as schools. Land used for tower siting may change or reduce the current and future functionality of the property depending on its size as well as its current and future use. The height of vegetation allowed within the transmission line easement is generally limited to 25 feet which may conflict with the property owner’s desire for landscaping. Maintenance activities within the easement may pose temporary periodic conflicts with use and enjoyment of the property

The major impacts to commercial and industrial properties, such as the industrial area in Farmington, are similar to those affecting residential areas. The compatibility of transmission lines with commercial and industrial uses is generally less of a concern with commercial property and even less so with industrial uses. Most commercial and industrial activities are located in close proximity to more heavily used road corridors and thus exposed to higher sound levels and affected viewsheds. Commercial activities may be more sensitive to impacts than industrial activities depending on the nature of commercial use. Parking and outdoor storage areas, typically a large portion of commercial and industrial land use, are not affected by transmission lines. Parking, vehicle circulation and outdoor storage are generally allowed under transmission lines

Mitigation

General measures to minimize impacts to Land Use Compatibility are discussed in Section 6.7. Within this route segment impacts to land use compatibility would be addressed primarily through BMPs to reduce impacts to agricultural areas during construction, operation and maintenance.

7.6.4.8 Land Based Economies—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

The primary land based economies along this route segment are agriculture based. Agricultural economies in the area may include livestock and dairy farms as well as bee-keeping. No mining or forestry operations are expected to be impacted by the Project.

The highest yield agricultural activities include cultivation of corn, soybeans and oats as well as raising cattle. Much of the agricultural land is designated as “prime farmland,” indicating land that this land is most desirable for agricultural production. The Project would result in permanent and temporary impacts to farmland. Permanent impacts would occur as a result of structure placement along the route centerline. It is estimated that the permanent impacts in agricultural fields would be 1,000 square feet per pole. During construction, temporary impacts, such as soil compaction and crop damage within the ROW, are possible. Temporary impacts in agricultural fields are estimated to be one acre per pole for construction activities.

Figure 7.6.4.8-1 below shows the amount of prime farmland within the ROW of each of the proposed route alternatives in this segment.

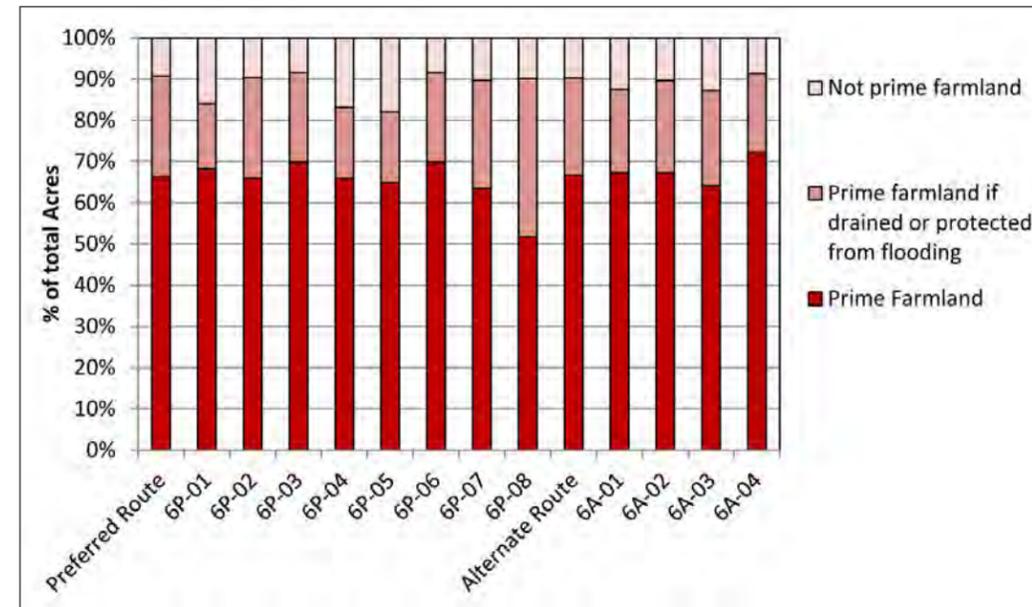
For the majority of the proposed route alternatives along this segment, the percentage of prime farmland within the ROW does not change notably from one route to the next. Proposed route alternative 6P-08, however, has the lowest percentage of prime farmland within its 150 foot ROW.

The locations of organic farms are shown in Map 7.6-17 and Appendix A. While certain proposed route alternatives are in closer proximity to organic farms than other proposed route alternatives, the implementation of mitigative measures described below would prevent impacts to organic farm status.

Mitigation

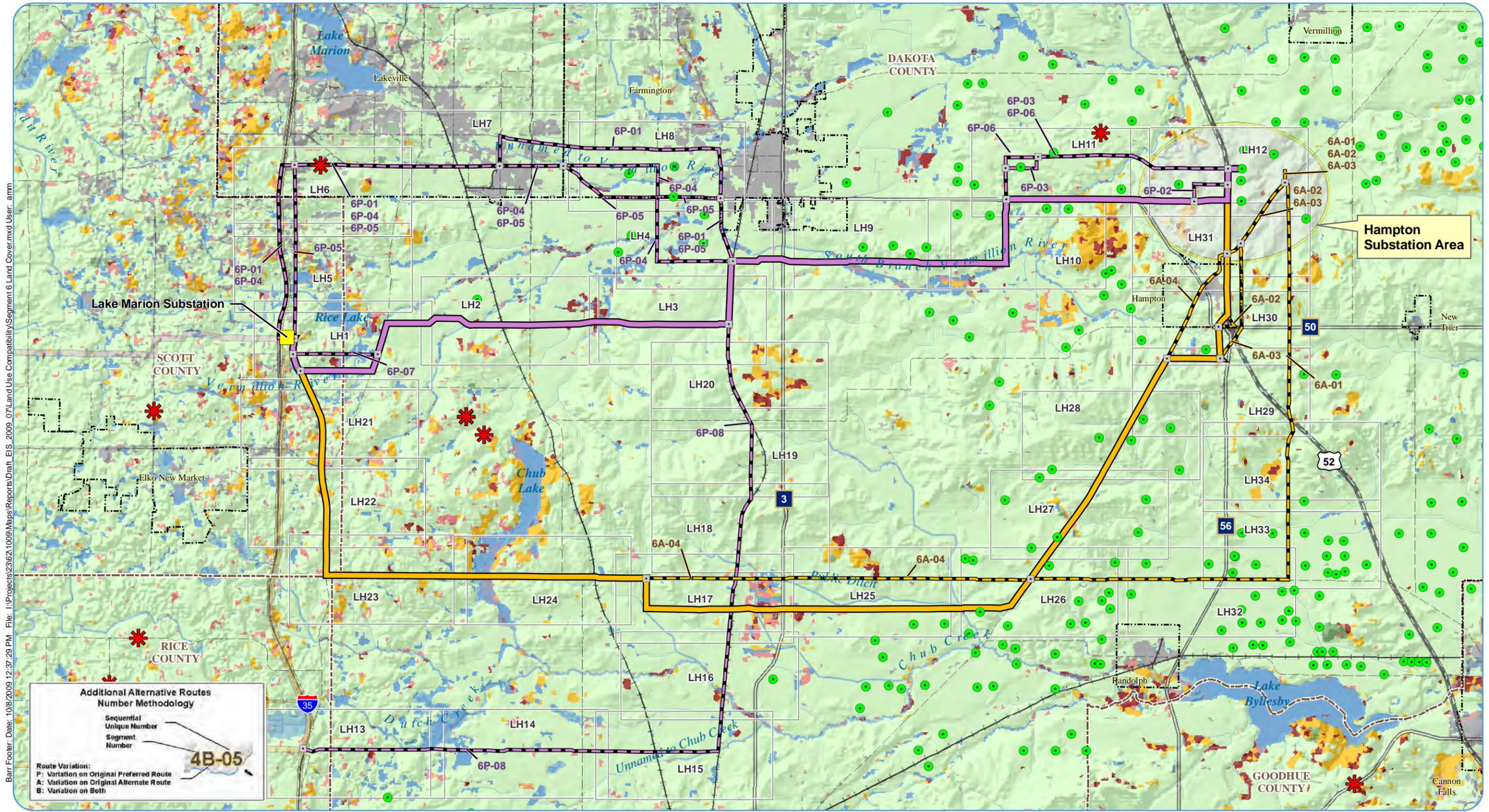
While the presence of an HVTL near an organic agricultural area does not directly impact organic status, special procedures must be followed during the construction and maintenance activities associated with HVTLs to avoid impacts to organic farms. The applicant has worked with the MDA to develop an AIMP for this Project. The overall objective of this AIMP is to identify measures the Utilities would take to avoid, mitigate, repair and/or provide compensation for impacts that may result from transmission line construction projects on agricultural land in Minnesota. The AIMP includes an appendix that outlines mitigation measures and procedures specific to construction and maintenance procedures near Organic Agricultural Land as described in the National Organic Program Rules, 7 CFR Parts 205.100, 205.202, and 205.101. By

Figure 7.6.4.8-1. Farmland and non-farmland within ROW of proposed route alternatives



Source: U.S. Department of Agriculture, Natural Resources Conservation Service

following the procedures outlined in the AIMP, impacts to Agricultural land based economies due to construction and maintenance of the line can be eliminated or mitigated.



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Additional Alternative Routes Number Methodology

Sequential Unique Number
Segment Number

4B-05

Route Variation:
P: Variation on Original Preferred Route
A: Variation on Original Alternate Route
B: Variation on Both

SL1 Appendix A Map Index

0 0.75 1.5 3 4.5 Miles

0 2 4 Kilometers

For detailed maps refer to Appendix A
Refer to Appendix B for information on data sources

Original Alignments	Project Substations	Land Cover	Upland Conifer-Deciduous mix
Preferred Route	Proposed Substation Areas	Upland Conifer Forest	Aquatic Environments
Alternate Route	Preferred	Upland Deciduous Forest	Crop/Grass
Additional Alternative Routes	Alternate	Lowland Deciduous Forest	Non-Vegetated
Variation on Preferred Route	County Boundaries	Lowland Conifer Forest	Shrubland
Variation on Alternate Route	Organic Farms		
Variation on Both	Center Pivot Irrigation		

Map 7.6-17
Land Use Compatibility Map
Segment 6, Lake Marion Substation
to Hampton Substation Area

Source: Refer to Appendix B for information on data sources

**7.6.4.9 Transportation and Public Services—
Analysis of Segment Alternatives for the Lake
Marion Substation to Hampton Substation**

**Roadways, Railroads and Emergency
Services**

The nature of impacts to roadways, railroads and emergency services are not expected to vary notably from one route segment to the next or from one route alternative to the next. Impacts are expected to be limited to temporary impacts along roads and railroad corridors due to construction and maintenance of the line. Section 6.9 provides an overview of potential impacts to transportation and emergency services.

Airports and Landing Strips

Potential impacts to airports and landing strips are expected to vary by route depending on the proximity of the line to the airport and the particular characteristics of the airport in question. Map 7.6-18 shows the location of airports along this section of the route.

Consideration was given to a number of small airports, including unregistered and private use airports.

Airlake Airport serves as a reliever airport to the Minneapolis-St. Paul International Airport, the region’s major commercial airport. Aircraft landing at this facility include single- and double-engine propeller and small jet-engine aircraft. The airport has one runway (Runway 12/30), located northwest to southeast. The airport is located at an elevation of 960 feet AMSL, thus limiting the elevation of the top of structures to no more than 1,210 feet MSL. Approaches and take-offs occur on either end of the runway; however, each end of the runway has a different approach slope and glide path. According to the FAA, the northwest

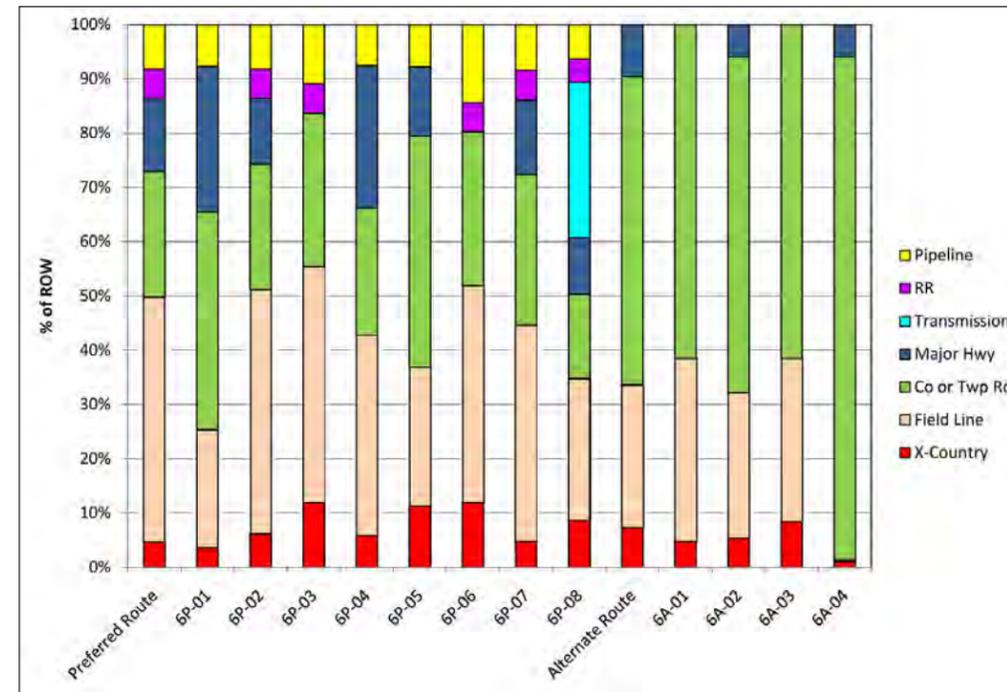
approach of Runway 12/30 has an approach slope of 34:1 for 10,000 feet from the end of the runway primary surface, transitioning to 20:1 for an additional 4,000 feet following the 10,000 foot radius. The southeastern approach, marked by chevrons at the end of the runway, has an approach slope of 50:1 for 10,000 feet from the end of the primary surface, and 40:1 for 40,000 feet beyond the initial 10,000 foot radius. In both instances, the transitional zone on either side of the runway centerline has a slope of 7:1.

Future planning for Airlake Airport has recently been approved and includes the extension of Runway 12/30 from 4,098 feet to 5,000 feet, extending the runway’s southern end. Land use development restrictions are more stringent on the southern approach to the runway, and filing a notification with the FAA would be necessary for any route within a 50,000 foot buffer, including the current Preferred Route.

The new proposed route alternatives 6P-01, 6P-04 and 6P-05 pass within 3,680 feet of the approach end of runway 12. At this distance, tower heights would be limited to 108 feet in order to not impinge upon the approach airspace.

Jennrich Field is a private, non-public use airport located approximately 6 miles south of Farmington. The facility has one turf runway (09/27) measuring 2,500 by 75 feet that is aligned west to east. There are 2 single engine aircraft based at this facility. The single runway at this airport is approximately 3,897 feet from the original proposed route and 2,700 feet from the new proposed 6P-08 route. Runway orientation information was not available to determine if the new proposed route impinge upon the runway approach path.

Figure 7.6.4.9-1. Shared ROW types along each route alternative



Source: Field survey observations, comments from project public meetings and aerial photograph interpretation by HDR. 12/29/08, updated by Barr 9/01/09

Nielsen’s is a private, non-public use airport located approximately 4 miles south southeast of Farmington. The facility has one turf runway (18/36) measuring 2,000 by 60 feet that is aligned north to south. There are 3 single engine aircraft based at this facility. The single runway at this airport is approximately 5,417 feet from the proposed power line.

Lucht Field is a private, non-public use airport located approximately 4 miles southeast of Farmington. The facility has one turf runway (17/35) measuring 2,000 by 72 feet that is aligned north to south. There is 1 single engine aircraft and 2 ultra-lights based at this facility. The single runway at this airport is approximately 3,432 feet from the proposed power line. A 20:1 approach path slope for the northern runway would require the transmission tower be no more than 172 feet.

Right of Way Sharing

Sharing ROW with existing infrastructure can minimize the ROW needed for the transmission line, minimizing impacts to adjacent property. In Map 7.6-18, areas where the ROW for the proposed route alternatives would share existing transportation, transmission line or pipeline infrastructure have been identified.

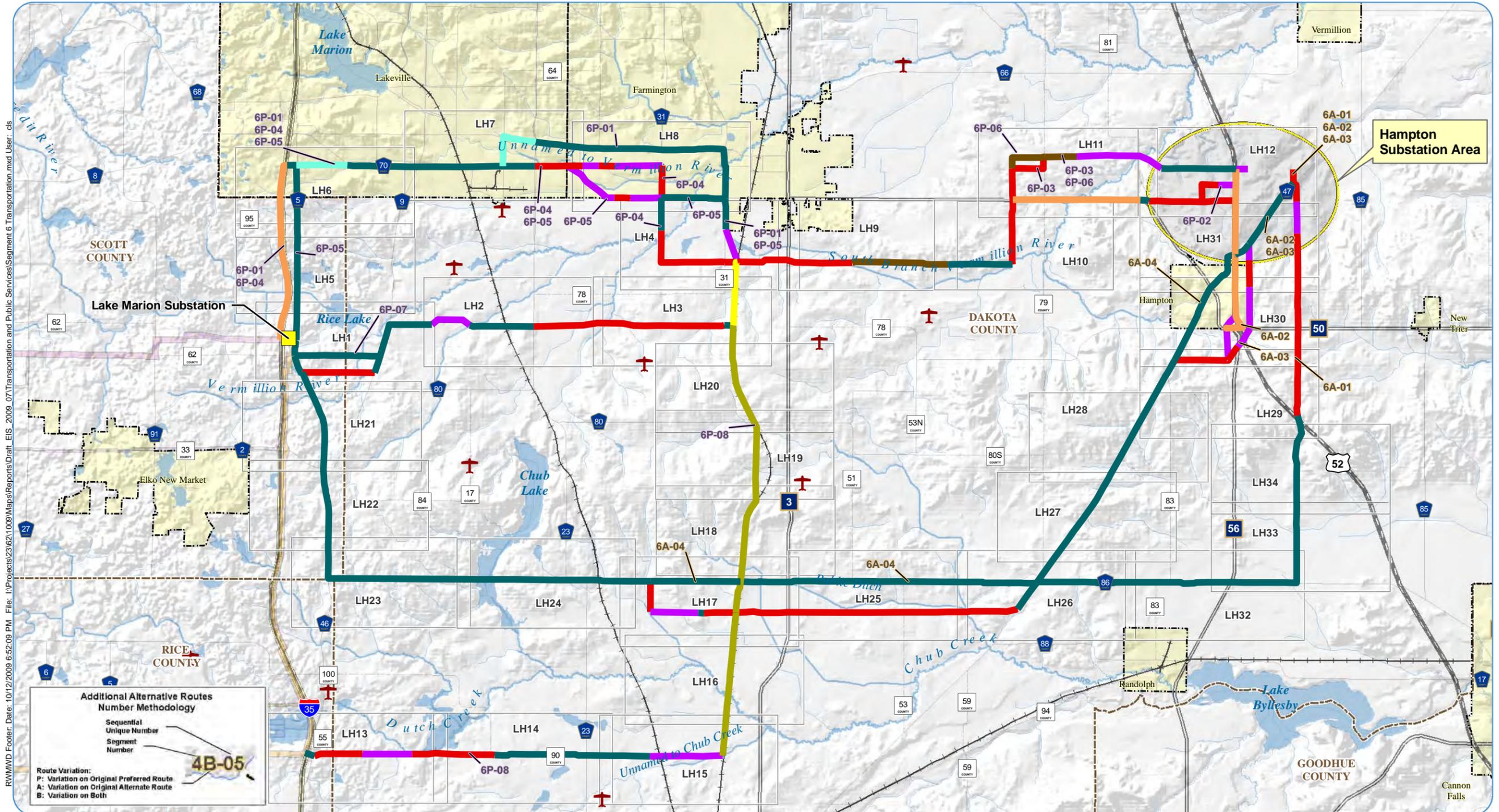
Figure 7.6.4.9-1 shows the percentage of total line distance where ROW is shared with existing infrastructure under each route alternative in this segment. Areas where proposed routes follow field lines (survey lines, natural division lines and agricultural field boundaries), or cut cross-country through fields, pastures, and forests have been highlighted. In these areas there is no opportunity to minimize impacts to property by sharing existing ROW area.

Route alternative 6A-04 shares the greatest percentage of its ROW with existing infrastructure and the Alternate Route and associated route alternatives appear to generally share more ROW than the Preferred Route and associated route alternatives. Much of the shared ROW across the route alternatives in this segment occurs along county or township roads or major highways and the majority of the unshared ROW follows field lines.

Mitigation

General mitigation measures to minimize impacts to Transportation and Public Services are discussed in Section 6.9. Within this route impacts to transportation are expected to be limited to airports. The main airport within this route segment where potential impacts exist is Airlake Airport. The new proposed route alternatives 6P-01, 6P-04, and 6P-05 pass within 3,680 feet of the approach end of runway 12 at Airlake Airport. Impacts to this airport could be avoided by using pole structures in this area with a height limited to less than 108 feet.

It should also be noted that by choosing routes that maximize the amount of shared ROW with existing roads, transmission lines, pipeline or railroad can mitigate impacts to surrounding land. Within this segment route alternative 6P-01 has the greatest amount of shared ROW.



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Additional Alternative Routes Number Methodology

Sequential Unique Number
Segment Number

Route Variation:
 P: Variation on Original Preferred Route
 A: Variation on Original Alternate Route
 B: Variation on Both

4B-05

SL1 Appendix A Map Index

0 0.75 1.5 3 4.5 Miles

0 2 4 Kilometers

For detailed maps refer to Appendix A
Refer to Appendix B for information on data sources

Project Substations	Pipeline	Non-ROW Sharing Field Line
Proposed Substation Areas	County or Township Road	Cross-Country
Preferred	Major Highway	
Alternate	Municipal Street	
County Boundaries	Railroad	
Airport	Transmission	
Scenic Byway		

Map 7.6-18
 Transportation Map
 Segment 6, Lake Marion Substation
 to Hampton Substation Area

Source: Refer to Appendix B for information on data sources

7.6.4.10 Recreation—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

The proposed Project has the potential to impact recreational resources in areas where pole placement may result in temporary construction related disturbances or even permanent impacts. In some areas, viewshed impacts from the transmission line may affect recreators. In order to capture the range of potential impacts to recreation in the region, recreational features within various distances of the line have been evaluated.

Within this segment, no impacts to SNAs and state and federal parks are expected. SNAs and state and federal parks are beyond the range where any direct impacts may occur and all of these features are outside the range where viewshed effects are possible.

Potential recreational resource impacts for each of the proposed alternatives for the route segment from Helena Substation to Lake Marion Substation (shown in Map 7.6-19 and Appendix A) are summarized in Figures 7.6.4.10-1 to 7.6.4.10-3.

Figure 7.6.4.10-1 compares the proximity to WMAs under each route alternative in this segment. WMAs play a large role in Minnesota’s outdoor recreation system as they offer opportunities for hunting.

Impacts to WMAs under the various route alternatives are discussed further in Section 7.6.4.12.

Figure 7.6.4.10-2 compares the proximity to a variety of recreational resources including local

parcs and recreation areas and areas used for sporting activities under each route alternative in this segment.

With the exception of route alternative 6P-01, the Preferred Route and associated route alternatives tend to have fewer recreational features nearby.

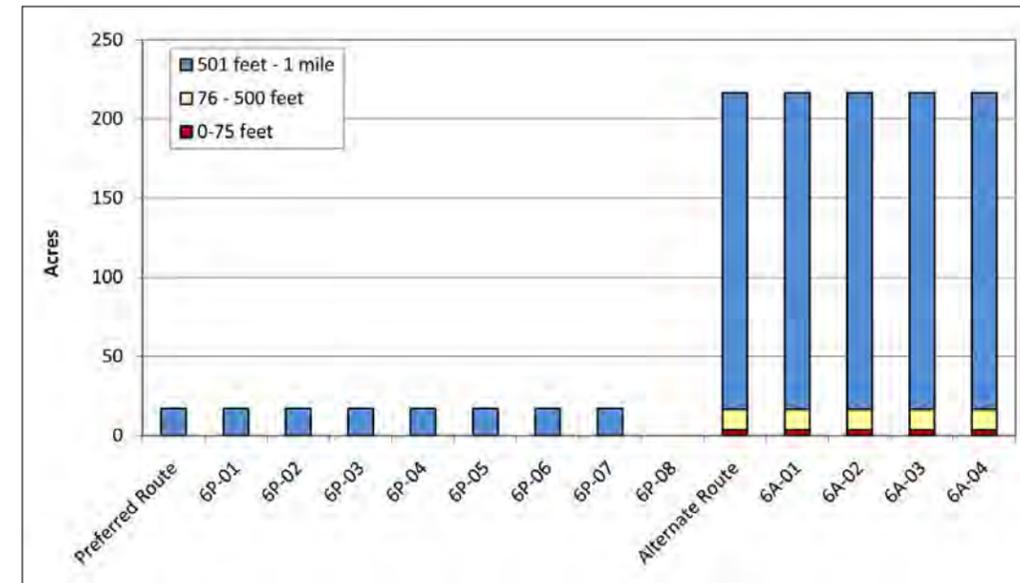
Minnesota’s state, county, and local trail systems offer recreational opportunities ranging from snowmobiling to cycling. Figure 7.6.4.10-3 compares potential snowmobile trail impacts across the various route alternatives in this route segment. Project impacts to trail systems may range from temporary construction impacts on trails immediately adjacent to the line to visual impacts for recreators in areas where the line is visible from the trail.

Impacts to snowmobile trails in terms of the total number of crossings tend to be lower under the route alternatives based on the Preferred Route. The total number of miles of trail within 500 feet of the centerline, are often higher on the Preferred Route and associated route alternatives. However, the Preferred Route and route alternative 6P-02 have the lowest number of miles of trail within 500 feet of the centerline.

Mitigation

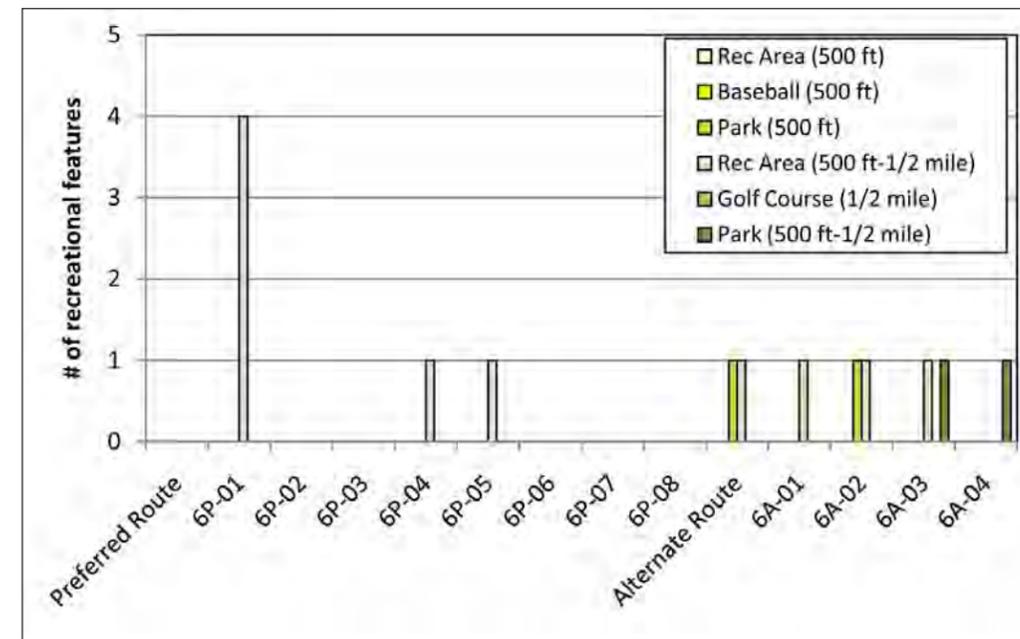
General mitigation measures to minimize impacts to recreation are discussed in Section 6.10. Because the impacts to recreational areas are primarily visual, impacts to recreational resources can be managed through choosing a route that minimizes the proximity of the line to recreational resources. Each proposed route impacts different recreational resources to a different degree, so minimizing impacts to certain resources may involve a tradeoff that results in greater impacts

Figure 7.6.4.10-1. WMAs along each route alternative



Source: DNR, Division of Fish and Wildlife 02/14/2006

Figure 7.6.4.10-2. Recreational resource areas along each route alternative

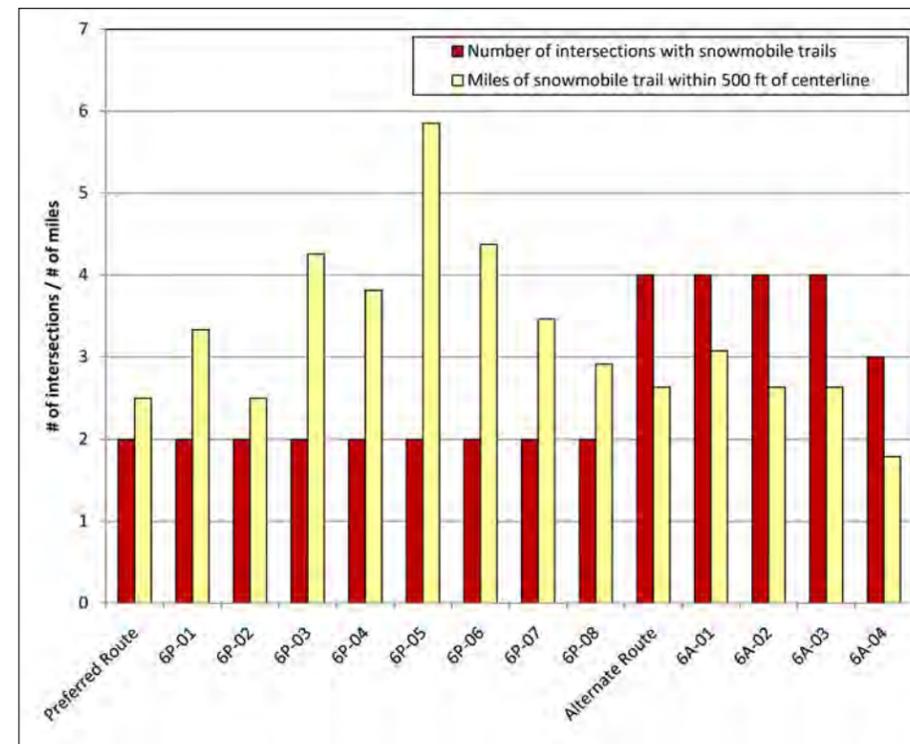


Source: Field survey observations, comments from project public meetings and aerial photograph interpretation by HDR. 12/29/08

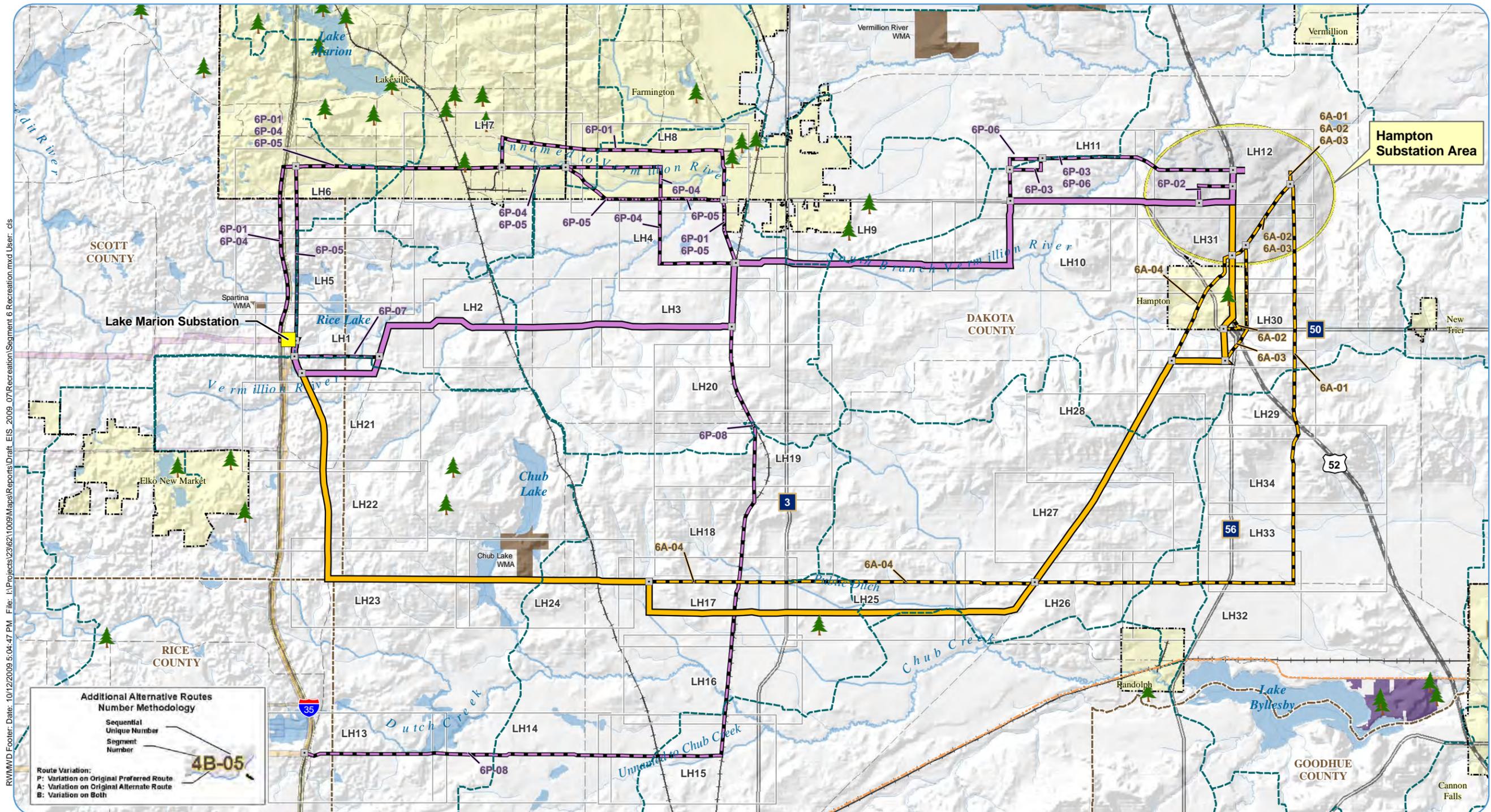
Environmental Impacts

to other recreational resources. Within this route segment, route alternative 6P-08 has no WMA areas within the route width. It should be noted that for WMAs that are directly adjacent to the proposed routes, placing poles so that they span WMA areas can help to reduce temporary and permanent impacts related to construction and pole placement. Route alternatives 6P-02, 6P-03, 6P-06, 6P-07, and 6P-08 have no apparent impacts to parks and sporting areas. Route alternatives 6A-01, 6P-02, and the Preferred Route appear to have the fewest potential impacts to snowmobile trails.

Figure 7.6.4.10-3. Snowmobile trails along each route alternative



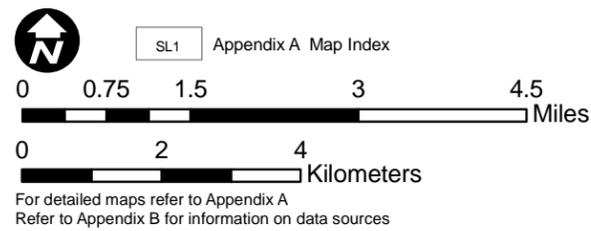
Source: DNR, Division of Trails and Waterways 06/01/2003



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Lake Marion Substation to Hampton Substation Segment

Section 7.6



- | | | | |
|-------------------------------|---------------------------|-------------------------|-----------------------------|
| Original Alignments | Project Substations | Regional Existing Trail | Regional Park |
| Preferred Route | Proposed Substation Areas | Regional Planned Trail | Scientific and Natural Area |
| Alternate Route | Preferred | Regional Proposed Trail | State Park |
| Additional Alternative Routes | Alternate | State Existing Trail | State Recreation Area |
| Variation on Preferred Route | County Boundaries | Snowmobile Trail | State Wayside |
| Variation on Alternate Route | Recreation Area | Scenic Byway | Wildlife Management Area |
| Variation on Both | | | Wildlife Refuge |

Map 7.6-19
Recreation Map
Segment 6, Lake Marion Substation
to Hampton Substation Area

Source: Refer to Appendix B for information on data sources

7.6.4.11 Water Resources—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation Segment

A variety of data sources (see Appendix B) were used to identify water resources within the 150-foot ROW and 1,000-foot route width of each route alternative within the Lake Marion Substation to Hampton Substation segment. Map 7.6-20 and Appendix A identify the water resources within the vicinity of each route alternative; see Map 7.6-21 for wetlands present beyond the 150-foot ROW of each route alternative. Several rivers, streams, and ditches (collectively referred to “watercourses” below) would be crossed by the route alternatives within this segment. There are no major rivers running through this segment (Map 7.6-20, Appendix A).

Figure 7.6.4.11-1 summarizes the number of watercourse and PWI crossings that would occur within each route alternative in this segment. Route alternative 6P-05 has the fewest watercourse crossings within the 150-foot ROW; however the Alternate Route and associated route alternatives have the fewest PWI watercourse crossings (Figure 7.6.4.11-1). The Preferred Route and associated route alternatives have trout stream crossings within their 150-foot ROW (Figure 7.6.4.11-1). With the exception of 6P-04 and 6P-07, each of the route alternatives within this segment has between one and two PWI wetlands within their 150-foot ROW (Figure 7.6.4.11-1). There are no PWI basins or Wild and Scenic Rivers located within the 150-foot ROW or 1,000-foot route width of any of the route alternatives within this segment.

Wetlands within the vicinity of the route alternatives within this segment consist mostly of small scattered freshwater emergent wetlands,

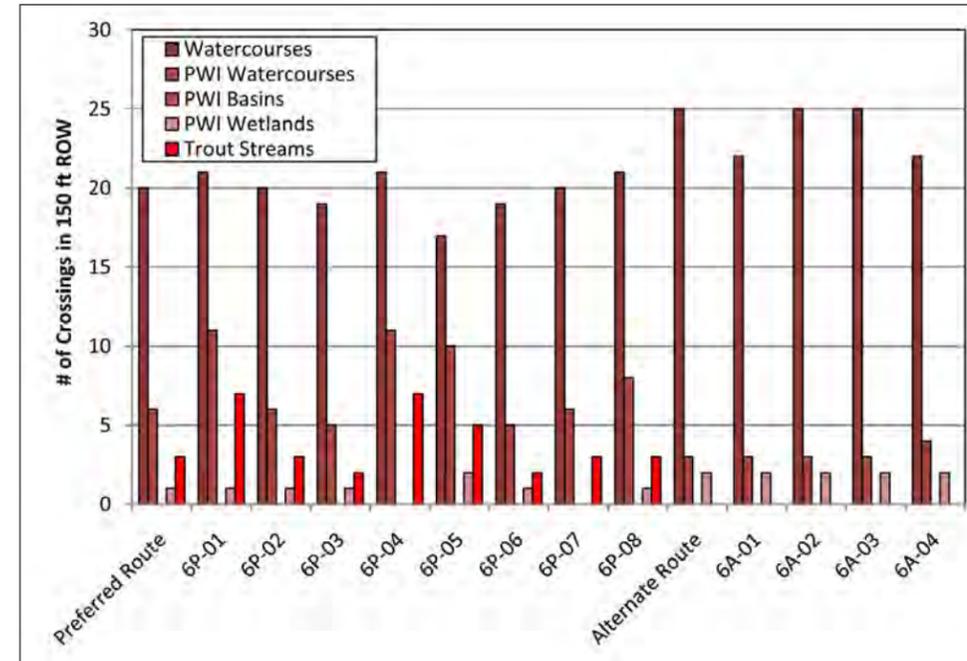
with a few freshwater ponds, riverine wetlands, and forested and shrub dominated wetlands also present. Figure 7.6.4.11-2 summarizes the total acres of wetland and forested wetland that are located within the 150-foot ROW of each route alternative within this segment. The 6A-04 route alternative has substantially fewer total acres of wetland within the 150-foot ROW and 1,000-foot route width relative to all of the other route alternatives within this segment (Figure 7.6.4.11-2, Table 7.6.4.11-1). In addition, this route alternative has the fewest acres of forested wetland within the 150-foot ROW (Figure 7.6.4.11-2).

Although wetlands would be spanned to the extent possible, there are wetlands in each of the route alternatives within this segment, except 6A-04, that are wider than 1,000 feet (Table 7.6.4.11-1) and may require placement of one or more poles within them. However, following detailed route planning, it is possible that some of these wetlands could be spanned or avoided.

Mitigation

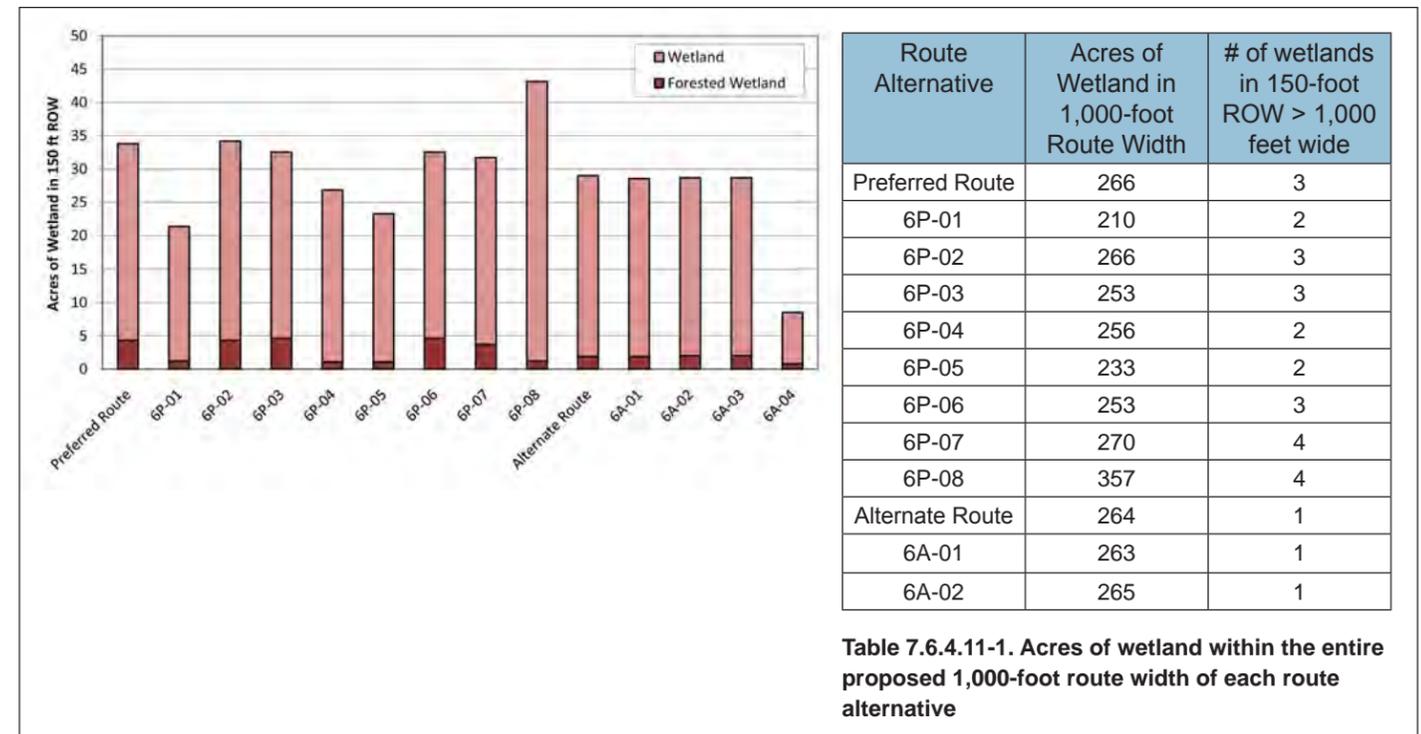
General mitigation measures that would be employed to minimize impacts to water resources are discussed in Section 6.11. Within this route segment, impacts to water resources can be managed by choosing a route alternative that minimizes the proximity of the line to watercourses, lakes, and wetlands. Because all watercourses and lakes would be spanned, no structures would be placed within these features and no direct impacts to watercourses and lakes are anticipated. Potential indirect impacts to these resources, such as increases in turbidity, may be minimized through use of BMPs and by choosing a route alternative with few watercourse and PWI crossings. The

Figure 7.6.4.11-1. Number of watercourse, PWI, and trout stream crossings within the proposed 150-foot ROW of each route alternative



Source: DNR, Division of Waters
07/31/2008

Figure 7.6.4.11-2. Acres of wetland and forested wetland within the proposed 150-foot ROW of each route alternative



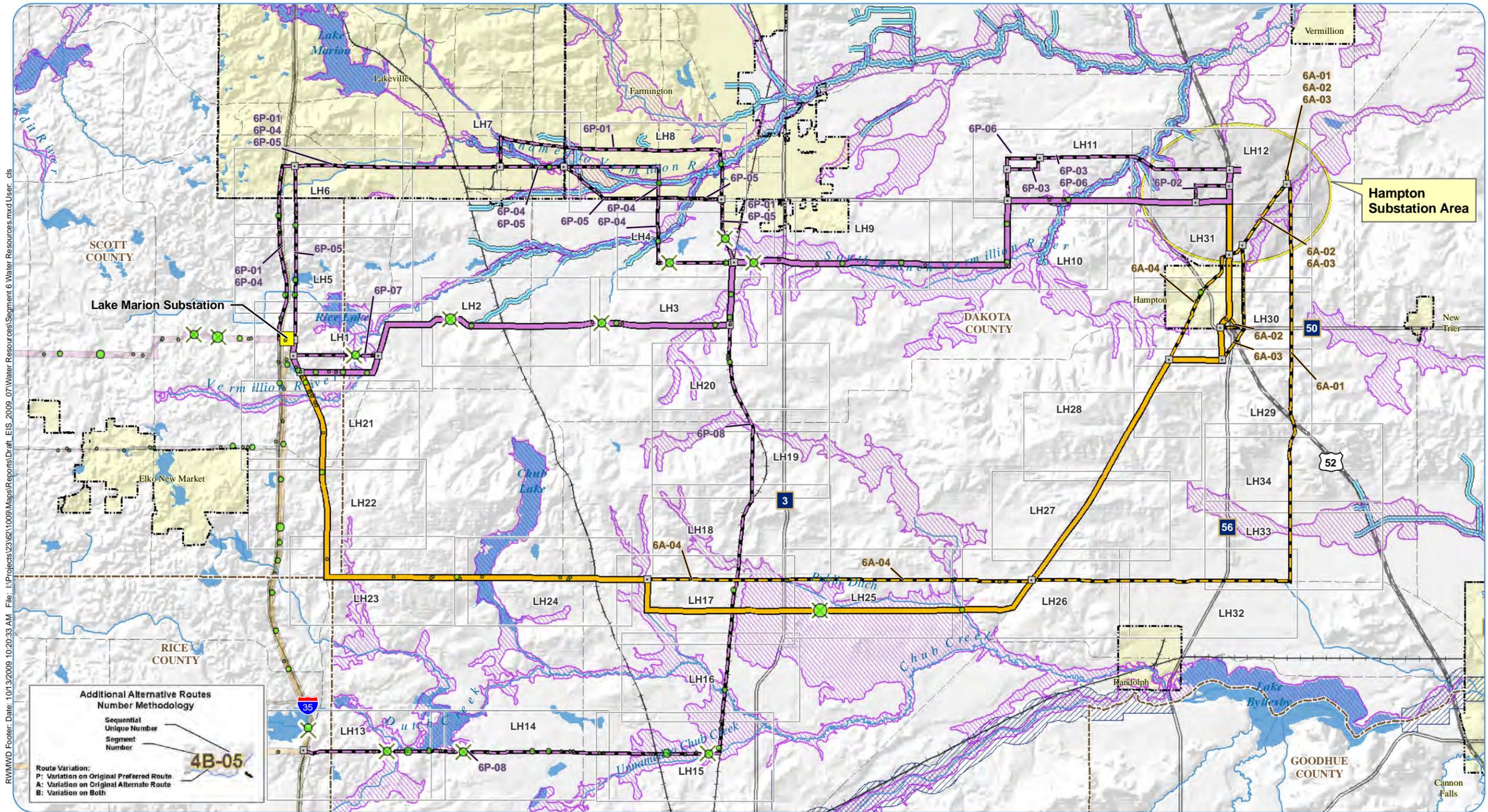
Route Alternative	Acres of Wetland in 1,000-foot Route Width	# of wetlands in 150-foot ROW > 1,000 feet wide
Preferred Route	266	3
6P-01	210	2
6P-02	266	3
6P-03	253	3
6P-04	256	2
6P-05	233	2
6P-06	253	3
6P-07	270	4
6P-08	357	4
Alternate Route	264	1
6A-01	263	1
6A-02	265	1

Table 7.6.4.11-1. Acres of wetland within the entire proposed 1,000-foot route width of each route alternative

Source: U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation

Preferred Route and associated route alternatives have the fewest watercourse crossings but have more PWI watercourse crossings relative to the

Alternate Route and associated route alternatives. In addition, the Preferred Route and associated route alternatives all have at least two trout



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Lake Marion Substation to Hampton Substation Segment Section 7.6

 For detailed maps refer to Appendix A Refer to Appendix B for information on data sources	SL1 Appendix A Map Index	Original Alignments Preferred Route Alternate Route Additional Alternative Routes Variation on Preferred Route Variation on Alternate Route Variation on Both	Project Substations Proposed Substation Areas Preferred Alternate County Boundaries Q3 FEMA Floodplain Trout Streams Wild and Scenic Rivers	Wetland Crossings > 1,000 Feet Wetland Area (acres) within 150-foot ROW 0.0 - 0.5 0.6 - 2.5 2.6 - 5.0 5.1 - 10.0 10.1 - 20.4	Designated Wildlife Lakes Public Waters Inventory Basins Public Water Inventory Watercourse
	Additional Alternative Routes Number Methodology Sequential Unique Number Segment Number Route Variation: P: Variation on Original Preferred Route A: Variation on Original Alternate Route B: Variation on Both	4B-05	6P-01, 6P-04, 6P-05, 6P-06, 6P-03, 6P-02, 6P-04, 6P-05, 6P-07, 6P-08, 6A-01, 6A-02, 6A-03, 6A-04	LH1, LH2, LH3, LH4, LH5, LH6, LH7, LH8, LH9, LH10, LH11, LH12, LH13, LH14, LH15, LH16, LH17, LH18, LH19, LH20, LH21, LH22, LH23, LH24, LH25, LH26, LH27, LH28, LH29, LH30, LH31, LH32, LH33, LH34	Lake Marion, Rice Lake, Vermillion River, Chub Lake, Chub Creek, Lake Bylesby

Map 7.6-20
 Water Resources Map
 Segment 6, Lake Marion Substation to Hampton Substation Area

Source: Refer to Appendix B for information on data sources

stream crossings while the Alternate Route and associated route alternatives do not have any trout stream crossings.

Temporary impacts to wetlands may occur if they need to be crossed during construction. Utilizing BMPs and choosing route alternative 6A-04, which has the least acres of wetland within the 150-foot ROW and 1,000-foot route width would minimize temporary impacts to wetlands. Permanent impacts to wetlands may occur if structures need to be placed within wetland boundaries; choosing route alternative 6A-04, which does not have any wetlands wider than 1,000 feet within the 150-foot ROW, would minimize these impacts. Permanent impacts to wetlands may also occur if the wetlands within the 150-foot ROW are currently forested. Forested wetlands may undergo a conversion to non-forested wetlands because vegetation maintenance procedures under transmission lines may prohibit trees from establishing. Choosing route alternative 6A-04, which has the fewest acres of forested wetland within the 150-foot ROW, would minimize these impacts.

7.6.4.12 Flora and Fauna—Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

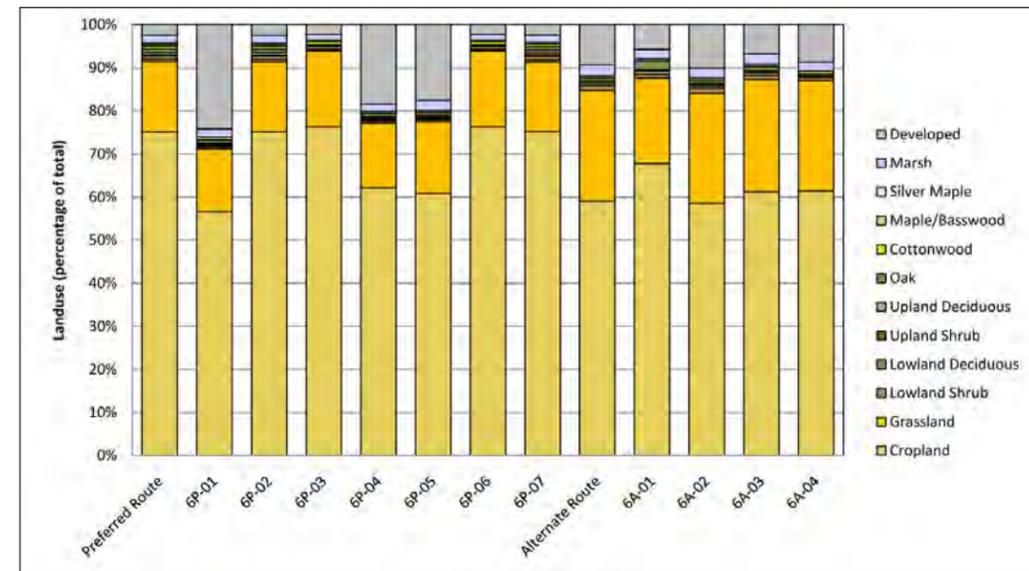
Flora

Vegetation communities on this segment were evaluated using GAP Level 3 data and DNR NHIS data (Maps 7.6-17 and 7.6-22). The GAP database provides information on general vegetative cover; details on GAP data are provided in Section 6.12. The NHIS database identifies unique and/or native plant community types. Native plant community types are discussed in detail in Section 6.13.

Figure 7.6.4.12-1 and Map 7.6-17 summarize the GAP vegetation data within the 150-foot ROW of each route alternative within this segment. There is little variation in vegetation cover between the route alternatives. Cropland is the dominant vegetation type across all of the route alternatives within this segment, with grasslands representing most of the remaining vegetation cover within each route alternative (Figure 7.6.4.12-1). Grasslands comprise most of the remaining vegetation cover within each route alternative. Other types present include upland shrublands, oak and cottonwood woods, marshes and wet forested areas.

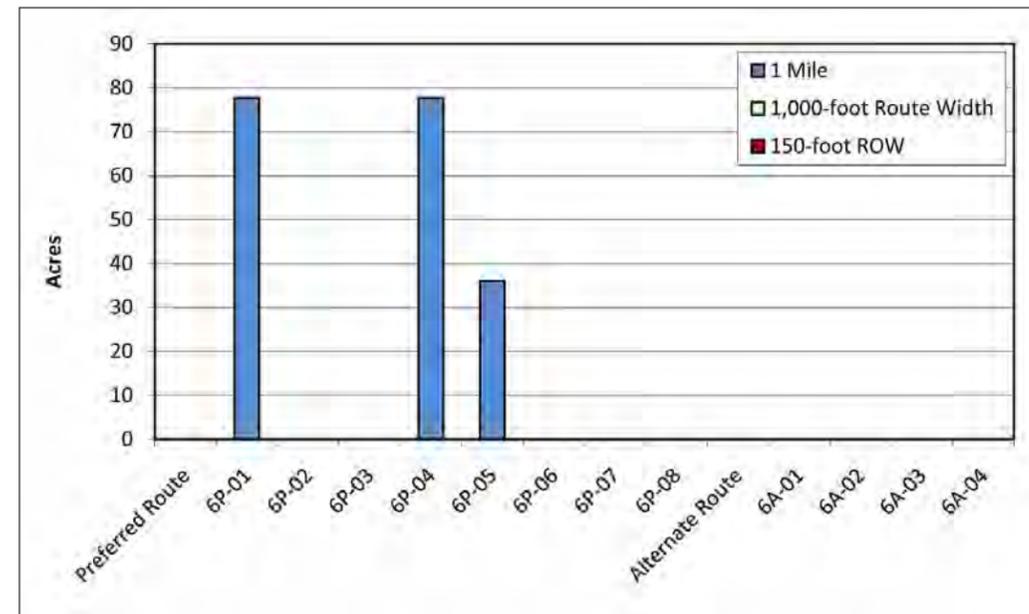
Several DNR-designated unique native plant community types are located within the route alternatives within this segment; these include southern dry hill prairies, southern mesic prairies, and southwestern calcareous fens. The Alternate Route and 1A-01 route alternative have a southern dry hill prairie community and two calcareous fens within one mile of their centerline. All route alternatives within this segment except 1P-02 have at least one southern Mesic Prairie within one mile of their centerline.

Figure 7.6.4.12-1. Summary of GAP vegetation data within 150-foot ROW for each route alternative



Source: DNR, Department of Forestry 06/06/2002

Figure 7.6.4.12-2. Acres of WPAs within one mile, the 1,000-foot route width, and within 150-foot ROW of each route alternative



Source: United States Fish and Wildlife Service 05/11/2009

See Appendix D for details on the number of occurrences of these communities within one mile of the centerline and within the 150-foot ROW of each route alternative.

Fauna

The presence of wildlife species and wildlife habitat on this segment was evaluated using GAP

Level 3 data and information on WMAs, WPAs, USFWS National Wildlife Refuges (Map 7.6-21 and Appendix A). GAP information provides an overview of the vegetation communities present, and hence the availability of forage, cover and reproductive habitats for various wildlife species (see Section 6.12 for further details on GAP data).

WMA, WPA, and data pinpoint locations where wildlife species may be more prevalent and/or diverse. WMAs, WPAs, and wildlife refuges within the 150-foot ROW, the 1,000-foot route width and within one mile of the routes in this segment were included in the evaluation. WMAs within or adjacent to the ROW are discussed in Section 7.6.4.10.

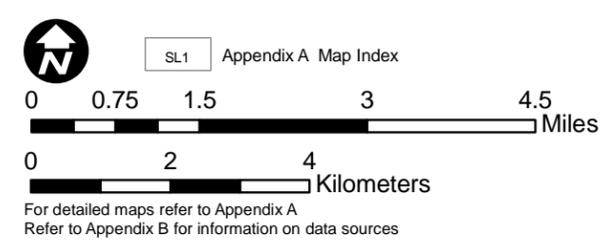
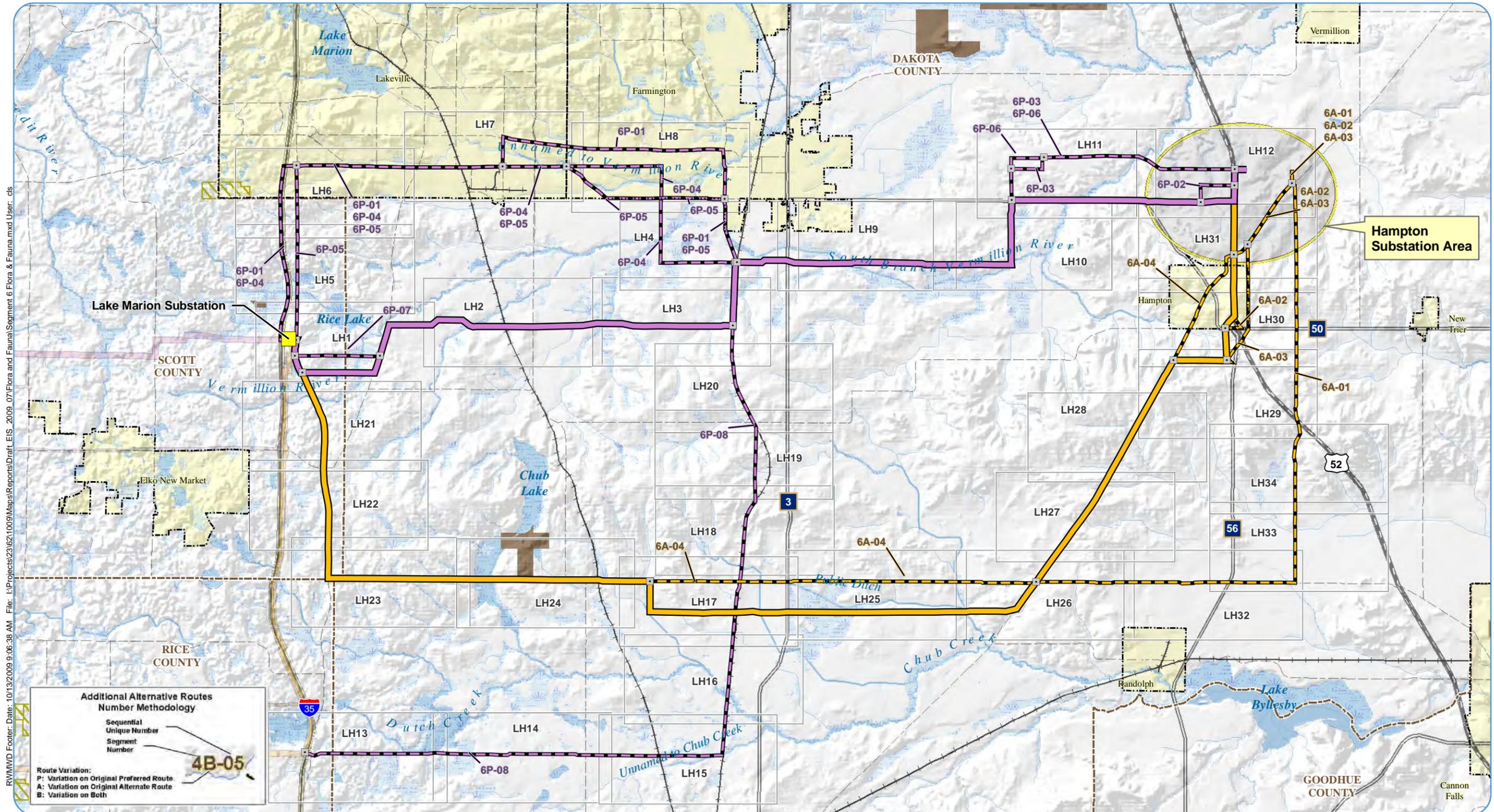
There are no wildlife refuges within one mile of any route alternative within this segment. There are no WPA or WMA areas within the 150-foot ROW or 1000-foot route width of any route alternatives associated with the original Alternate route. Within this segment, route alternatives 6P-01 and 6P-04 have the highest acreage of WPAs and WMAs within one mile. Habitat availability for waterfowl and wildlife that utilize wet habitats is relatively low in this segment compared to other segments.

Mitigation

General temporary and permanent impacts to vegetation and wildlife resources for this segment are described in Section 6.12. Habitats where native prairie remnants, other unique plant communities, and rock outcrops have been recorded or are likely to occur would be spanned as feasible.

Construction impacts to most vegetation cover types would be mitigated with seeding of disturbed areas with native plant species, unless the area is to be returned to agricultural use. Removal of trees would be minimized; however, in order to safely operate the transmission line, trees removed from beneath or immediately adjacent to the line cannot be replaced.

Avian collisions with the transmission line may also occur in this segment. The applicant would work with DNR and USFWS to identify areas that may require marking transmission line shield wires, bird flight diverters, or using alternate structures to reduce the likelihood of collisions.



- Original Alignments
- Preferred Route
- Alternate Route
- Additional Alternative Routes
- Variation on Preferred Route
- Variation on Alternate Route
- Variation on Both
- Project Substations
- Proposed Substation Areas
- Preferred
- Alternate
- County Boundaries
- Fish Technology Center
- Fisheries Research Station
- National Fish Hatchery
- National Wildlife Refuge
- Waterfowl Production Area
- Scientific and Natural Area
- Wildlife Management Area
- Wildlife Refuge
- Wetland (NWI)

Map 7.6-21
Flora & Fauna Map
Segment 6, Lake Marion Substation
to Hampton Substation Area

Source: Refer to Appendix B for information on data sources

7.6.4.13 Rare and Unique Resources— Analysis of Segment Alternatives for the Lake Marion Substation to Hampton Substation

Rare and unique resources were identified within one mile of each route alternative within the Lake Marion Substation to the Hampton Substation segment using the DNR NHIS, DNR state-designated railroad prairies, and MCBS databases (see Appendix B). The following discussions focus on federal and state protected species and rare and unique communities located within one mile of each route alternative. Data on rare communities, animal assemblages, and MCBS sites are summarized in this section; however, complete data sets for each route alternative are available in Appendix D. There is no legal protection for state special concern and non-status species within the State of Minnesota. These data are outside the focus of this discussion and are available in Appendix D. In addition, waterbodies and watercourses would be spanned; therefore it is anticipated that impacts to threatened and endangered aquatic species would be avoided. Because of this, aquatic species are mentioned but are not the focus of discussion.

Table 7.6.4.13-1 and Map 7.6-22 summarize the rare and unique resources documented within one mile of the route alternatives within this segment (see Appendix A for more detailed maps). However, in order to protect rare resources from exploitation or destruction, Map 7.6-22 and Appendix A do not indicate the names of species or communities identified within the NHIS database.

Four state-threatened species have been documented within one mile of various route alternatives within this segment; these include kitten-tails (*Besseyia bullii*), valerian (*Valeriana edulis* ssp. *ciliata*), the Blanding’s turtle (*Emydoidea blandingii*), and the loggerhead shrike (*Lanius ludovicianus*). With the exception of route alternatives 6P-01, 6P-04, 6P-05, and 6A-04, which only have one listed species (loggerhead shrike) documented within one mile of them, all other route alternatives have at least two listed species documented within one mile of them (Table 7.6.4.13-1).

Kitten-tails is a vascular plant that inhabits oak savannas and dry prairies along bluffs and terraces of the Minnesota River valley (DNR

2009). Valerian is a vascular plant that inhabits a variety of calcareous wetlands, including calcareous fens, wet meadows, and moist prairies (DNR 2009). Blanding’s turtles generally inhabit wetland complexes where there are adjacent sandy uplands for nesting (DNR 2009). The loggerhead shrike is a migratory song bird that inhabits relatively open land with some shrub cover (DNR 2009).

Rare communities and MCBS sites have been documented within one mile of each route alternative within this segment (Table 7.6.4.13, Map 7.6-22; see Appendix D for community types). However, rare communities and MCBS sites are only located within the 150-foot ROW of route alternative 6P-08 and all five alternatives to the Alternate Route (Table 7.6.4.13-1). Route alternative 6P-08 is the only route alternative that has state-designated railroad prairies within one mile of it; one of these prairies is also located within the 150-foot ROW.

Mitigation

General mitigation measures that would be employed to minimize impacts to rare and unique resources are discussed in Section 6.13. See Section 6.12 for a discussion of the measures

that would be utilized to minimize the impacts of avian collisions with transmission lines. Within this route segment, threatened and endangered species are found within one mile of each route alternative. Impacts to kitten-tails would be minimized by spanning or avoiding oak savannas and dry prairies or by choosing the Preferred Route or one of the route alternatives associated with the Preferred Route. Impacts to valerian would be minimized by spanning or avoiding wetlands or by choosing a route alternative other than 6P-08 or 6A-01. Impacts to Blanding’s turtles would be minimized by spanning or avoiding wetlands and wetland complexes, especially those with adjacent sandy uplands or by choosing a route alternative other than the Preferred Route, 6P-02, 6P-03, 6P-06, or 6P-07. The loggerhead shrike has been documented within one mile of each route alternative; avoiding or spanning open areas with some shrub component would minimize impacts to this species. If the rare species is unavoidable, a Takings Permit from the DNR may be required along with other conditions.

There are MCBS sites and DNR-listed rare natural communities within one mile of each route alternative within this segment. The placement of structures within MCBS and DNR-listed rare natural communities would be avoided or minimized by spanning them to the extent possible. Where structure placement cannot be avoided in these sensitive communities, rare species associated with these habitats could be affected. The Alternate Route and associated route alternatives and the 6P-08 route alternative all have rare communities and MCBS sites within the 150-foot ROW; choosing a route alternative other than these six would minimize impacts to these rare resources.

Table 7.6.4.13-1. Summary of rare and unique resources within one mile of each route alternative

Common Name	Scientific Name	Type	MN Status	U.S. Status	Route Alternatives												
					Preferred	6P-01	6P-02	6P-03	6P-04	6P-05	6P-06	6P-07	6P-08	Alternate	6A-01	6A-02	6A-03
Kitten-tails	<i>Besseyia bullii</i>	Botanical	THR	NONE										X	X	X	X
Valerian	<i>Valeriana edulis</i> ssp. <i>ciliata</i>	Botanical	THR	NONE									X		X		
Blanding’s Turtle	<i>Emydoidea blandingii</i>	Zoological	THR	NONE	X		X	X	X	X	X	X	X	X	X	X	X
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Zoological	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X
Rare Communities		Ecological	na	na	7	6	7	6	7	7	6	7	1/9	1/7	1/8	1/7	1/7
Animal Assemblages		Zoological	na	na	7								2	2	2	2	2
State-Designated Railroad Prairies			na	na									1/4				
MCBS Sites			na	na	5	4	8	5	5	5	5	5	2/11	1/7	2/4	2/7	2/7

Source: Natural Heritage Information System Rare Features Data Copyright 2009 State of Minnesota, Department of Natural Resources

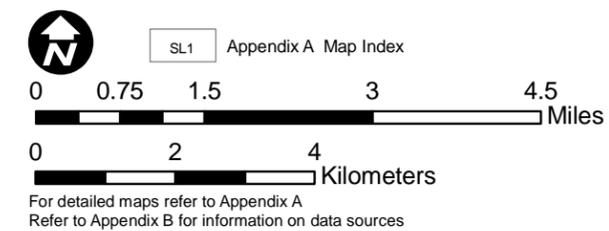
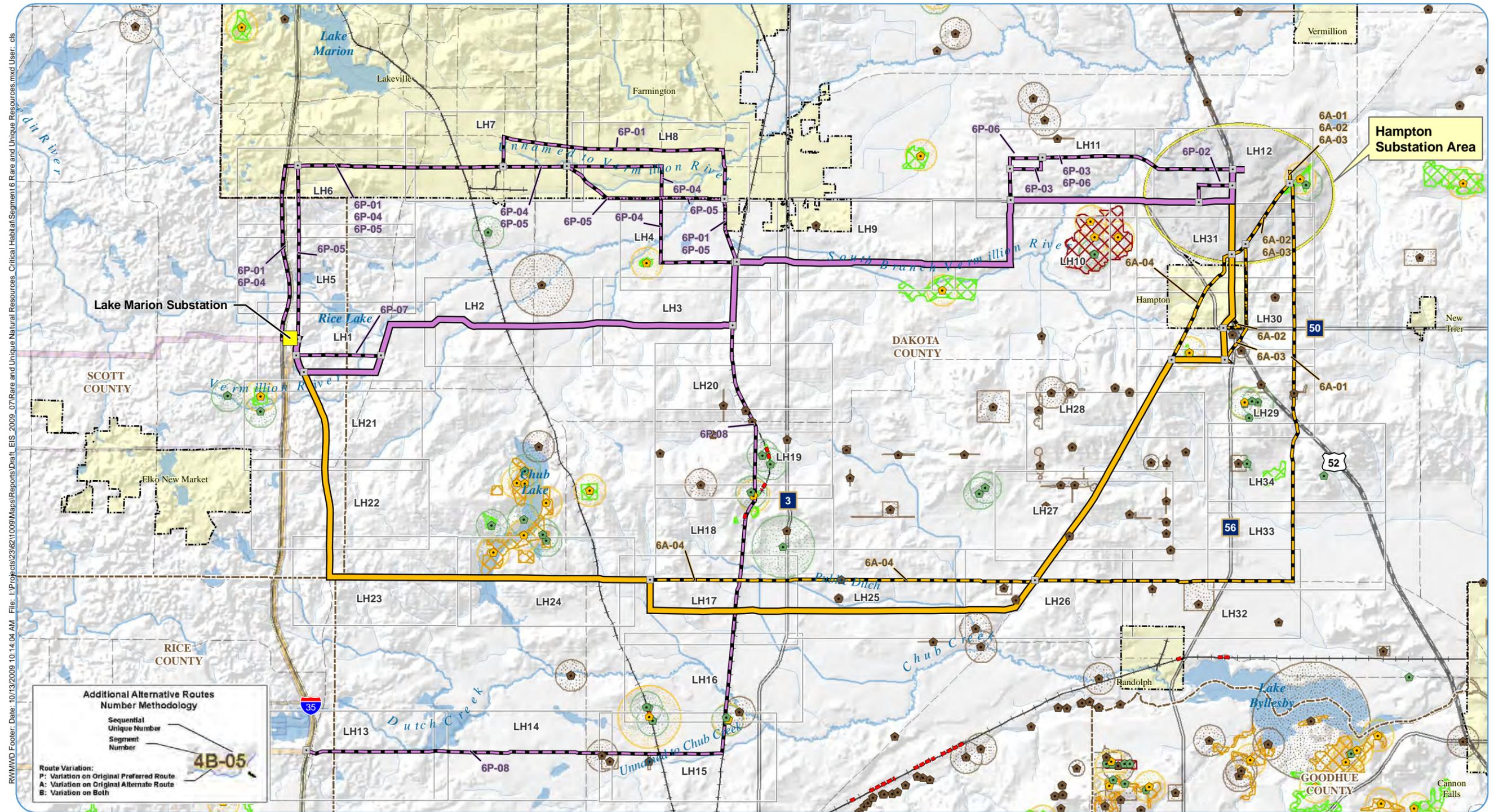
An “X” indicates the presence of that particular species within 1 mile of centerline, while a blank cell indicates that a particular species, community, or site is not within 1 mile of the centerline. Rows in tan indicate non-aquatic state and/or federally-threatened or endangered species and rows in blue indicate aquatic state and/or federally-threatened or endangered species.

Cells in red indicate if and how many of the sites are located within the 150-foot ROW (e.g. 1/2 means that one of two total sites is located in the ROW).

“MCBS” = Minnesota County Biological Survey - data includes sites classified as outstanding, high, and moderate biodiversity significance.

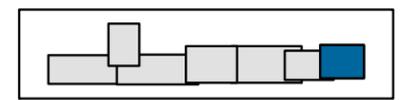
Animal Assemblages includes colonial waterbird nesting sites and/or mussel sampling sites.

“END” = Endangered, “THR” = threatened, “None” = no federal status, “na” = not applicable.



- Original Alignments
- Preferred Route
- Alternate Route
- Additional Alternative Routes
- Variation on Preferred Route
- Variation on Alternate Route
- Variation on Both
- Project Substations
- Proposed Substation Areas
- Preferred
- Alternate
- County Boundaries
- MN DNR Natural Heritage
- Botanical
- Ecological
- Zoological
- Botanical
- Ecological
- Zoological
- State-Designated RR Prairie
- MCBS Biodiversity Significance
- Moderate Significance
- High Significance
- Outstanding Significance

Map 7.6-22
Rare & Unique Resources/Critical Habitat Map
Segment 6, Lake Marion Substation
to Hampton Substation Area



Source: Refer to Appendix B for information on data sources