8.3 Segment 3 – North Rochester Substation to Mississippi River

A total of 31 route alternatives are considered for Segment 3. The applicant's preferred and alternate route alternatives in this segment are labeled 3P and 3A, respectively. Naming of the remaining route alternatives is determined by whether the proposed route alternative is based on the applicant's preferred route, the applicant's alternate route, or a combination of the two, or whether a route alternative involves parallel alignments of portions of Segments 2 and 3.

The following are examples of route alternative names based on the naming convention described above:

- "P Route" 3P-002 – This refers to a route alternative in Segment 3 which is a variation on the applicant's preferred route. It is the second such variation proposed during scoping.
- "A Route" 3A-004 – This is a route alternative in Segment 3 based on the applicant's alternate route. It is the fourth such variation proposed during scoping.
- "B Route" 3B-001 – This is a route alternative in Segment 3 that initially follows the applicant's preferred route before switching to the applicant's alternate route or visa-versa. It is the first such variation proposed during scoping.
- "C Route" 2C3-002-3 – This is a route alternative in Segment 3 that shares a parallel alignment with a Segment 2 route alternative. It is the second such variation proposed during scoping.

Within the A and P routes, there are a few route alternatives with more descriptive names than those mentioned above; these include the following route alternatives: 3P-Zumbro-N, 3P-Zumbro-S, 3P-Kellogg, 3A-Kellogg, and 3A-Crossover. In addition to the applicant's preferred and alternate routes, the applicant presented a Zumbro River crossing at the Zumbro dam. Once the route crosses the Zumbro dam, the 3P-Zumbro-N route alternative would stay north and run along the applicant's alternate route, while the 3P-Zumbro-S route alternative would head south and meet up with the applicant's preferred route. The 3P-Kellogg and 3A-Kellogg route alternatives follow the applicant's preferred and alternate routes, respectively; however, these route alternatives would turn north at the western boundary of the McCarthy Lake Wildlife Management Area (WMA) in order to avoid crossing it. The 3A-Crossover route alternative would follow the applicant's alternate route until approximately 3.3 miles east of the Zumbro River, where the route alternative would then head south and meet up with the applicant's preferred route.

Nine of the 31 Segment 3 route alternatives are "C route alternatives." These route alternatives involve sharing right-of-way (ROW) and creating a parallel alignment between portions of Segments 2 and 3. A portion of each of these route alternatives overlap in the parallel alignment portion (see Figures 2.6-01 and 2.6-02 for an example). Each of the two portions are given a unique name; in this case, 2C3-002-2 for the Segment 2 portion and 2C3-002-3 for the Segment 3 portion. Because of the overlapping portion of Segment 2 with Segment 3 there are environmental impacts that are double counted, once in Section 8.2 and once in Section 8.3. For an accurate comparison of these route alternatives the impacts for the overlapping section would have to be subtracted from the total impact of that combination of Segment 2 and Segment 3. The calculated impacts for the overlapping portions are provided in Appendix J.

Figure 2.6-1 "C routes" showing parallel alignment portion

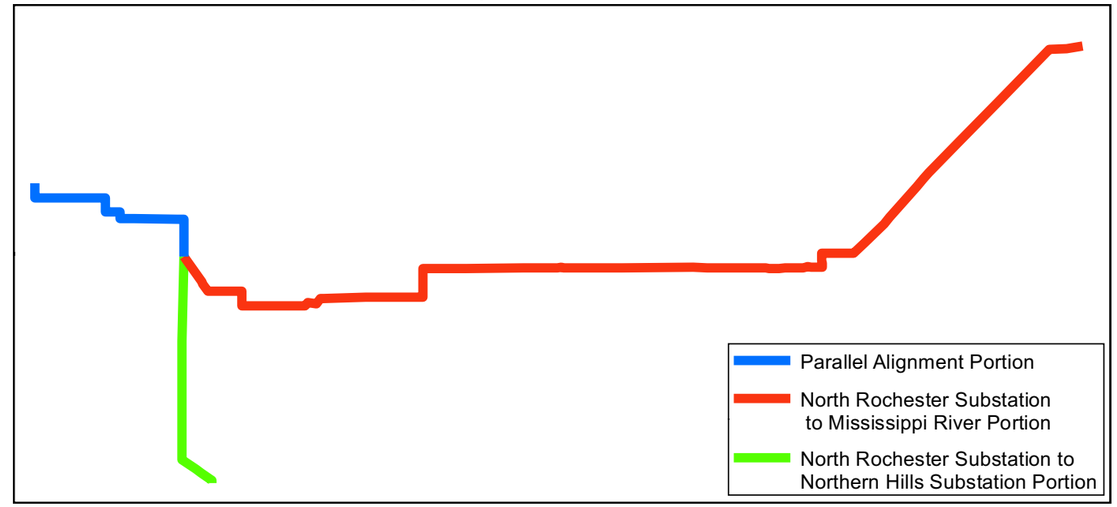
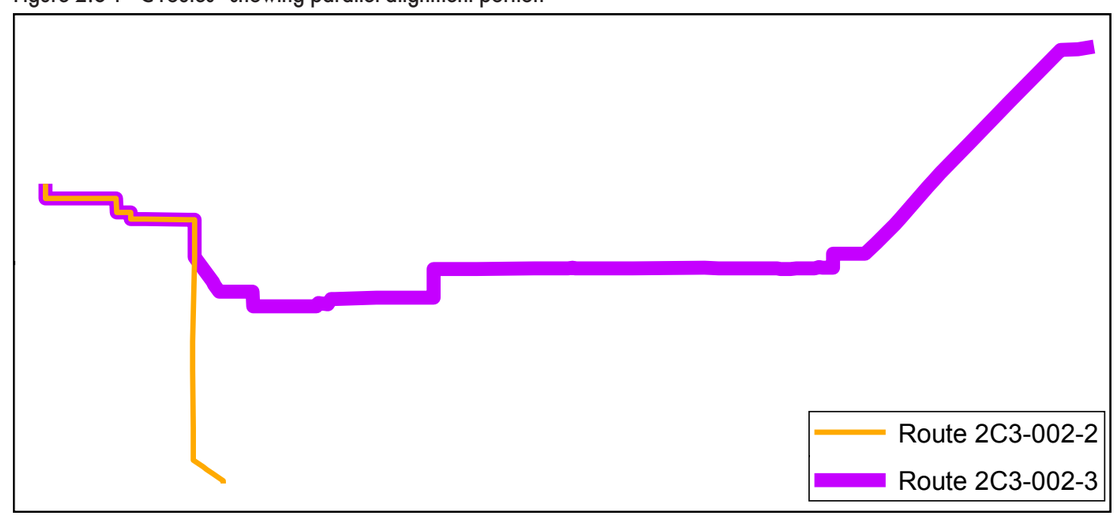
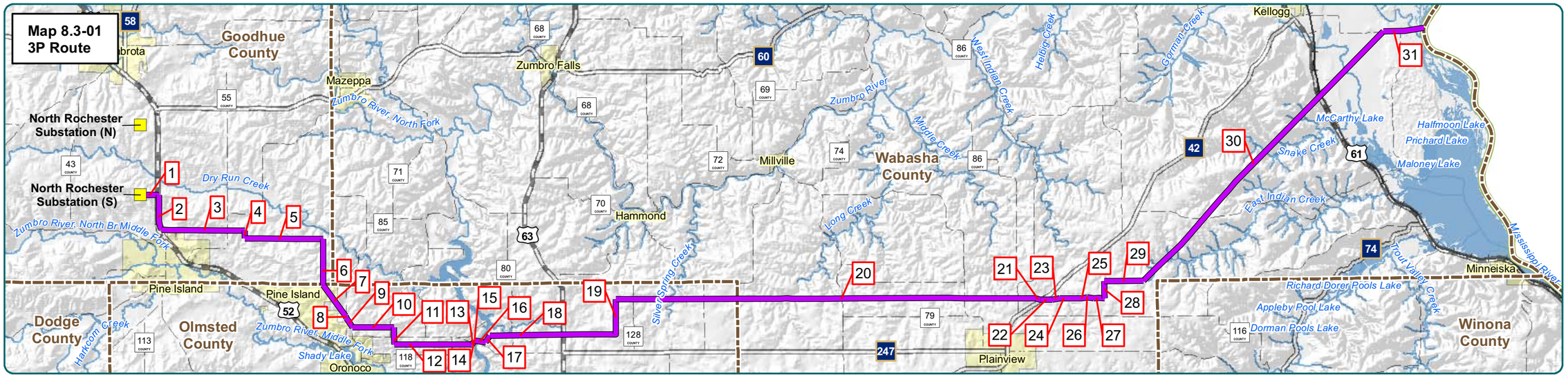
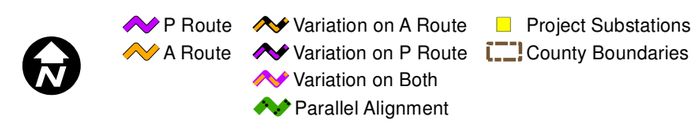


Figure 2.6-1 "C routes" showing parallel alignment portion



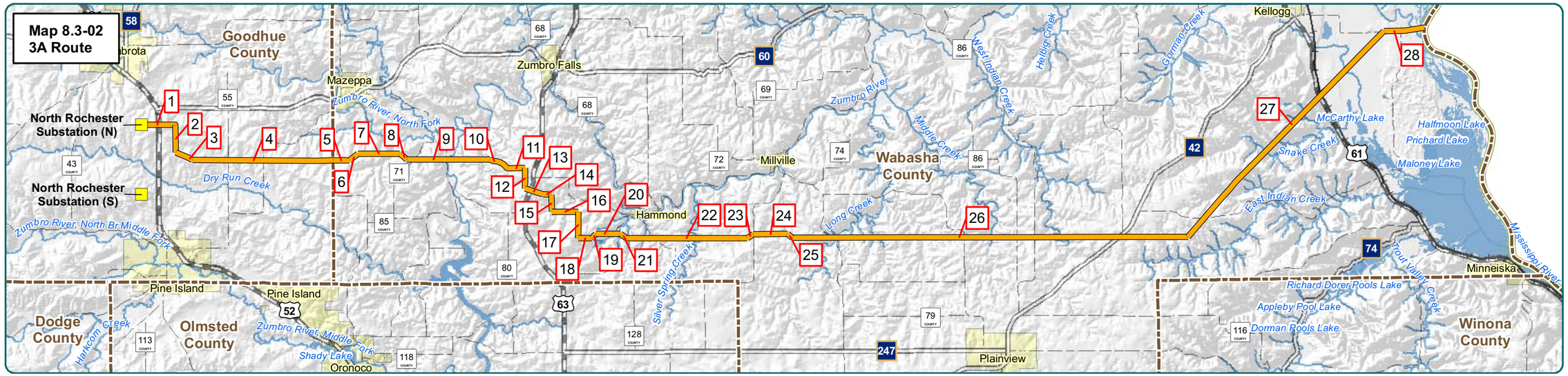
8.3.1 Description of Route Alternatives – North Rochester Substation to Mississippi River





North Rochester to Mississippi River (3P)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the Proposed North Rochester Substation (S) go east following field line	0.52	Field Line
2	Turn south following US Hwy 52	1.00	Major Hwy
3	Turn east following field line/cross-country	2.36	Field Line/Cross-country
4	Turn south following field line	0.23	Field Line
5	Turn east following field line/cross-country	2.23	Field Line/Cross-country
6	Turn south following field line/cross-country to Ash Road NW	1.31	Field Line/Cross-country
7	Turn southeast following Ash Road NW	1.08	Cty or Twp Road
8	Turn south/southeast crossing Ash Road NW	0.07	Cty or Twp Road
9	Turn southeast following CSAH 18	0.31	Cty or Twp Road
10	Turn east cross-country	1.17	Cross-country
11	Turn south cross-country	0.50	Cross-country
12	Turn east following field line/cross-country	2.20	Field Line/Cross-country
13	Turn northeast cross-country to White Bridge Road NE	0.09	Cross-country
14	Continue northeast crossing White Bridge Road NE	0.03	Cty or Twp Road
15	Continue northeast cross-country	0.02	Cross-country
16	Turn east/southeast cross-country (cross the Zumbro River)	0.32	Cross-country
17	Turn northeast cross-country	0.22	Cross-country
18	Turn east following field line/cross-country	3.57	Field Line/Cross-country
19	Turn north following field line	0.99	Field Line
20	Turn east following field line/cross-country	11.94	Field Line/Cross-country
21	Turn east/southeast cross-country	0.14	Cross-country
22	Turn east cross-country	0.34	Cross-country
23	Turn east/northeast following cross-country	0.21	Cross-country
24	Turn east following field line	0.62	Field Line
25	Turn east/northeast cross-country	0.17	Cross-country
26	Turn east/southeast cross-country	0.19	Cross-country
27	Turn east cross-country	0.31	Cross-country
28	Turn north following field line	0.49	Field Line
29	Turn east following field line	1.12	Field Line
30	Turn northeast following transmission line	9.83	Transmission Line
31	Turn east/northeast following transmission line to Mississippi River	1.16	Transmission Line

Environmental Impacts

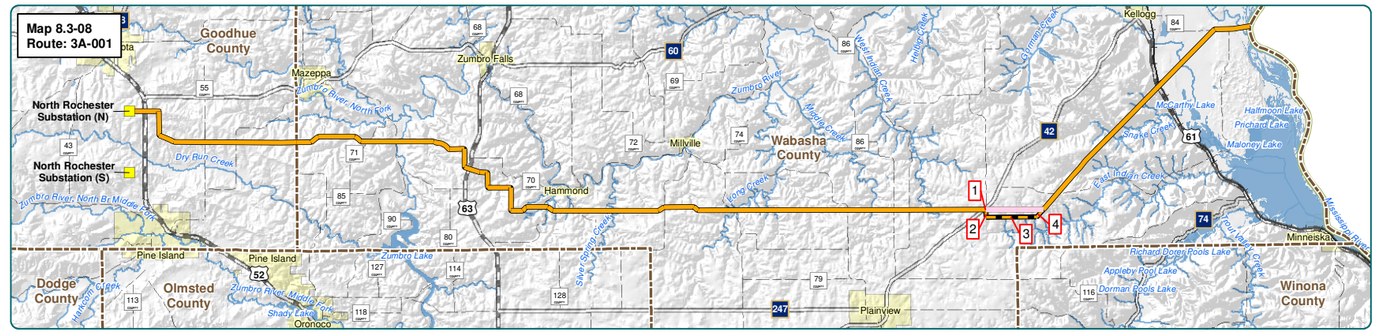


North Rochester to Mississippi River (3A)

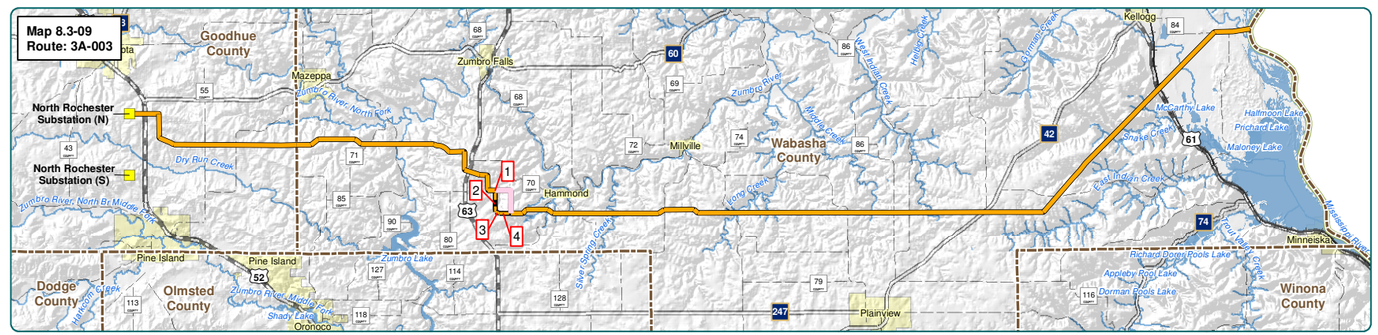
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the Proposed North Rochester Substation (N) go east following field line	0.97	Field Line
2	Turn south following 195th Ave.	0.78	Cty or Twp Road
3	Turn southeast cross-country	0.52	Cross-country
4	Turn east following field line/cross-country to T-156	4.00	Field Line/Cross-country
5	Continue east following T-156	0.47	Cty or Twp Road
6	Turn northeast cross-country	0.30	Cross-country
7	Turn east cross-country	1.19	Cross-country
8	Turn southeast cross-country	0.26	Cross-country
9	Turn east following field line/cross-country	2.35	Field Line/Cross-country
10	Turn east/southeast cross-country	0.58	Cross-country
11	Turn east following field line	0.49	Field Line
12	Turn south following field line/cross-country	0.59	Field Line/Cross-country
13	Turn east/southeast cross-country	0.53	Cross-country
14	Turn east following field line	0.25	Field Line
15	Turn south following field line	0.50	Field Line
16	Turn east cross-country	0.75	Cross-country
17	Turn south following field line/cross-country to T-196	0.75	Field Line/Cross-country
18	Turn east following T-196	0.40	Cty or Twp Road
19	Turn northeast cross-country	0.17	Cross-country
20	Turn east cross-country	0.71	Cross-country
21	Turn southeast cross-country	0.20	Cross-country
22	Turn east following field line/cross-country	3.43	Field Line/Cross-country
23	Turn northeast cross-country	0.21	Cross-country
24	Turn east cross-country	0.98	Cross-country
25	Turn southeast cross-country	0.16	Cross-country
26	Turn east following field line/cross-country	11.25	Field Line/Cross-country
27	Turn northeast following transmission line	8.07	Transmission Line
28	Turn east/northeast following transmission line to Mississippi River	1.16	Transmission Line

P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

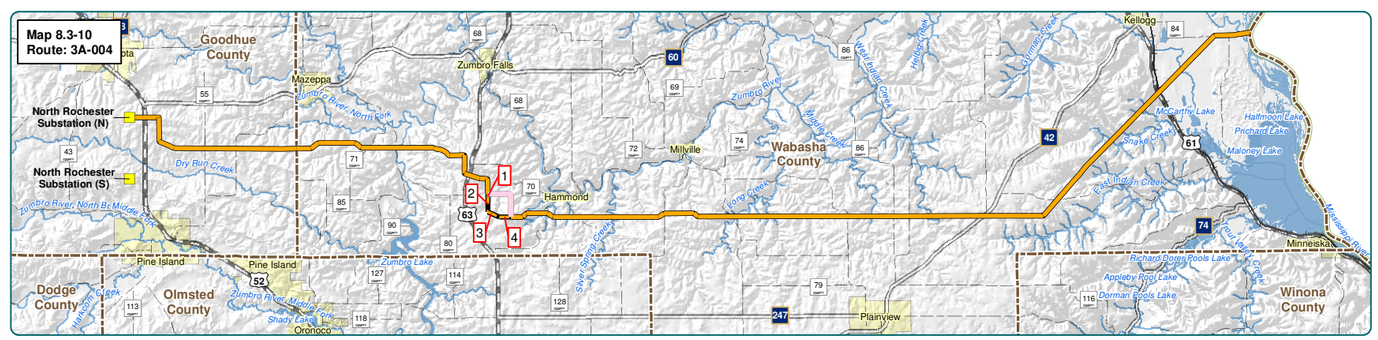
North Rochester to Mississippi River (3A-001)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's alternate route until 0.1 miles south of intersection MN Hwy 42 and CSAH 14		
2	Turn south following CSAH 14	0.25	Cty or Twp Road
3	Turn east cross-country/field lines	1.64	Cross-country/field lines
4	Turn northeast following transmission line	0.33	Returns to the applicant's alternate route - Transmission Line



North Rochester to Mississippi River (3A-003)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's alternate route until 1 mile east of intersection CSAH 7 and US Hwy 63		
2	Turn south following field line	0.69	Field Line
3	Turn southeast cross-country	0.14	Cross-contry
4	Turn east following T-196	0.37	Returns to applicant's alternate route - Cnty or Twp Road

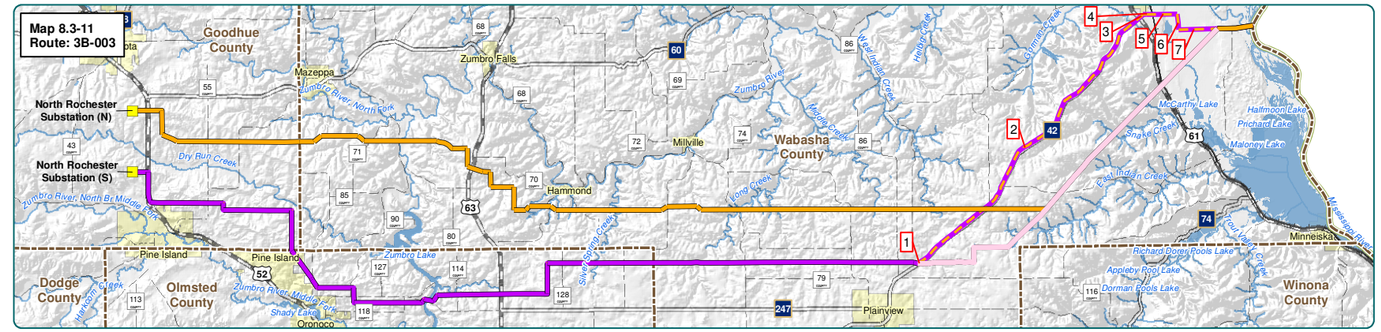


North Rochester to Mississippi River (3A-004)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.75 miles east of intersection CSAH 7 and US Hwy 63		
2	Turn south cross-country	0.58	Cross-country
3	Turn southeast cross-country	0.42	Cross-country
4	Turn east following T-196	0.37	Returns to applicant's alternate route - Cnty or Twp Road

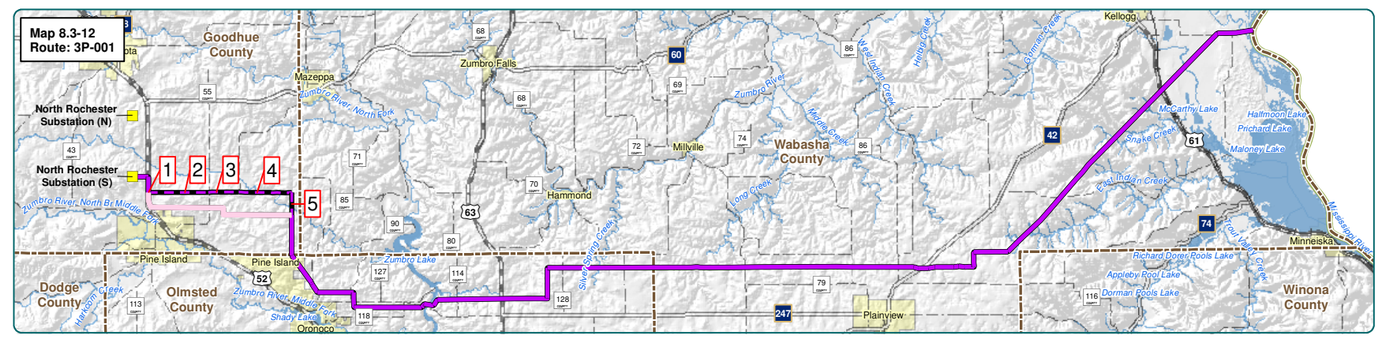


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

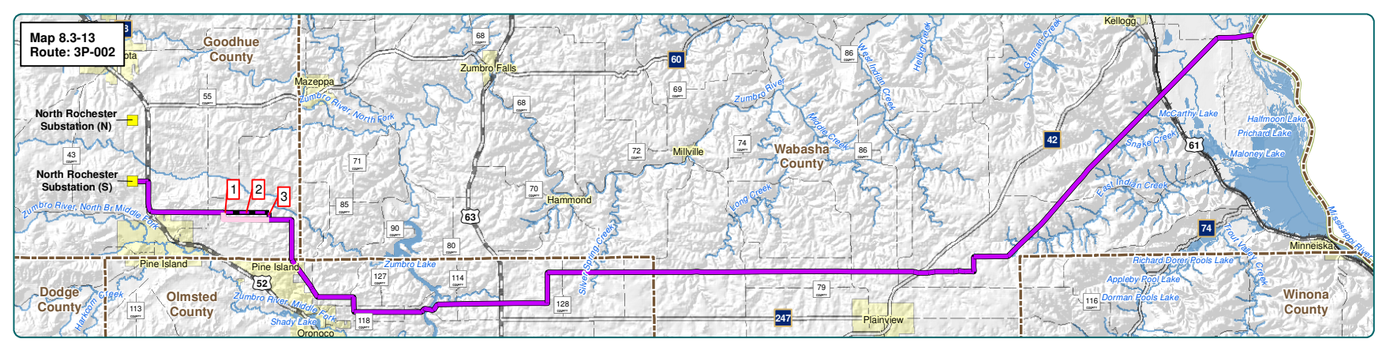
North Rochester to Mississippi River (3B-003)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.45 miles north of CSAH 27 and 0.65 miles east of CSAH 4		
2	Turn northeast following MN Hwy 42	11.06	Major Hwy
3	Continue northeast following CSAH 18	0.16	Cty or Twp Road
4	Turn east cross-country to Cty Road 84	0.11	Cross-country
5	Continue east following Cty Road 84	1.00	Cty or Twp Road
6	Turn south following Cty Road 84	0.50	Cty or Twp Road
7	Turn east following Cty Road 84	1.26	Returns to applicant's alternate route - Cty or Twp Road



North Rochester to Mississippi River (3P-001)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until the intersection of US Hwy 52 and 500th St.		
2	Turn east following 500th St.	1.96	Cty or Twp Road
3	Continue east following CSAH 11	1.00	Cty or Twp Road
4	Continue east following 500th St.	1.72	Cty or Twp Road
5	Continue south cross-country	0.73	Returns to applicant's preferred route - Cross-country

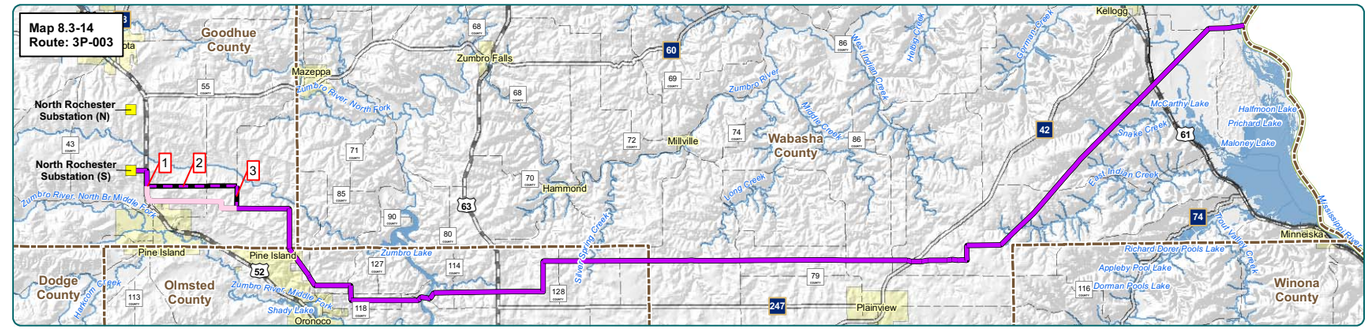


North Rochester to Mississippi River (3P-002)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.5 miles west of 220th Ave. and 0.5 miles north of 510		
2	Turn east cross-country to 230th Ave.	1.49	Cty or Twp Road
3	Turn south following 230th Ave.	0.24	Returns to applicant's preferred route - Cty or Twp Road

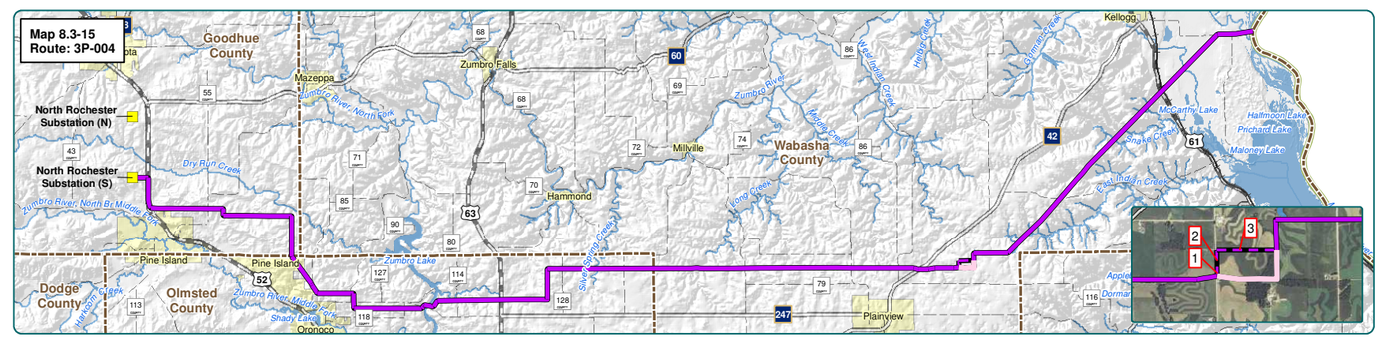


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

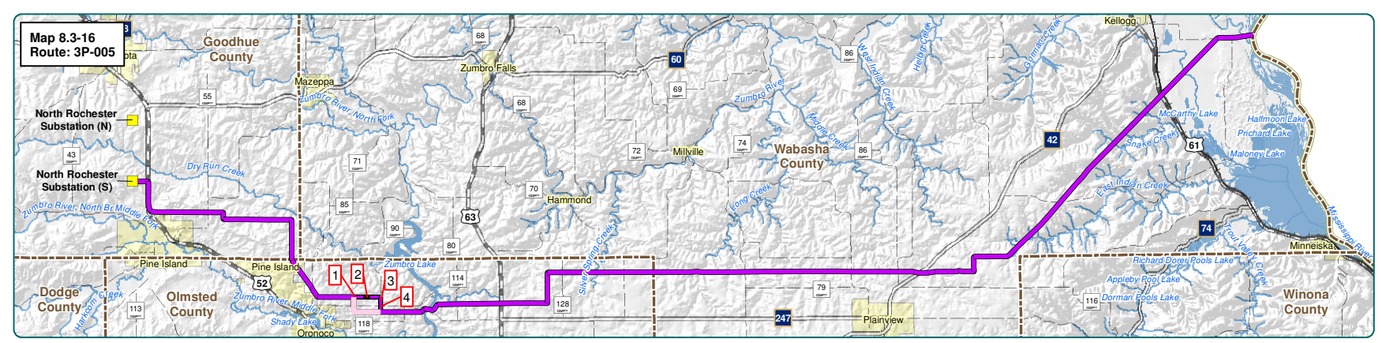
North Rochester to Mississippi River (3P-003)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until the intersection of US Hwy 52 and 500th St.		
2	Turn east following 500th St.	2.95	Cty or Twp Road
3	Turn south following 200th Ave.	0.74	Returns to applicant's preferred route - Cty or Twp Road



North Rochester to Mississippi River (3P-004)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.45 miles south of T-307 and T-203		
2	Turn north following T-203	0.21	Cty or Twp Road
3	Turn east following field line	0.49	Returns to applicant's preferred route - Field Line

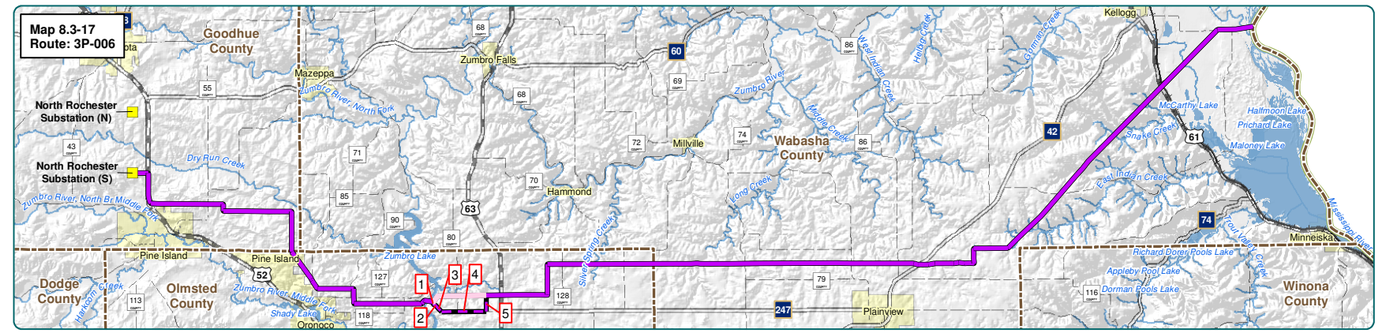


North Rochester to Mississippi River (3P-005)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.1 miles east of Power Dam Road and 0.25 miles north of White Bridge Road NW		
2	Continue east cross-country to 25th Ave NW	0.88	Cross-country
3	Turn south following 25th Ave.	0.25	Cty or Twp Road
4	Continue south following field line	0.24	Returns to applicant's preferred route - Field Line

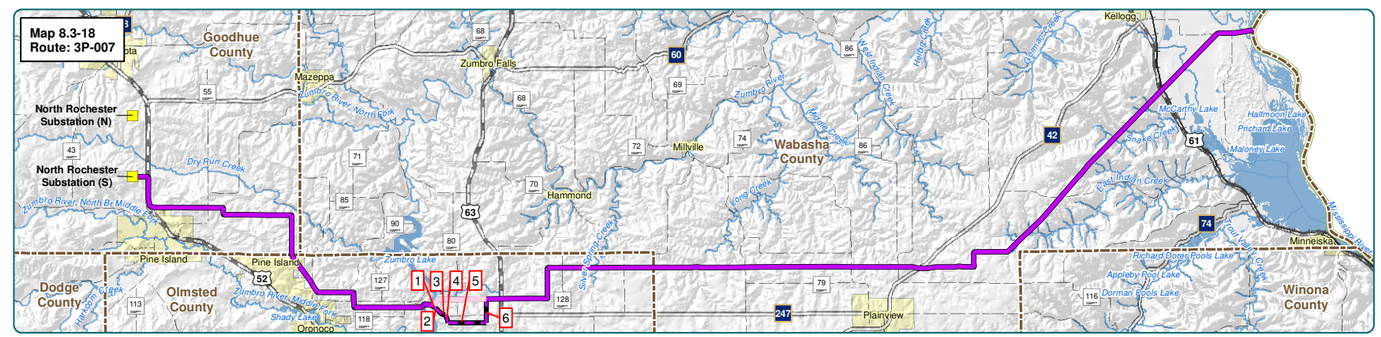


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

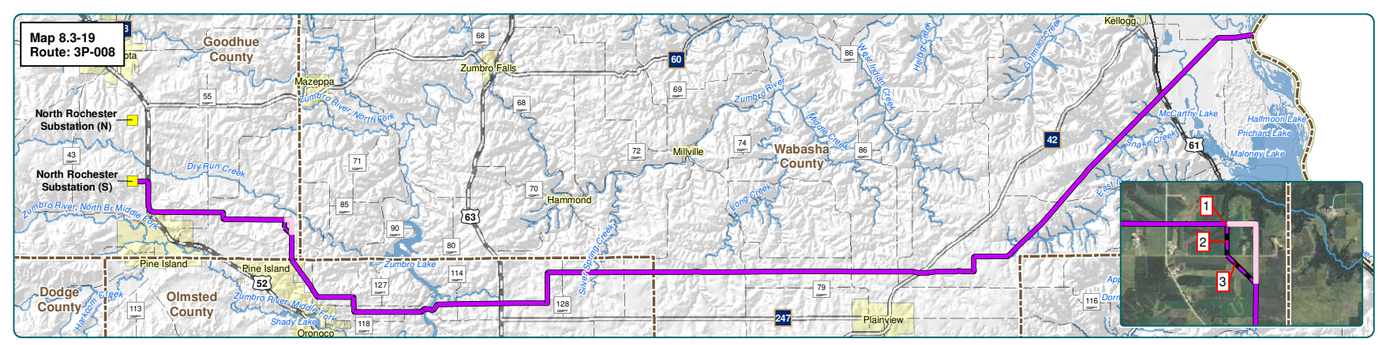
North Rochester to Mississippi River (3P-006)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.1 miles north of White Bridge Road NE and 0.1 miles east of Zumbro River		
2	Turn southeast cross country to White Bridge Road NE	0.08	Cross-country
3	Continue southeast following White Bridge Road NE	0.37	Cty or Twp Road
4	Turn east following White Bridge Road NE	1.45	Cty or Twp Road
5	Turn north following field line	0.52	Returns to applicant's preferred route - Field Line



North Rochester to Mississippi River (3P-007)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.08 miles north of White Bridge Road NE and 0.11 miles east of Zumbro River		
2	Turn southeast cross country to White Bridge Road NE	0.08	Cross-country
3	Continue southeast following White Bridge Road NE	0.44	Cty or Twp Road
4	Turn southeast cross country	0.28	Cross-country
5	Turn east cross country	1.23	Cross-country
6	Turn north following field line	0.78	Returns to applicant's preferred route - Field Line

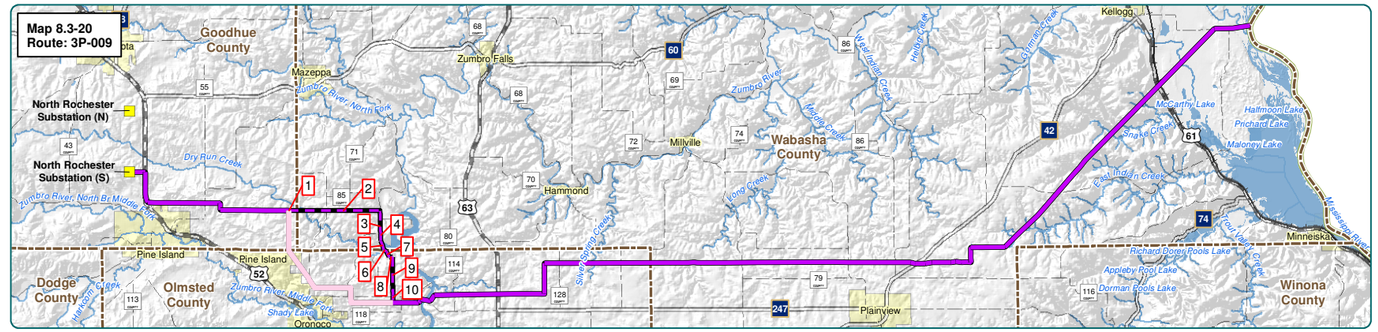


North Rochester to Mississippi River (3P-008)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.5 miles east of 230th Ave. and 0.25 miles north of 510 St.		
2	Turn south following field line	0.26	Field Line
3	Turn southeast cross country	0.33	Returns to applicant's preferred route - Cross-country

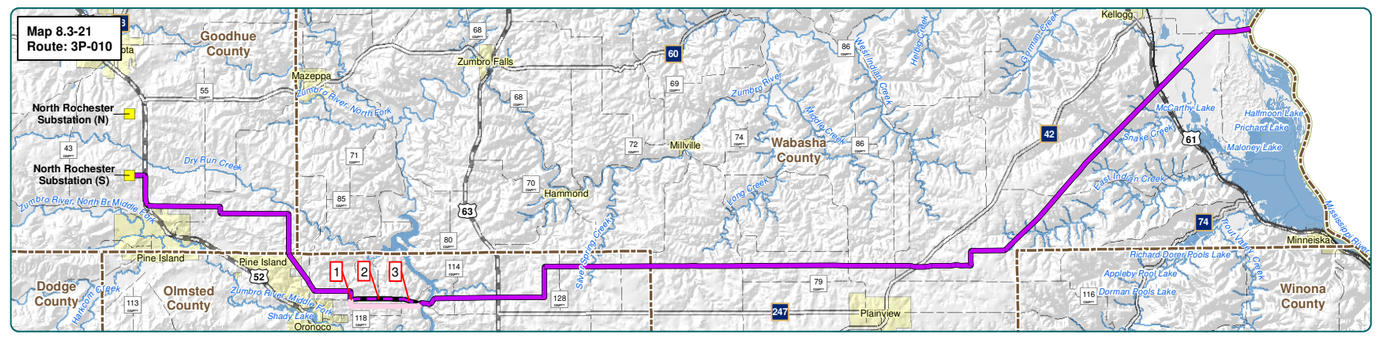


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

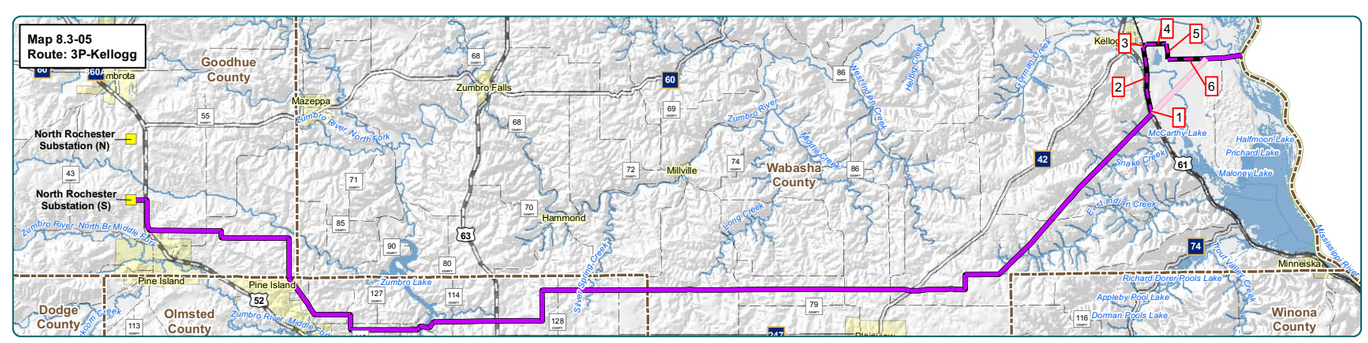
North Rochester to Mississippi River (3P-009)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.7 miles east of of 230th Ave.		
2	Continue east cross-country/field lines	2.96	Cross-country/field lines
3	Turn south following CSAH 21	0.75	Cty or Twp Road/Transmission Line
4	Continue south cross-country	0.24	Cross-country/Transmission Line
5	Turn southeast cross-country to 25th Ave NW	0.30	Cross-country/Transmission Line
6	Turn east following 25th Ave	0.12	Cty or Twp Road/Transmission Line
7	Turn southeast cross-country	0.20	Cross-country/Transmission Line
8	Turn east cross-country to Postier Dr. NW	0.11	Cross-country/Transmission Line
9	Turn south following Postier Dr. NW	1.24	Cty or Twp Road/Transmission Line
10	Continue south following transmission line	0.25	Returns to applicant's preferred route - Transmission Line



North Rochester to Mississippi River (3P-010)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until White Bridge Road		
2	Turn east following White Bridge Road	1.72	Cty or Twp Road
3	Turn southeast following White Bridge Road	0.56	Returns to applicant's preferred route - Cty or Twp Road



North Rochester to Mississippi River (3P-Kellogg)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until the RR tracks just east of US Hwy 61		
2	Turn north following RR line	2.20	RR Line
3	Turn northeast cross-country	0.14	Cross-country
4	Turn east along CR-84	0.66	Cty or Twp Road
5	Turn south following CR-84	0.51	Cty or Twp Road
6	Turn east following CR-84	1.26	Returns to applicant's preferred route - Cty or Twp Road

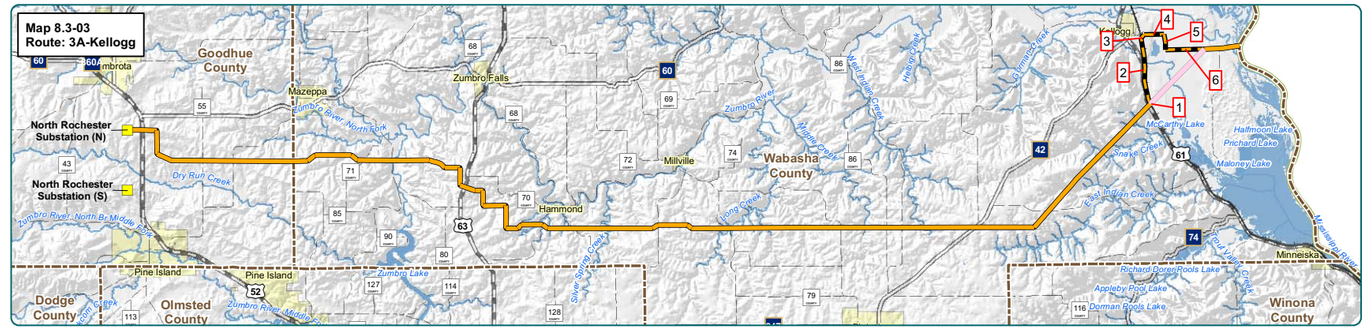


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

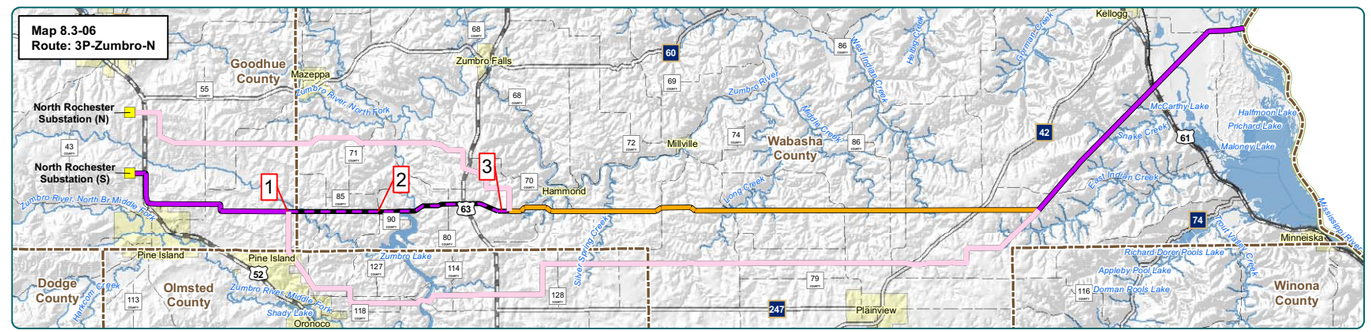
Section 8.3

Segment 3 – North Rochester Substation to Mississippi River

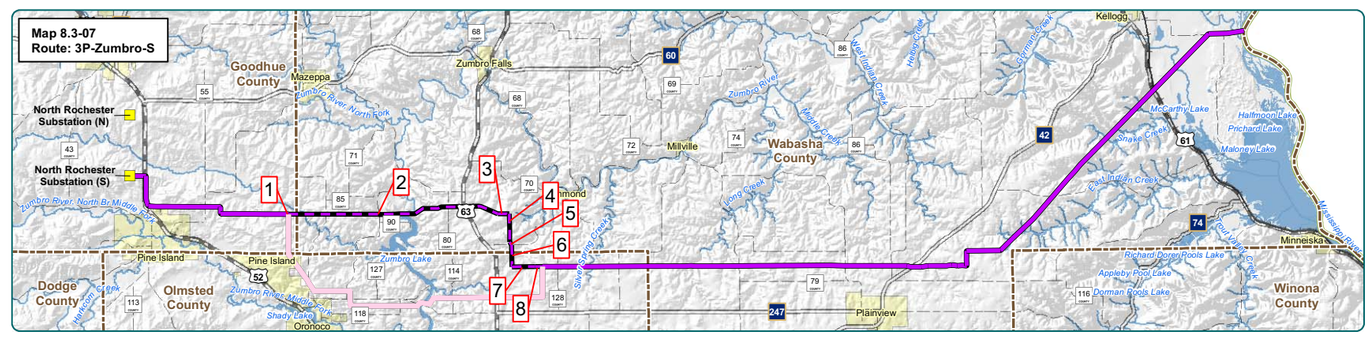
North Rochester to Mississippi River (3A-Kellogg)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's alterante route until the RR tracks rust east of US Hwy 61		
2	Turn north following RR line	2.20	RR Line
3	Turn northeast cross-country	0.14	Cross-country
4	Turn east along CR-84	0.66	Cty or Twp Road
5	Turn south following CR-84	0.51	Cty or Twp Road
6	Turn east following CR-84	1.26	Returns to applicant's alternate route -Cty or Twp Road



North Rochester to Mississippi River (3P-Zumbro-N)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.7 miles east of 230th Ave		
2	Continue east cross-country/field line	6.97	Cross-country/field line
3	Continue east on T-196	0.37	Returns to applicant's alternate route - Cty or Twp Road

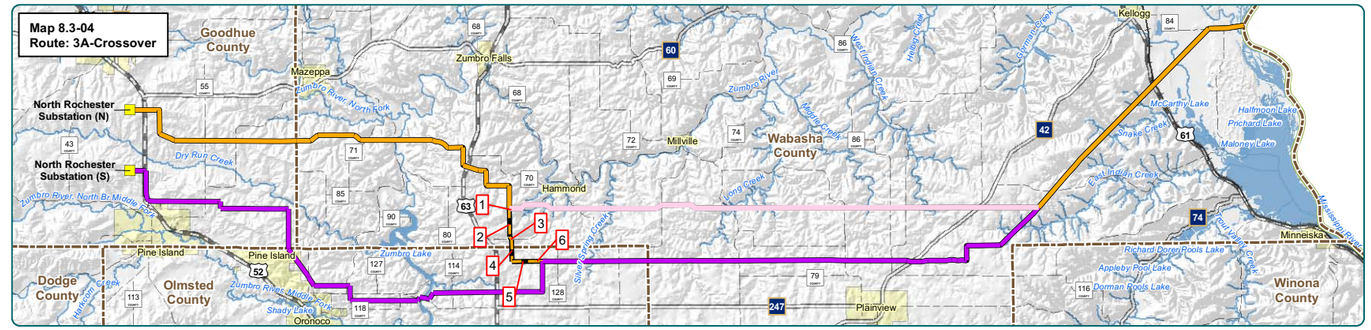


North Rochester to Mississippi River (3P-Zumbro-S)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.7 miles east of 230th Ave		
2	Continue east cross-country/field line	6.97	Cross-country/field line
3	Continue east on T-196	0.37	Cty or Twp Road
4	Turn south cross-country/field line	0.92	Cross-country/field line
5	Turn southeast cross-country	0.13	Cross-country
6	Turn south cross-country/field line	0.70	Cross-country/field line
7	Turn east along field line	0.74	Field line
8	Continue east cross-country	0.25	Returns to applicant's preferred route - Cross-country

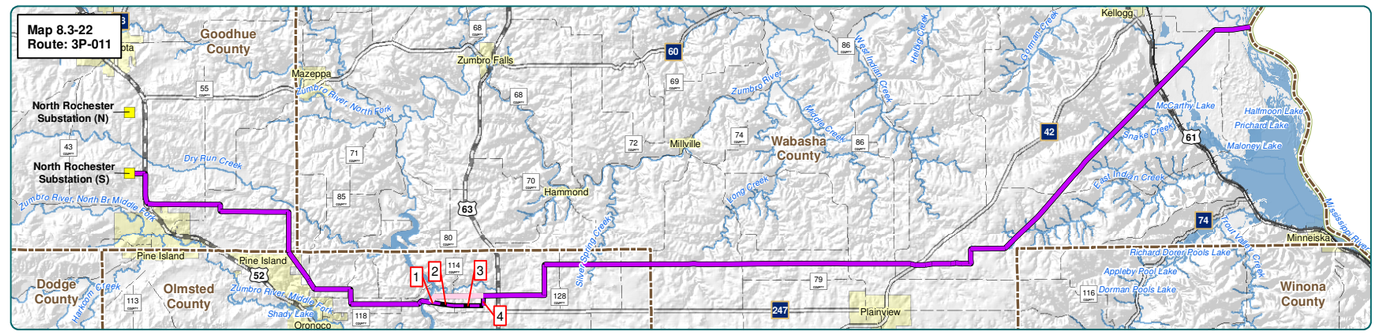


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

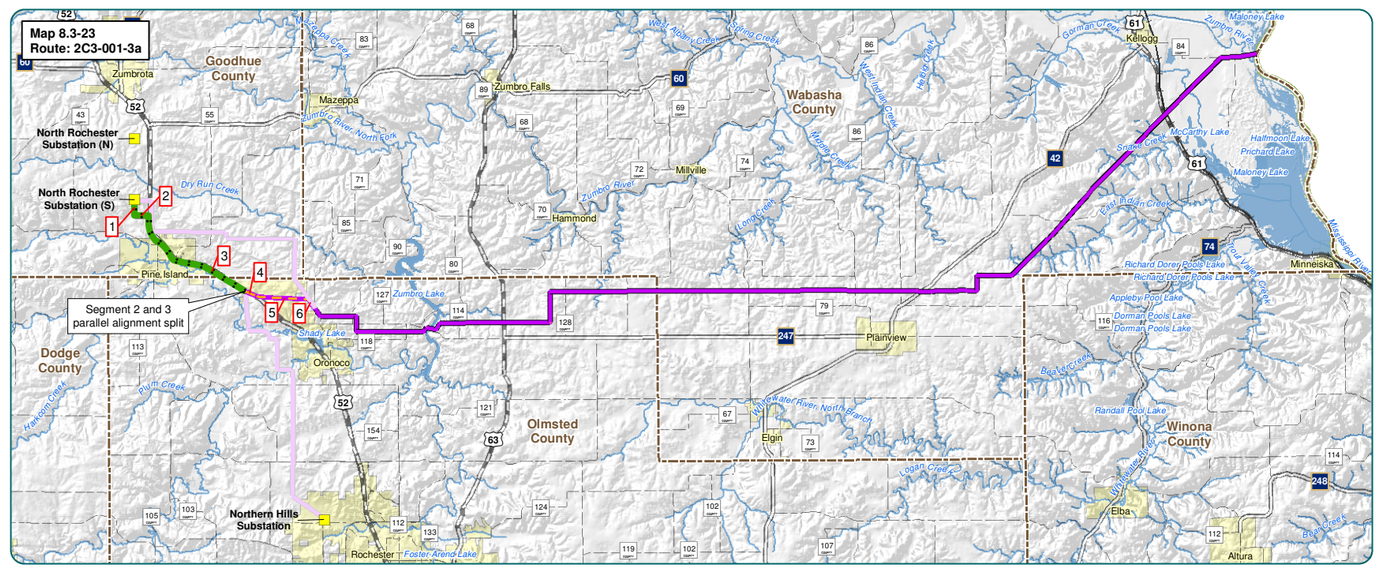
North Rochester to Mississippi River (3A-Crossover)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's alternate route to T-196		
2	Continue south cross-country/field line	0.92	Cross-country/field line
3	Turn southeast cross-country	0.13	Cross-country
4	Turn south cross-country/field line	0.70	Cross-country/field line
5	Turn east along field line	0.74	Field line
6	Continue east cross-country	0.25	Returns to applicant's preferred route - Cross-country



North Rochester to Mississippi River (3P-011)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	Follow the applicant's preferred route until 0.11 miles east of Zumbro River and 0.08 miles north of White Bridge Road NE		
2	Continue southeast cross-country	0.76	Cross-country
3	Turn east cross-country	0.95	Cross-country
4	Turn north cross-country	0.32	Returns to applicant's preferred route - Cross-country



North Rochester to Mississippi River (2C3-001-3a)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the North Rochester Substation (S), go south following transmission line	0.51	Transmission Line (Parallel alignment)
2	Turn east following field line	0.46	Field Line (Parallel alignment)
3	Turn south following US Hwy 52	4.33	Major Hwy (Parallel alignment)
4	Continue southeast following US Hwy 52	0.38	Major Hwy
5	Turn east cross-country to Ash Road NW	1.67	Cross-country
6	Turn southeast following Ash Road NW	0.37	Returns to applicant's preferred route - Cty or Twp Road

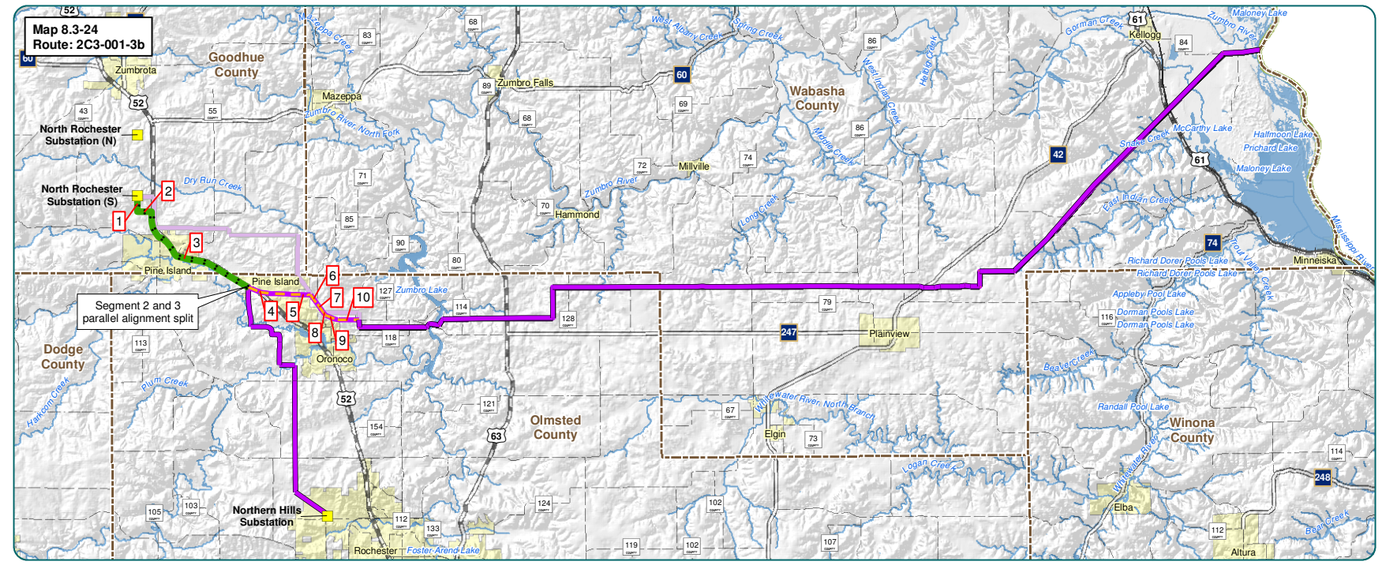


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

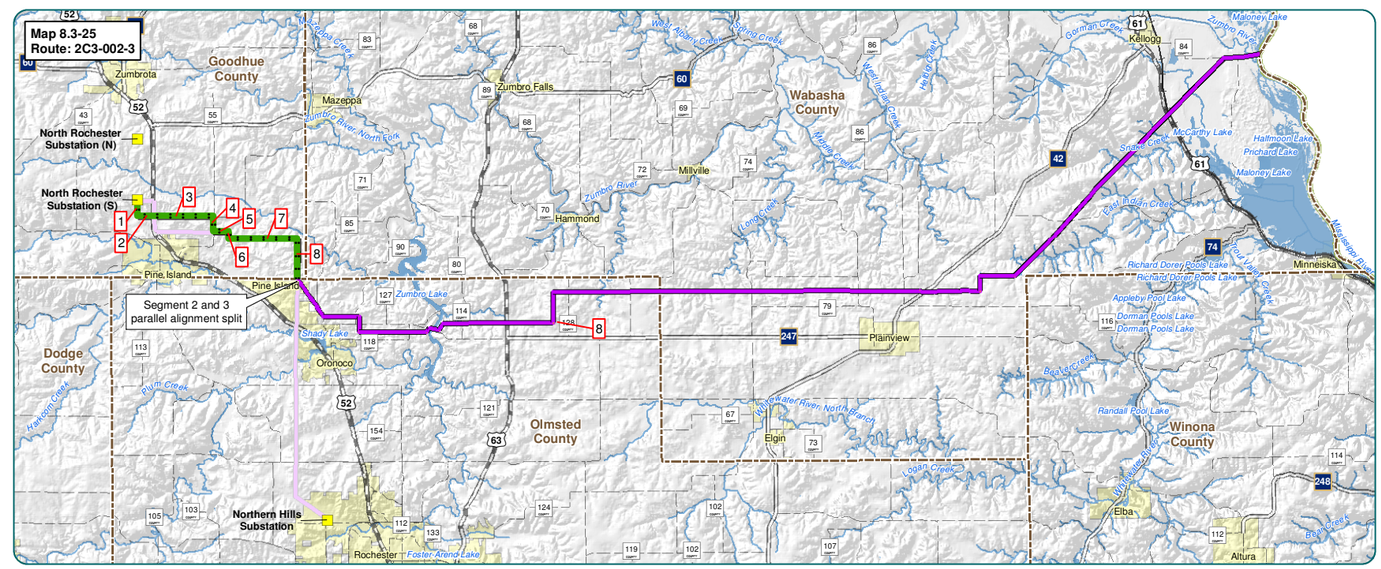
Section 8.3

Segment 3 – North Rochester Substation to Mississippi River

North Rochester to Mississippi River (2C3-001-3b)		
Turn by Turn	Distance (miles)	Comments/ROW Type
1 From the North Rochester Substation (S), go south following transmission line	0.51	Transmission Line (Parallel alignment)
2 Turn east following field line	0.46	Field Line (Parallel alignment)
3 Turn south following US Hwy 52	4.33	Major Hwy (Parallel alignment)
4 Continue southeast following US Hwy 52	0.38	Major Hwy
5 Turn east cross-country to Ash Road NW	1.67	Cross-country
6 Turn southeast following Ash Road NW	0.37	Cty or Twp Road
7 Continue southeast following CSAH 18	0.31	Cty or Twp Road
8 Continue southeast cross-country	0.14	Cross-country
9 Continue east/southeast cross-country	0.41	Cross-country
10 Turn east following White Bridge Road NW	0.70	Returns to applicant's preferred route - Cty or Twp Road

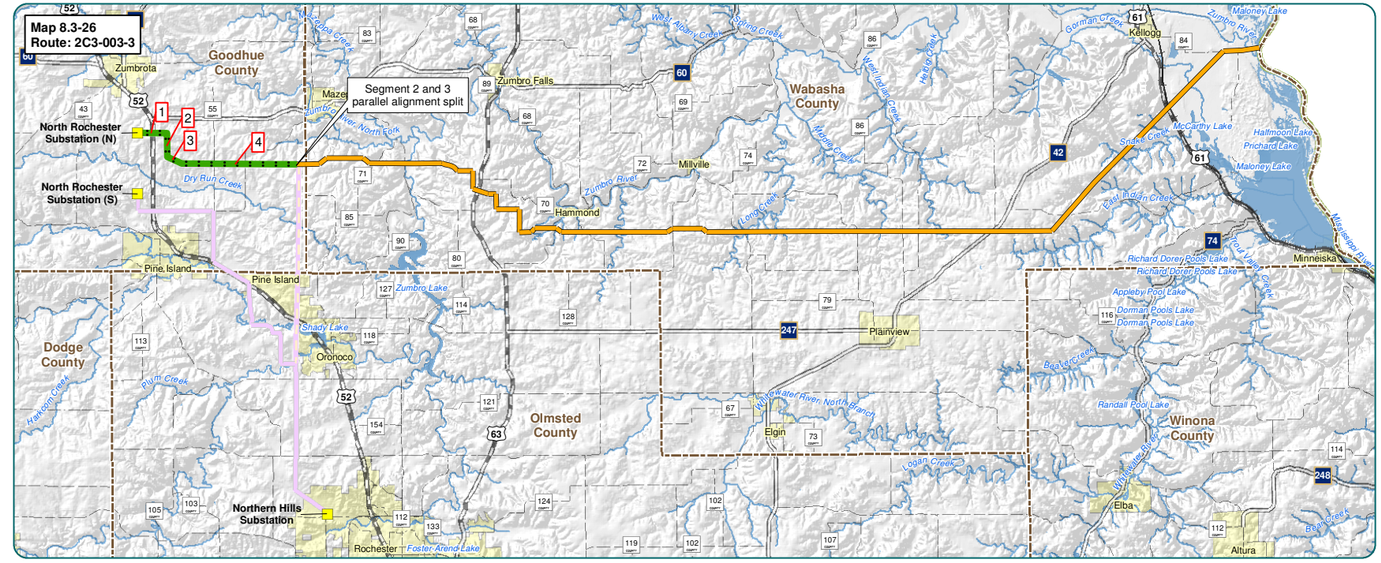


North Rochester to Mississippi River (2C3-002-3)		
Turn by Turn	Distance (miles)	Comments/ROW Type
1 From the North Rochester Substation (S), go south following transmission line	0.50	Transmission Line (Parallel alignment)
2 Turn east following field line	0.46	Field line (Parallel alignment)
3 Continue east following 500th St.	2.00	Cty or Twp Road (Parallel alignment)
4 Turn south following CSAH 11	0.50	Cty or Twp Road (Parallel alignment)
5 Turn east following field line	0.50	Field line (Parallel alignment)
6 Turn south following field line	0.23	Field line (Parallel alignment)
7 Turn east cross-country/field lines	2.23	Cross-country (Parallel alignment)
8 Turn south cross-country	1.31	Returns to applicant's preferred route - Cross-country (Parallel alignment)

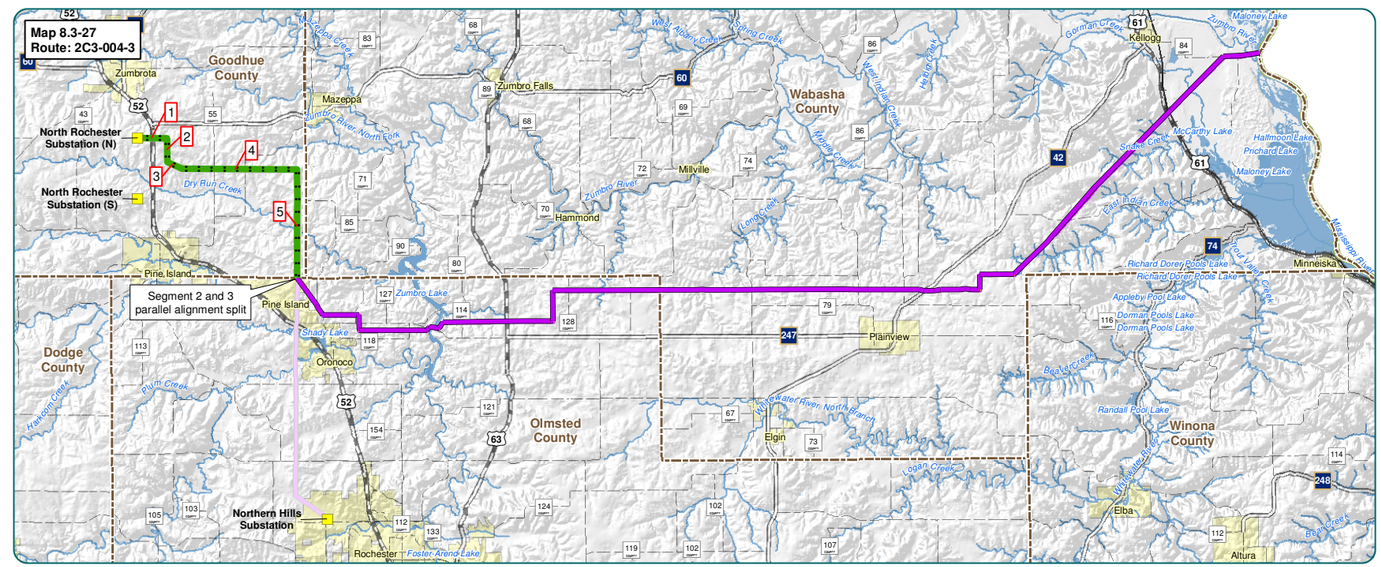


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

North Rochester to Mississippi River (2C3-003-3)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the North Rochester Substation (N), go east following field line to 195th Ave.	0.99	Field Line (Parallel alignment)
2	Turn south following 195th Ave.	0.77	Cty or Twp Road (Parallel alignment)
3	Turn southeast cross-country	0.51	Cross-country (Parallel alignment)
4	Turn east following field line	3.75	Returns to applicant's alternate route - Field Line (Parallel alignment)

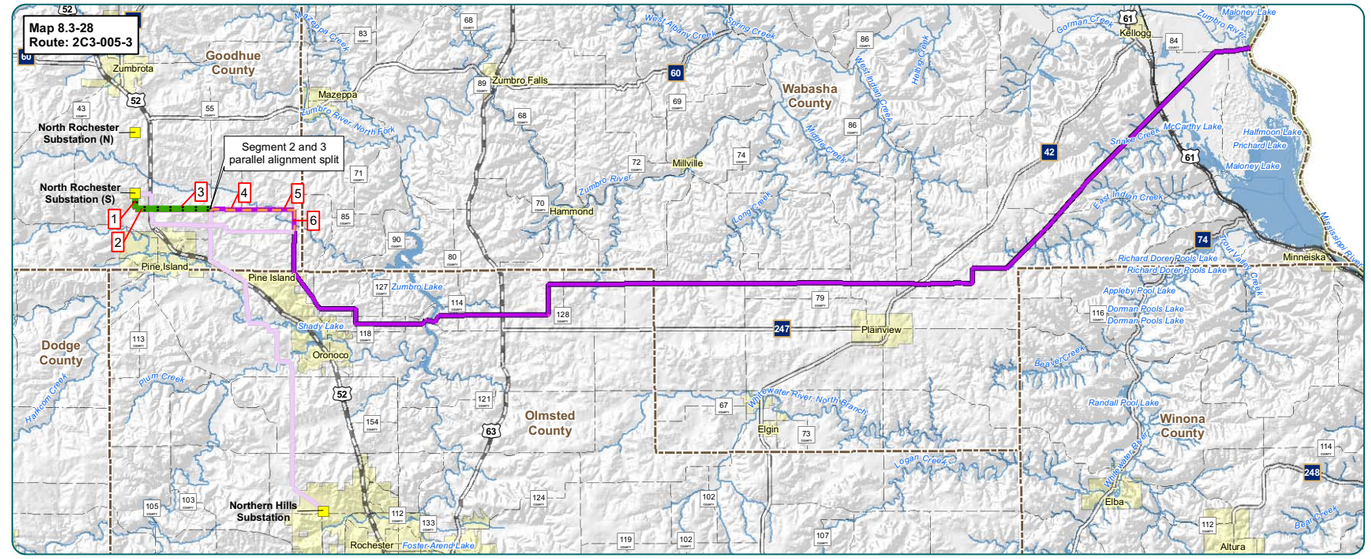


North Rochester to Mississippi River (2C3-004-3)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the North Rochester Substation (N), go east following field line to 195th Ave.	0.97	Field Line (Parallel alignment)
2	Turn south following 195th Ave.	0.78	Cty or Twp Road (Parallel alignment)
3	Turn southeast cross-country	0.52	Cross-country (Parallel alignment)
4	Turn east following field line/cross-country	3.75	Field Line (Parallel alignment)
5	Turn south cross-country	3.53	Returns to applicant's preferred route - Cross-country (Parallel alignment)

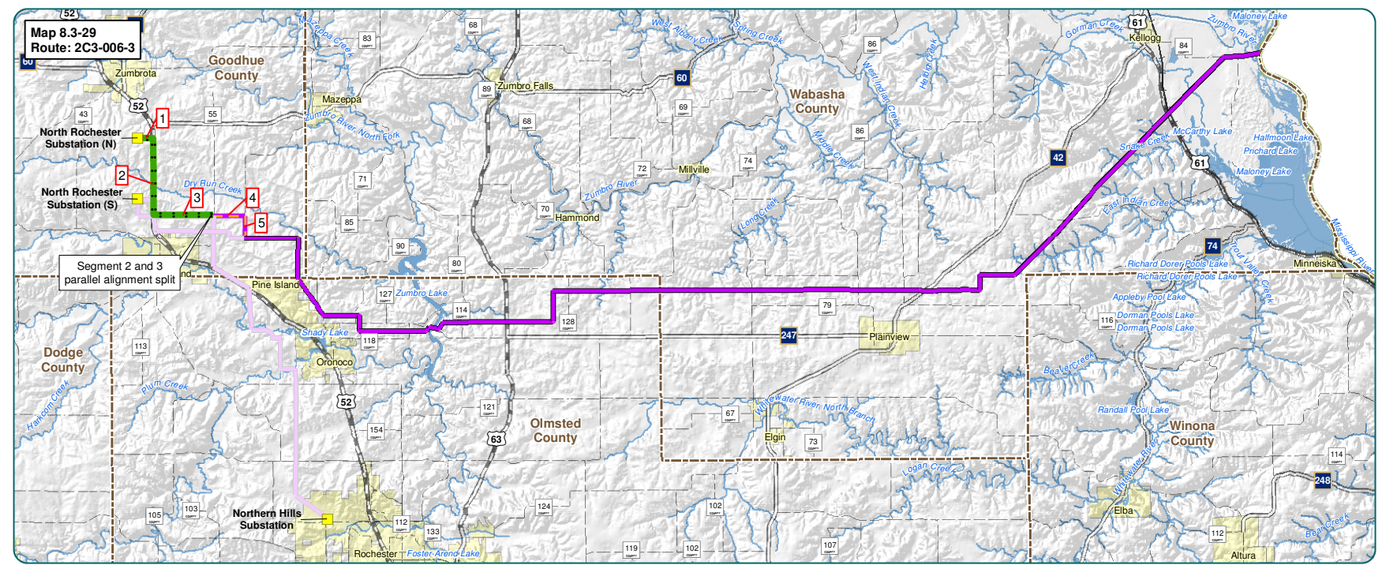


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

North Rochester to Mississippi River (2C3-005-3)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the North Rochester Substation (S), go south following transmission line	0.51	Transmission Line (Parallel alignment)
2	Turn east following field line	0.46	Field Line (Parallel alignment)
3	Continue east following 500th St.	2.00	Cty or Twp Road (Parallel alignment)
4	Continue east following 500th St.	2.01	Cty or Twp Road
5	Continue east cross-country/field lines	0.72	Cross-country/field lines
6	Turn south cross-country	0.73	Returns to applicant's preferred route - Cross-country

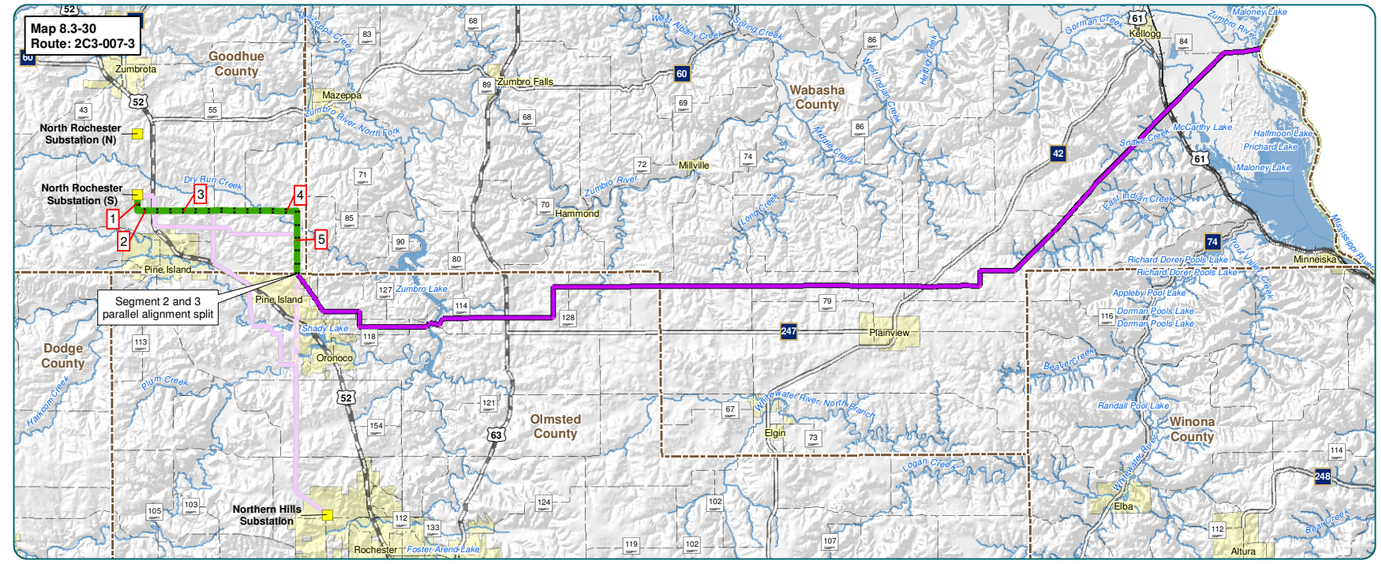


North Rochester to Mississippi River (2C3-006-3)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the North Rochester Substation (N), go east following field line to US Hwy 52	0.51	Field line (Parallel alignment)
2	Turn south following US Hwy 52	2.50	Major Hwy (Parallel alignment)
3	Turn east following 500th St.	1.94	Cty or Twp Road (Parallel alignment)
4	Continue east following 500th St.	1.01	Cty or Twp Road
5	Turn south following 220th Ave.	0.73	Returns to applicant's preferred route - Cty or Twp Road

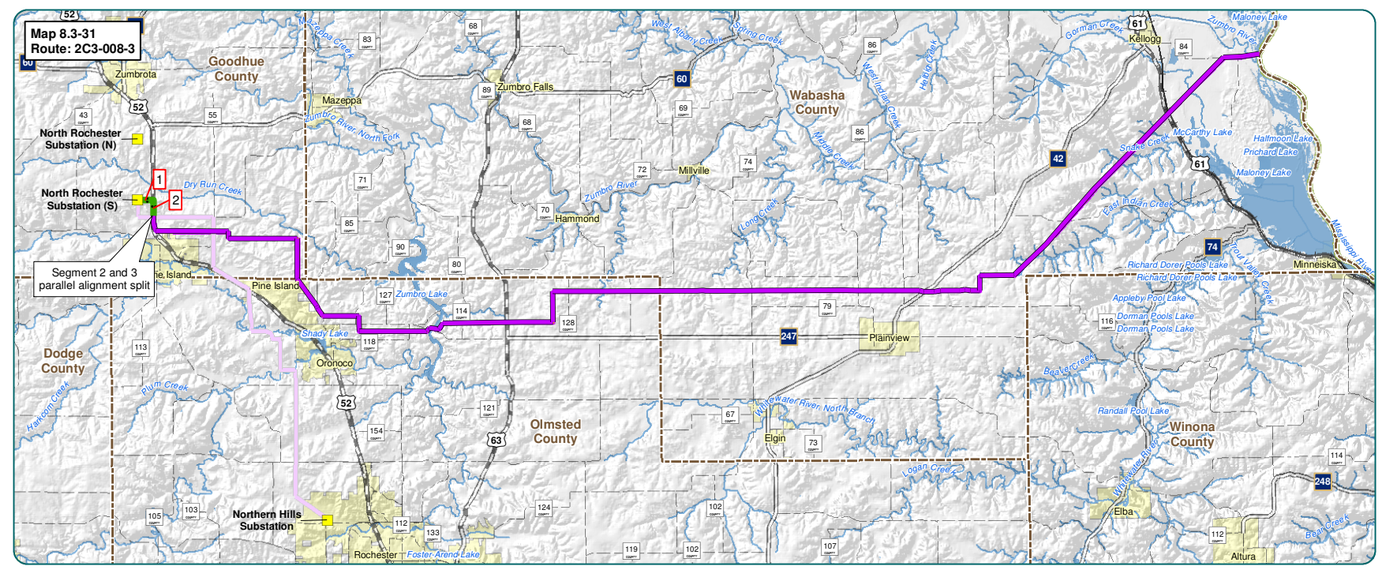


P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

North Rochester to Mississippi River (2C3-007-3)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the North Rochester Substation (S), go south following transmission line	0.51	Transmission line (Parallel alignment)
2	Turn east following field line	0.52	Field Line (Parallel alignment)
3	Continue east following 500th St.	3.95	Cty or Twp Road (Parallel alignment)
4	Continue east cross-country	0.71	Cross-country (Parallel alignment)
5	Turn south cross-country	2.04	Returns to the applicant's preferred route - Cross-country (Parallel alignment)



North Rochester to Mississippi River (2C3-008-3)			
	Turn by Turn	Distance (miles)	Comments/ROW Type
1	From the North Rochester Substation (S), go east following applicant's preferred route to US Hwy 52	0.52	Field Line (Parallel alignment)
2	Turn south following US Hwy 52 and the applicant's preferred route	0.51	Returns to applicant's preferred route - Major Hwy (Parallel alignment)



P Route
A Route
Variation on A Route
Variation on P Route
Variation on Both
Parallel Alignment
Project Substations
County Boundaries

8.3.2 Environmental Setting – North Rochester Substation to Mississippi River

This segment of the route extends from the proposed North Rochester Substation, east to the Mississippi River, and crosses from Kellogg, Minnesota into Alma, Wisconsin. This segment is located within Goodhue, Olmsted, and Wabasha Counties, Minnesota. According to the Department of Natural Resources (DNR) Ecological Classification System (ECS), this segment is located within the Rochester Plateau and Blufflands subsections of the Eastern Broadleaf Forest Province. The Eastern Broadleaf Forest Province covers much of the southeastern corner of Minnesota and into Wisconsin. The Eastern Broadleaf Forest Province represents a transition between semiarid portions of the state that were historically prairie and semi-humid mixed conifer-deciduous forests to the northeast (DNR 2010d). Precipitation in the Eastern Broadleaf Forest Province increases annually from about 24 inches in the northwestern portion to about 35 inches in the southeastern portion (DNR 2010d).

The Rochester Plateau subsection consists of level to gently rolling till plains. Topography is largely controlled by underlying glacial till, with sinkholes, indicative of karst topography, present in the southwestern portion of the subsection (DNR 2010e). Presettlement vegetation consisted of tallgrass prairie and bur oak savanna.

The Blufflands subsection consists of loess-capped plateau deeply dissected by river valleys (DNR 2010g). Topography is controlled by underlying glacial till along the western edge of the subsection, where loess is several feet thick; sinkholes are common in the southwestern portion (DNR 2010g). Historically tallgrass prairie and bur oak savanna were the major vegetation types on ridge tops and dry upper slopes, while red oak-white oak-shagbark hickory-basswood forests were present on moister slopes, and red oak-basswood-black walnut forests in protected valleys (DNR 2010g).

The communities located within Segment 3 include: Greenfield Township, Mazeppa Township, Pine Island Township, Watopa Township, and Zumbor Township. These communities are primarily small agricultural towns.

8.3.3 Socioeconomic Setting – North Rochester Substation to Mississippi River

This segment is located in a sparsely populated, agricultural part of Minnesota and crosses parts of Goodhue, Olmsted, and Wabasha Counties. The primary industries for Goodhue, Olmsted, and Wabasha Counties include education, health and social services, agriculture, manufacturing, and retail trade. Table 8.3.3-1 shows the differences in population across the counties spanned by this segment of the project.

8.3.4 Analysis of Segment Alternatives for North Rochester Substation to Mississippi River

Resources are discussed in the same order in which they appeared in Section 7 and include the following:

- **8.3.4.1** Public health and safety
- **8.3.4.2** Property values
- **8.3.4.3** Human settlement
- **8.3.4.4** Land use compatibility
- **8.3.4.5** Land-based economies
- **8.3.4.6** Rare and unique natural resources
- **8.3.4.7** Flora and fauna
- **8.3.4.8** Water resources
- **8.3.4.9** Electronic device interference
- **8.3.4.10** Archaeological and historic resources
- **8.3.4.11** Transportation and public services
- **8.3.4.12** Recreation
- **8..4.13** Air quality

8.3.4.1 Public Health and Safety – Analysis of Segment Alternatives for North Rochester Substation to Mississippi River Segment

Discussion of potential public health and safety impacts associated with this project are discussed in Section 7.1. Primary public health and safety concerns are associated with:

- Electric and Magnetic Fields (EMFs);
- Implantable Medical Devices; and
- Stray Voltage;

Table 8.3.3-1 Socioeconomic statistics in Goodhue, Olmsted, and Wabasha Counties - Segment 3

County	2009 Population	2009 Total Minority Population	2009 Minority Population Percentage	1999 Per Capita Income
Goodhue	45,836	1,742	3.8	$21,934
Olmsted	143,962	15,835	11.0	$24,939
Wabasha	21,884	460	2.1	$19,664

Source: U.S. Census Bureau (1999, 2009)

These features do not vary notably between the proposed route alternatives in this segment. Thus, the nature of impacts to public health and safety are not expected to vary notably from one route alternative to the next.

Any perceived risks to health and safety from EMFs, stray voltage, or impacts to implantable medical devices are 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 segment is provided in Section 8.3.4.3. Additional health and safety concerns along with proposed mitigation procedures are discussed in Section 7.1.

8.3.4.2 Property Values - Analysis of Segment Alternatives for North Rochester Substation to Mississippi River Segment

Public input gathered earlier in the permitting process for the project revealed that many people are concerned about the potential effect of proximity to transmission lines on the value of their property. The relationship between property values and proximity to transmission lines has been thoroughly researched, but no clear cause-and-effect relationship has been identified. A recent literature review of this topic found that the research to date has identified little or no effect on sales prices due to proximity to transmission lines. In studies that identified a relationship between property values and proximity to transmission lines, the effect generally dissipated with time and distance. The effects that were found ranged from an approximately 2 percent to 9 percent decrease in property value. In some cases, particularly with development of vacant land, increases in property value were found (Jackson and Pitts 2010).

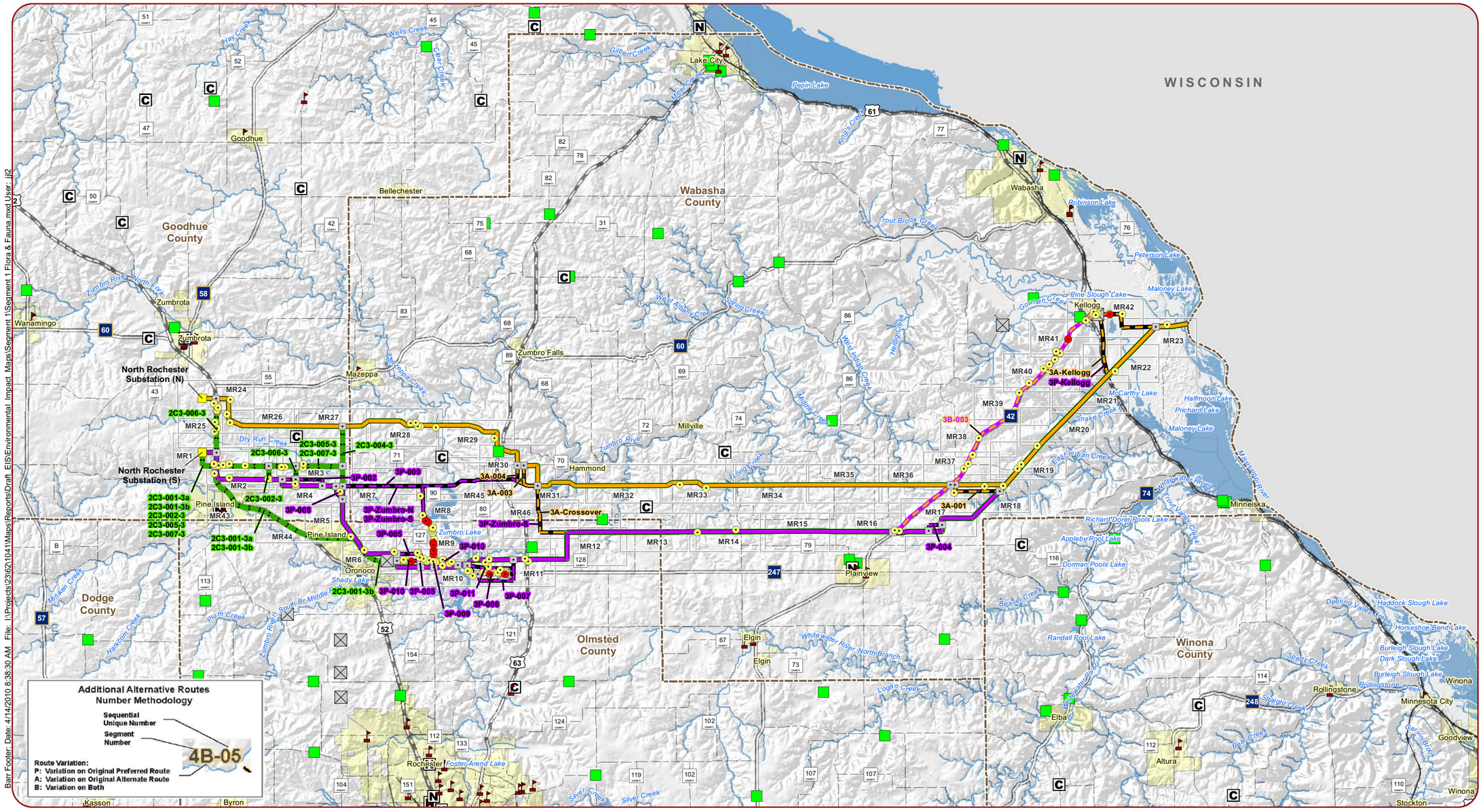
An additional potential adverse effect of transmission lines on adjacent properties is on the ability of homeowners and developers to obtain Federal Housing Administration (FHA) and/or Housing and Urban Development (HUD) loans. Loan guidelines for these agencies contain provisions restricting funds for properties in close proximity to transmission lines (FHA/HUD 1999).

In any event, the primary strategy to mitigate impacts to property values would be to avoid residences as much as possible during route selection. Potential project impacts on property values are discussed in detail in Section 7.2. Information on the proximity of homes to each proposed route alternative within this segment is provided in Section 8.3.4.3.

8.3.4.3 Human Settlement—Analysis of Segment Alternatives for North Rochester Substation to Mississippi River Segment

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 7.3 provides an overview of each of these potential impact areas.

The extent to which particular route alternatives may impact human settlement is primarily a function of proximity to the proposed route alternatives. Noise impacts, for example, are most likely to cause concern where people are nearby to experience these impacts – in areas where the line is located near human settlement features such as homes, businesses, schools, daycares, hospitals, churches, and cemeteries. In addition, in areas where the proposed route alternatives are in close proximity to human settlement areas there is a greater tendency for



Barr Footer: Date: 4/14/2010 8:38:30 AM File: \\Projects\23\62\1041\Maps\Reports\Draft_EIS\Environmental Impact Maps\Segment 1\Segment 1 Flora & Fauna.mxd User: jjl2

MR1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

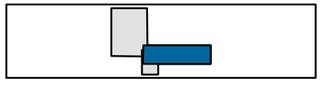
For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
- P Route
- A Route

Additional Alternative Routes
- Variation on P Route
- Variation on A Route
- Variation on Both
- Parallel Alignment

- Project Substations
- County Boundaries
- Residences within 500 Feet of Alternatives
- Residences within 75 Feet of Alternatives
- Pinch Points
- Hospitals
- Nursing Homes
- Schools
- Chuches
- Cemeteries
- Tribal Lands

Map 8.3-33
Human Settlement Map
Segment 3, North Rochester Substation to Mississippi River



Section 8.3

Segment 3 – North Rochester Substation to Mississippi River

certain features of these settlement areas to be impacted. Tree groves and wind breaks, for example, are frequently established in areas of human settlement 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 the human settlement features that they were established to protect.

Displacement impacts also depend upon the proximity of the transmission line to homes. As discussed in Section 7.3, for electrical safety code and maintenance reasons, utilities would not generally allow residences or other buildings within the actual ROW easement for a high-voltage transmission line (HVTL). Displacement would occur where any occupied structure (residence or business) is located within the ROW of the proposed route alternatives.

Because of the close correlation between the proximity of the proposed route alternatives to human settlement features and the extent and magnitude of impacts on human settlement, this impact summary focuses on the proximity of each of the proposed route alternatives to homes, schools, churches, cemeteries, nursing homes and hospitals.

Table 8.3.4.3-1 summarizes the proximity of the proposed route alternatives to homes in Segment 3. Map 8.3-33 provides an overview of each of these human settlement features along the proposed route alternatives.

Table 8.3.4.3-1 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. This figure shows that the 3A, 3A-001, 3A-003, and 3A-004 route alternatives have the fewest homes within the 1,000–foot route width. Route alternatives 3P-Kellogg, 3P-006, 3P-009, 3A-Kellogg, 2C3-001- 3a, and 2C3-001-3b all have houses located within the ROW and may result in displacement. Along the areas of parallel alignment (2C3) route alternatives, houses located within the wider, 200-foot ROW face potential displacement. There are no schools, churches, cemeteries or hospitals within the 1000-foot route width of any of the proposed route alternatives in this segment.

Pinch Points

A review of geographic information system (GIS) data and a field survey were completed to aid in identifying pinch points, or narrow areas along each of the proposed route alternatives. In these areas, human settlement features or important resources are located on either side of the proposed route and avoiding impacts by modifying route alignment may not be possible. Table 8.3.4.3-2 provides an overview of the number of critical pinch points along each of the proposed route alternatives in Segment 3. A more detailed discussion of each of these pinch points is provided below (see also, Map 8.3-33).

Table 8.3.4.3-2 Pinch points - Segment 3

Route Alternative	Number of Pinch Points
3B-003	1
3P-006	1

Within this segment, pinch points have been identified along route alternatives 3B-003 and 3P-006. The pinch point on route alternative 3B-003 is located along County Rd. 84 in Wabasha County just east of the intersection with US Hwy 61, where two houses are located in close proximity on opposite sides of the road. Similarly, the pinch point on route alternative 3P-006 occurs along White Bridge Rd. NE in Wabasha County where the line runs between adjacent residences that are both located in close proximity to the road.

Table 8.3.4.3-1 Proximity of homes along each proposed route alternative - Segment 3

Route Alternative	Number of Homes				
	Within 0-75 feet	Within 76-150 feet	Within 151-300 feet	Within 301-500 feet	Total homes within 500 feet
3P	0	1	4	20	25
3P-Kellogg	1	1	7	24	33
3P-Zumbro-N	0	2	6	15	23
3P-Zumbro-S	0	2	7	15	24
3P-001	0	0	11	18	29
3P-002	0	1	4	19	24
3P-003	0	0	11	17	28
3P-004	0	1	4	20	25
3P-005	0	1	6	20	27
3P-006	2	1	8	22	33
3P-007	0	1	3	19	23
3P-008	0	1	4	19	24
3P-009	6	4	10	18	38
3P-010	1	6	11	21	39
3P-011	0	1	4	19	24
3B-003	2	4	14	23	43
3A-001	0	0	3	15	18
3A-003	0	0	3	15	18
3A-004	0	0	3	15	18
3A-Crossover	0	0	4	15	19
3A-Kellogg	1	0	6	19	26
3A	0	0	3	15	18
2C3-001-3a	6	1	7	36	50
2C3-001-3b	7	1	9	38	55
2C3-002-3	0	1	8	19	28
2C3-003-3	0	0	3	15	18
2C3-004-3	0	0	4	19	23
2C3-005-3	0	0	11	19	30
2C3-006-3	0	6	14	23	43
2C3-007-3	0	0	11	19	30
2C3-008-3	0	1	4	20	25

Source: Field Survey observations, comments from project public meetings and aerial photograph interpretation by AECOM (Barr 2010)

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

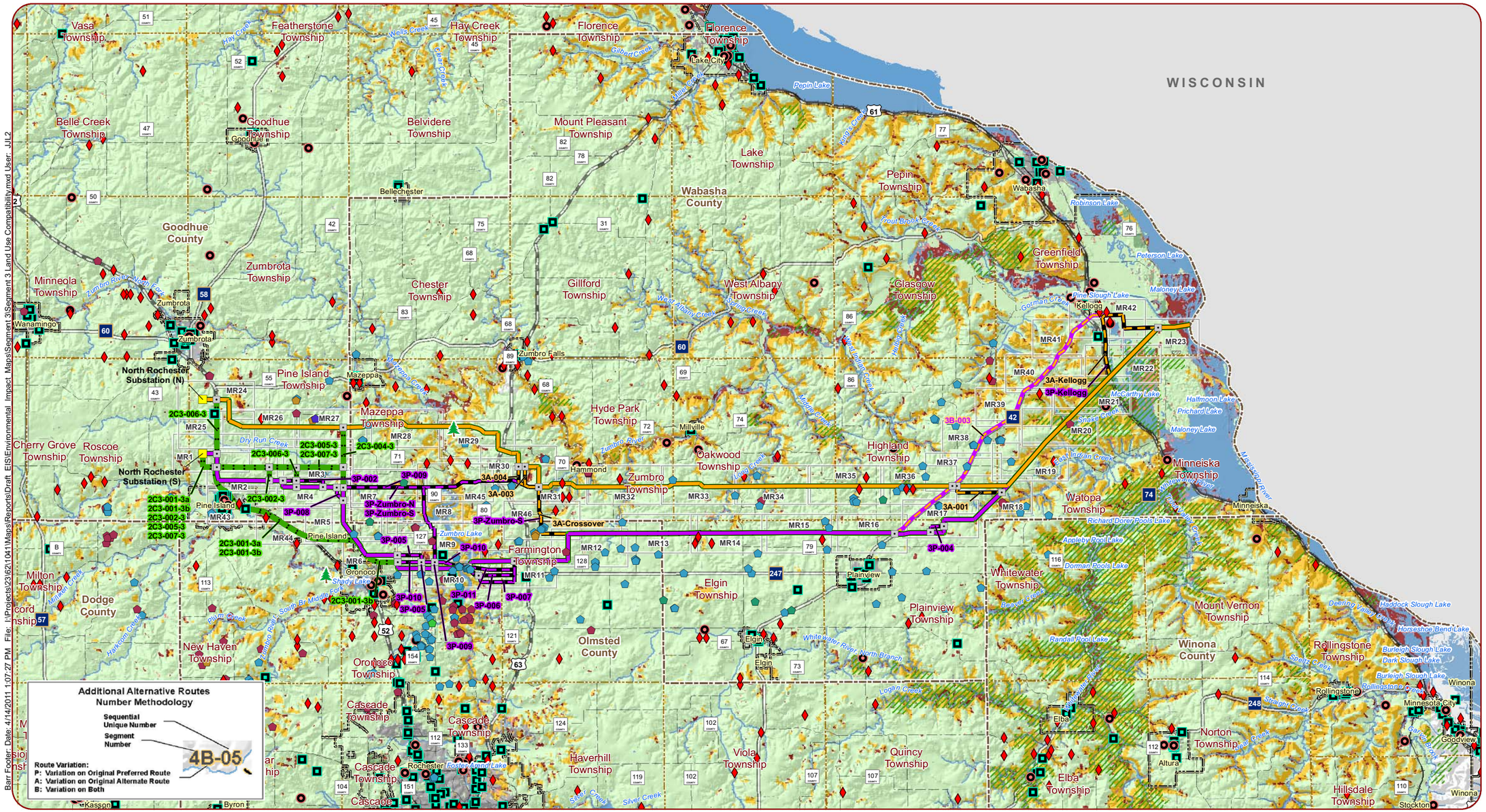
8.3.4.4 Land Use Compatibility – Analysis of Segment Alternatives for the North Rochester Substation to Mississippi River Segment

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 ROW for each route alternative in this segment have been reviewed and are summarized in Figure 8.3.4.4-1.

All route alternatives are located on or adjacent to primary agricultural land in crop, pasture or grassland use in this segment. Within this segment, forests make up a more significant portion of the land use adjacent to the proposed route alternatives than in the other segments. Some route alternatives run adjacent to recreation and special interest areas, which are discussed in detail in Section 8.3.4.12.

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 also affects the operation of irrigation equipment if present as well as crop spraying operations. Stray voltage and cattle are also a compatibility concern. Single pole towers will 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 impact does not affect many people. Impacts during tower construction include destruction of crops within the grading/construction zoning and the compacting of soils by construction equipment and activities.



MR1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

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

Original Alignments
- P Route
- A Route

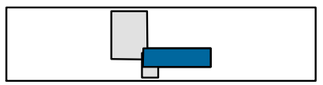
Additional Alternative Routes
- Variation on P Route
- Variation on A Route
- Variation on Both
- Parallel Alignment

- Project Substations
- Aggregate Mines
- Tree Farms
- Soil and Groundwater Contamination Sites
- LUST Sites
- Forest Stands
- Pivot Irrigation
- County Boundaries

Land Cover
- Upland Conifer Forest
- Upland Deciduous Forest
- Lowland Conifer Forest
- Lowland Deciduous Forest
- Upland Conifer-Deciduous mix
- Aquatic Environments
- Crop/Grass
- Non-Vegetated
- Shrubland

Karst Features
- Spring
- Stream Sink/Sieve
- Sinkhole
- Surface Tile Inlet
- Surface Tile Outlet
- Miscellaneous

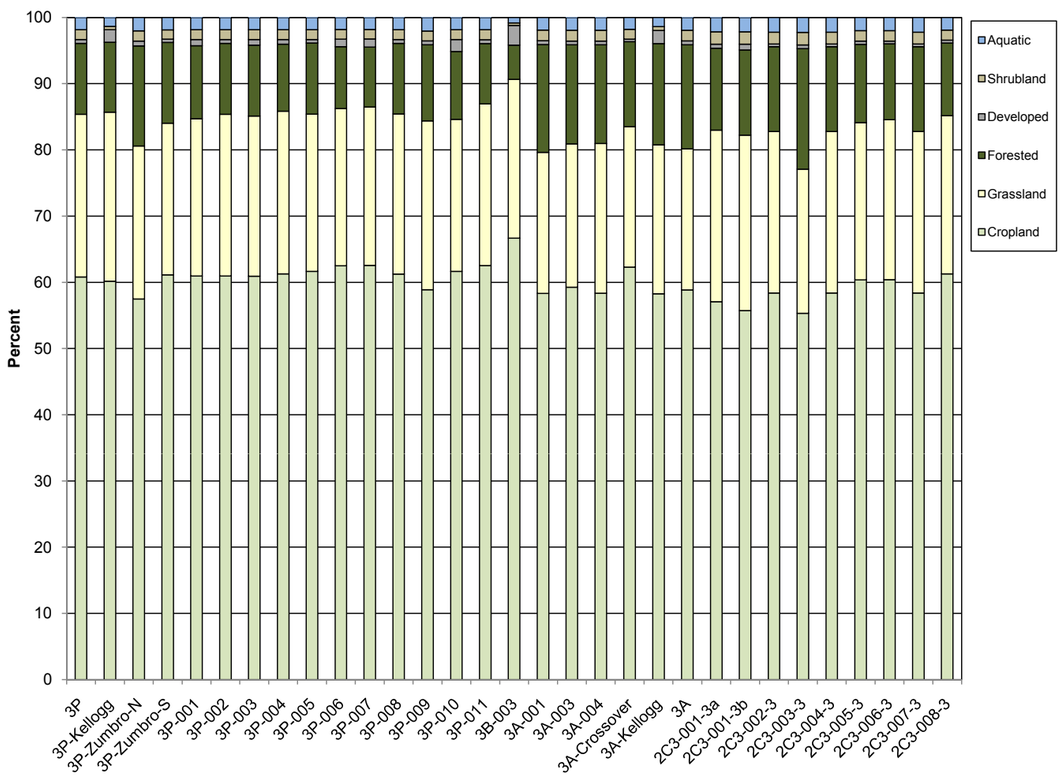
Map 8.3-34
Land Use Compatibility Map
Segment 3, North Rochester Substation to Mississippi River



The major impact on residential areas may include changes to viewsheds for some properties and potential minor noise impacts 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 pole structures 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 periodic conflicts with use and enjoyment of the property.

While local approvals are not required for construction and operation of the transmission line, local ordinances and land use plans were examined for potential future impacts of the proposed project on future development plans. These ordinances and plans are available as part of the route permit application and available through each city and county government. In general, the project's various route alternatives are not inconsistent with city and county ordinances and land use plans.

Figure 8.3.4.4-1 Land cover types along each route alternative - Segment 3



Source: Barr Figure

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

Mitigation

General mitigation measures to minimize impacts to Land Use Compatibility are discussed in Section 7.4. Within this segment impacts to land use compatibility primarily through best management practices (BMPs) to reduce impacts to agricultural areas during construction, operation and maintenance.

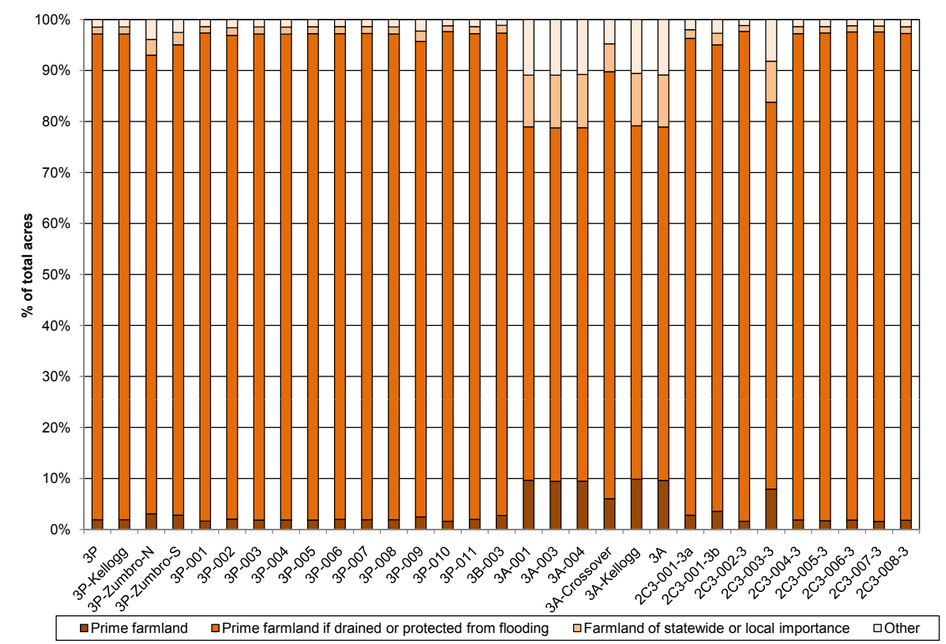
8.3.4.5 Land Based Economies – Analysis of Segment Alternatives for the North Rochester Substation to Mississippi River Segment

The primary land based economies along this segment are agricultural. Agricultural economies in the area include livestock and dairy farms and bee-keeping.

Crops in Goodhue County include primarily corn and soybeans, and livestock are primarily turkeys, hogs and pigs (U.S. Department of Agriculture (USDA 2007b)). Primary agricultural crops in Olmsted County include corn and soybeans; the primary livestock raised include turkeys, hogs, pigs, and cattle (USDA 2007d). Agricultural crops in Wabasha County include corn and forage; livestock raised include calves and egg layers (USDA 2007e).

Much of the land in this segment (over 70%) is designated as "prime farmland if drained or protected from flooding," (Figure 8.3.4.5-1) indicating land that 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 55 square feet per pole. During construction, temporary impacts, such as soil compaction and crop damage within the ROW, are likely to occur. Temporary impacts in agricultural fields are estimated to be one acre per pole for construction activities.

Figure 8.3.4.5-1. Prime farmland and non-farmland within ROW of each route alternative - Segment 3



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

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

The percentage of prime farmland within the ROW is slightly lower in route alternatives 2C3-001-2, 2C3-002-2, 2C3-004-2, and 2C3-007-2 relative to the other route alternatives in this segment. However, overall the percentage of prime farmland does not vary significantly across the various route alternatives in this segment.

Impacts to organic farms present within this segment would be avoided through implementation of mitigative measures discussed in Section 7.5 and below.

Mines and future reserve areas have been identified along the route alternatives in this segment using data collected from the DOT Aggregate Sources Interactive Map; these mines are shown on Map 8.3-34. Minn. Stat. § 84.94 requires each Minnesota county to identify and protect aggregate resources, in addition to locating areas to mine and develop long-term comprehensive plans that incorporate aggregate resources (DNR 2007). Goodhue, Olmsted, and Wabasha Counties were identified by the DNR as being a region of many crushed stone operations (DNR 1998). The transmission line would not impact the mining operations located along the route alternatives in this segment. There would be no direct impacts to existing mining operations.

Some forested areas are present along the various route alternatives in this segment (see Figure 8.3.4.4-1 and Map 8.3-34). Within the Richard J. Dorer Memorial Hardwood Forest (RJD Forest), 53 DNR forest stands are located within 500 feet of the route alternatives in this segment (see Map 8.3-34); however, timber harvest plans for these stands are currently not available. There is a small, 50-acre, privately owned tree farm in the RJD Forest, located in Township 109, Range 14, and Section 15 in Wabasha County. All of the A route alternatives and 2C3-003-3 would run through this small tree farm. Impacts to forest-based economies in this segment are not anticipated to be significant. However, depending upon the route alternative chosen, and the DNR harvest plans, there could be impacts to economically important forestry resources along some route alternatives in this segment. Impacts to other forested areas within this segment are discussed in Section 8.3.4.7.

Mitigation

As discussed in Section 7.5, the applicant has worked with the Minnesota Department of Agriculture (MDA) to develop an Agricultural Impact Mitigation Plan (AIMP) for this project (see Appendix E). 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 of the CapX2020 projects on agricultural land in Minnesota. The AIMP includes an appendix that outlines mitigation measures and procedures specific to Organic Agricultural Land as described in the National Organic Program Rules, 7 CFR Parts 205.100, 205.202, and 205.101. By following the procedures outline in the AIMP, impacts to agricultural land based economies can be minimized and mitigated.

Impacts to economically important forestry resources could be minimized by choosing a route alternative that goes through the fewest DNR stands and does not go through the small tree farm mentioned above.

8.3.4.6 Rare and Unique Resources - Analysis of Segment Alternatives for the North Rochester Substation to Mississippi River Segment

Rare and unique resources were identified within the 150-foot and 200-foot ROWs (referred to as ROW below) and within one mile of each route alternative evaluated in Segment 3 using the DNR Natural Heritage Information System (NHIS) database, DNR state-designated railroad prairies, and DNR Minnesota County Biological Survey (MCBS) database (see Appendix B). The discussion here is focused on federally-listed and state-listed threatened and endangered species. State species of special concern and non-status species within Minnesota are not discussed; however, data on these species are available in Appendix F. It is anticipated that most waterbodies and watercourses could be spanned, thus limiting potential impacts to threatened and endangered aquatic species. Accordingly, aquatic species are mentioned here but are not the focus of discussion. Data on rare communities, animal assemblages, and MCBS sites are discussed generally in this section; however, additional, more detailed data are provided in Appendix F.

Table 8.3.4.6-1 and Map 8.3-35 summarize the rare and unique resources documented within one mile of the route alternatives within this segment (see Appendix A for more detailed maps). In order to protect rare resources from exploitation or destruction, Map 8.3-35 and the Appendix A maps do not indicate the names of species or communities identified within the NHIS database.

Three state-endangered and 18 state-threatened species have been documented within one mile of the various route alternatives in Segment 3. None of these species are federally-listed; however, one species is a federal candidate species. The three state-endangered species include: two mussels, the sheepnose (*Plethobasus cyphyus*), which is a federal candidate species, and the rock pocketbook (*Arcidens confragosus*), and one plant species, the sweet-smelling Indian-plantain (*Cacalia suaveolens*). The 18 threatened species include the following seven mussel species: elktoe (*Alasmidonta marginata*), ellipse (*Venustaconcha ellipsiformis*), monkeyface (*Quadrula metanevra*), mucket (*Actinonaias ligamentina*), pistolgrip (*Tritogonia verrucosa*), round pigtoe (*Pleurobema coccineum*), and washboard (Megalonaias nervosa); the following five plant species: Davis' sedge (*Carex davisii*), glade mallow (*Napaea dioica*), James' sedge (*Carex jamesii*), spreading sedge (*Carex laxiculmis*), and tuberous Indian-plantain (*Arnoglossum plantagineum*); the following two turtles: the Blanding's turtle (*Emydoidea blandingii*) and the wood turtle (*Clemmys insculpta*); the following two birds: loggerhead shrike (*Lanius ludovicianus*) and the peregrine falcon (*Falco peregrines*); the following fish: the paddlefish (*Polydon spathula*); and the following snake: the timber rattlesnake (*Crotalus horridus*). The nine mussel species and the paddlefish are all aquatic species; however, because watercourses will most likely be spanned, impacts to these species are not anticipated.

The sweet-smelling Indian-plantain inhabits moist riverbanks, wet meadows along streams, and marsh edges (DNR 2011l). In southeastern Minnesota, Davis' sedge has been documented in alluvial forests associated with major river valleys of the Mississippi River drainage (DNR 2011m). In Minnesota, the glade mallow has been documented on stream banks and floodplains in the valleys of small to medium sized streams (DNR 2011c). James' sedge and spreading sedge prefer rich woods, dominated by sugar maple (*Acer saccharum*) and basswood (*Tilia Americana*) (DNR 2011n, 2011o). In southern Minnesota, the tuberous Indian-plantain has been primarily documented on native moist prairies, with few documentations of this species on bluff prairies (DNR 2011j). The Blanding's turtle generally inhabits wetland complexes where there are adjacent sandy uplands for nesting (DNR 2011h). Wood turtles are largely aquatic, preferring small to medium-sized fast-moving rivers and streams; wood turtles occupy adjacent uplands, including alder thickets, forest, grassland, and agricultural land, for basking, foraging, and nesting (DNR 2011k). The loggerhead shrike is a migratory song bird that inhabits relatively open land with some shrub cover (DNR 2011i). In southeastern Minnesota, the peregrine falcon nests primarily on buildings and bridges and in historic eyries on cliffs along the Mississippi River (DNR 2011p).The timber rattlesnake inhabits forested bluffs, rock outcrops, and bluff prairies (DNR 2011g).

Four of the documented non-aquatic rare species have been found within the ROW of some of the route alternatives in this segment; these include tuberous Indian-plantain, Blanding's turtle, wood turtle, and timber rattlesnake (Table 8.3.4.6-1). The Blanding's turtle and the timber rattlesnake have been documented within the ROW of all 31 route alternatives in this segment (Table 8.3.4.6-1). The tuberous Indian-plantain has been documented within the ROW of 22 of

Table 8.3.4.6-1a Summary of rare and unique resources within one mile of each route alternative - Segment 3

					Route Alternatives														
Common Name	**Scientific Name**	**Type**	**MN Status**	**U.S. Status**	**3P**	**3-P-Kellogg**	**3-P-Zumbro-N**	**3-P-Zumbro-S**	**3P-001**	**3P-002**	**3P-003**	**3P-004**	**3P-005**	**3P-006**	**3P-007**	**3P-008**	**3P-009**	**3P-010**	**3P-011**
Sheepnose	*Plethobasus cyphyus*	Invertebrate Animal	END	C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rock pocketbook	*Arcidens confragosus*	Invertebrate Animal	END	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sweet-smelling Indian-plantain	*Cacalia suaveolens*	Vascular Plant	END	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Elktoe	*Alasmidonta marginata*	Invertebrate Animal	THR	NONE	X	X			X	X	X	X	X	X	X	X		X	X
Ellipse	*Venustaconcha ellipsiformis*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Monkeyface	*Quadrula metanevra*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mucket	*Actinonaias ligamentina*	Invertebrate Animal	THR	NONE			X	X									X		
Pistolgrip	*Tritogonia verrucosa*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Round pigtoe	*Pleurobema coccineum*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Washboard	*Megalonaias nervosa*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Davis' sedge	*Carex davisii*	Vascular Plant	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Glade mallow	*Napaea dioica*	Vascular Plant	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
James' sedge	*Carex jamesii*	Vascular Plant	THR	NONE			X												
Spreading sedge	*Carex laxiculmis*	Vascular Plant	THR	NONE			X												
Tuberous Indian-plantain	*Arnoglossum plantagineum*	Vascular Plant	THR	NONE	X	X			X	X	X	X	X	X	X	X	X	X	X
Blanding's turtle	*Emydoidea blandingii*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wood turtle	*Clemmys insculpta*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Loggerhead shrike	*Lanius ludovicianus*	Vertebrate Animal	THR	NONE			X												
Peregrine falcon	*Falco peregrinus*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Paddlefish	*Polyodon spathula*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Timber rattlesnake	*Crotalus horridus*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Species highlighted in blue indicate aquatic species.

"END" refers to state-endangered, "THR" refers to state-threatened, "C" refers to federal candidate species, and "NONE" refers to no federal status

An "X" indicates the presence of that particular species within 1 mile of the proposed centerline, while a blank cell indicates that a particular species or site has not been documented within 1 mile of the proposed centerline.

Cells in pink indicate the presence of that particular species within the proposed ROW.

Table 8.3.4.6-1b Summary of rare and unique resources within one mile of each route alternative - Segment 3

					Route Alternatives														
Common Name	**Scientific Name**	**Type**	**MN Status**	**U.S. Status**	**3B-003**	**3A-001**	**3A-003**	**3A-004**	**3-A-Crossover**	**3-A-Kellogg**	**3A**	**2C3-001-3a**	**2C3-001-3b**	**2C3-002-3**	**2C3-003-3**	**2C3-004-3**	**2C3-005-3**	**2C3-006-3**	**2C3-007-3**	**2C3-008-3**
Sheepnose	*Plethobasus cyphyus*	Invertebrate Animal	END	C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rock pocketbook	*Arcidens confragosus*	Invertebrate Animal	END	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sweet-smelling Indian-plantain	*Cacalia suaveolens*	Vascular Plant	END	NONE		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Elktoe	*Alasmidonta marginata*	Invertebrate Animal	THR	NONE	X							X	X	X	X	X	X	X	X	X
Ellipse	*Venustaconcha ellipsiformis*	Invertebrate Animal	THR	NONE	X							X	X	X			X	X	X	X
Monkeyface	*Quadrula metanevra*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mucket	*Actinonaias ligamentina*	Invertebrate Animal	THR	NONE																
Pistolgrip	*Tritogonia verrucosa*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Round pigtoe	*Pleurobema coccineum*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Washboard	*Megalonaias nervosa*	Invertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Davis' sedge	*Carex davisii*	Vascular Plant	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Glade mallow	*Napaea dioica*	Vascular Plant	THR	NONE	X							X	X	X			X	X	X	X
James' sedge	*Carex jamesii*	Vascular Plant	THR	NONE		X	X	X		X	X				X					
Spreading sedge	*Carex laxiculmis*	Vascular Plant	THR	NONE		X	X	X		X	X				X					
Tuberous Indian-plantain	*Arnoglossum plantagineum*	Vascular Plant	THR	NONE	X							X	X	X		X	X	X	X	X
Blanding's turtle	*Emydoidea blandingii*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wood turtle	*Clemmys insculpta*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Loggerhead shrike	*Lanius ludovicianus*	Vertebrate Animal	THR	NONE		X	X	X		X	X				X					
Peregrine falcon	*Falco peregrinus*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Paddlefish	*Polyodon spathula*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Timber rattlesnake	*Crotalus horridus*	Vertebrate Animal	THR	NONE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Species highlighted in blue indicate aquatic species.

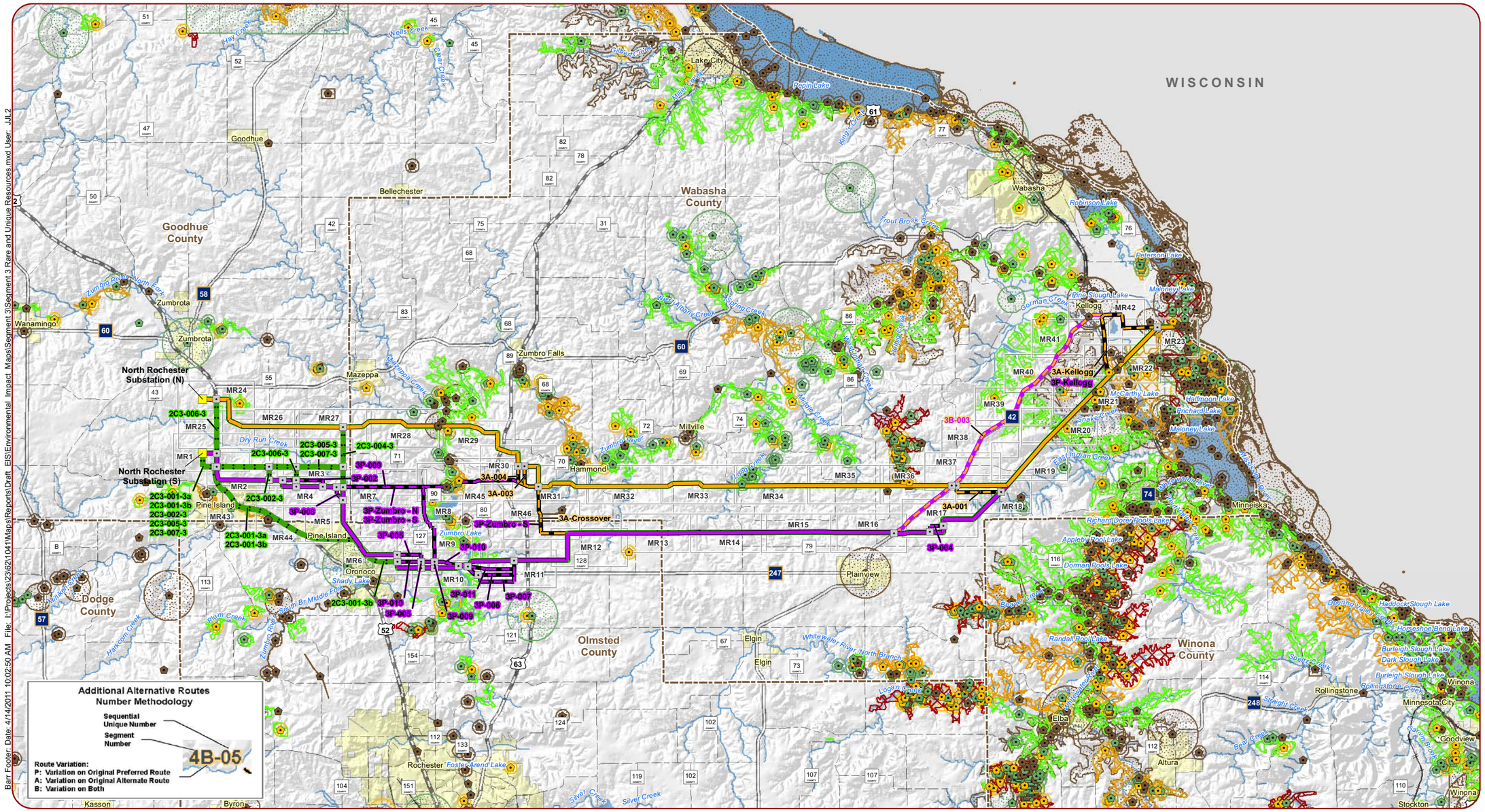
"END" refers to state-endangered, "THR" refers to state-threatened, "C" refers to federal candidate species, and "NONE" refers to no federal status

An "X" indicates the presence of that particular species within 1 mile of the proposed centerline, while a blank cell indicates that a particular species or site has not been documented within 1 mile of the proposed centerline.

Cells in pink indicate the presence of that particular species within the proposed ROW.

Source: Minnesota Department of Natural Resources – Natural Heritage Information System Database

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.



Barr Footer: Date: 4/14/2011 10:02:50 AM File: I:\Projects\23\62\11041\Maps\Reports\Draft EIS\Environmental Impact Maps\Segment 3\Segment 3 Rare and Unique Resources.mxd User: JJL2

MR1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

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

Original Alignments
- P Route
- A Route

Additional Alternative Routes
- Variation on P Route
- Variation on A Route
- Variation on Both
- Parallel Alignment

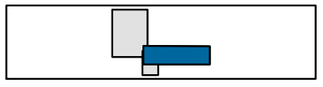
- Project Substations
- County Boundaries

MN DNR Natural Heritage
- Botanical
- Ecological
- Zoological
- Botanical
- Ecological
- Zoological

- State Designated Railroad Prairie

MCBS Biodiversity Significance
- Moderate Significance
- High Significance
- Outstanding Significance

Map 8.3-35
Rare & Unique Resources/Critical Habitat Map
Segment 3, North Rochester Substation to Mississippi River

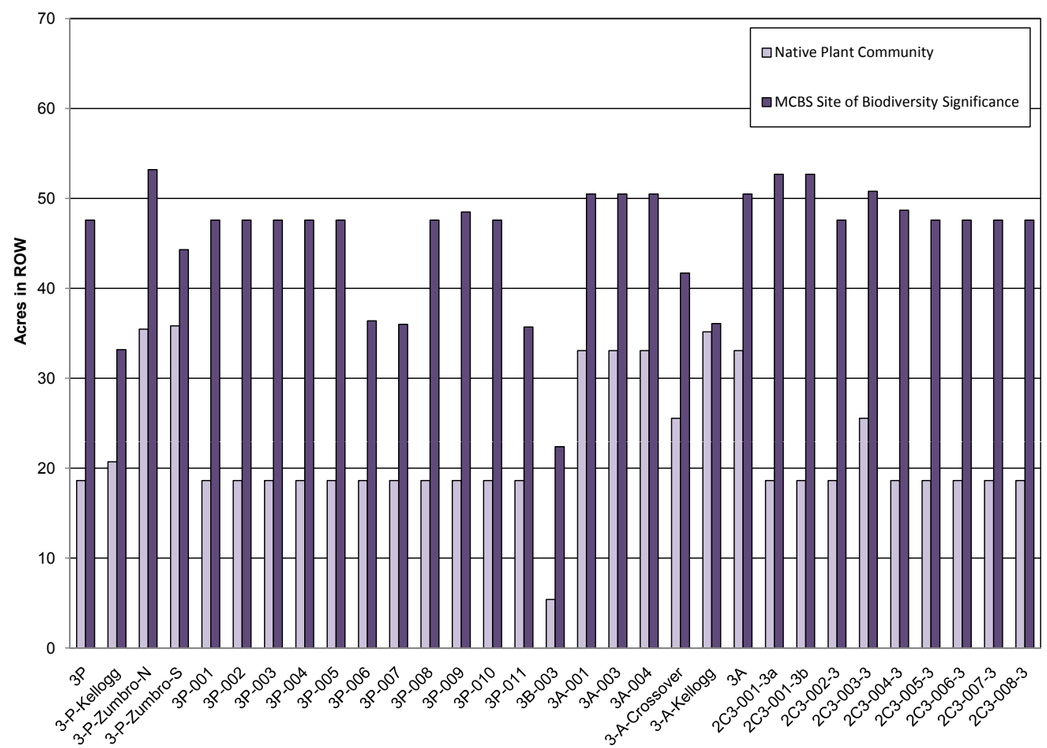


the 31 route alternatives in this segment (Table 8.3.4.6-1). The wood turtle has been documented in the ROW of the following route alternatives: 3A, 3A-001, 3A-003, 3A-004, 3-A-Crossover, 3-A-Kellogg, and 2C3-003-3 (Table 8.3.4.6-1). Bald eagles have been found within the ROW of all route alternatives in this segment (Appendix F).

A bat colony has been documented within one mile of seven route alternatives in this segment (Appendix F). This bat colony is not within the ROW of any of the route alternatives in this segment. A freshwater mussel concentration area has been documented within one mile of the following route alternatives in this segment: 3-P-Kellogg, 3-P-Zumbro-N, 3-P-Zumbro-S, 3B-003, 3A-001, 3A-003, 3A-004, 3-A-Crossover, 3-A-Kellogg (there are two freshwater mussel concentration areas within one mile of this route alternative), 1A, 2C3-001-3a, 2C3-001-3b, and 2C3-003-3 (Appendix F). None of the freshwater mussel concentration areas are located within the ROW of any route alternative in this segment.

DNR native plant communities are present within the ROW of all route alternatives in this segment (Figure 8.3.4.6-1). These native plant communities consist of Calcareous Fen (Southeastern), Dry Bedrock Bluff Prairie (Southern), Dry Limestone-Dolomite Cliff (Southern), Dry Sand-Gravel Prairie (Southern), Red Oak-White Oak-(Sugar Maple) Forest, Red Oak-White Oak Forest, Silver Maple-(Virginia creeper) Floodplain Forest, and White Pine-Oak Woodland (Sand) (Appendix F). See Appendix F for additional native plant communities that have not been documented within the ROW but have been documented within one mile of several route alternatives in this segment. All route alternatives in this segment have MCBS Sites of Biodiversity Significance (SBS) within the ROW. As shown in Figure 8.3.4.6-1, route alternative 3B-003 has significantly less acres of native plant community and MCBS SBS within the ROW relative to the other route alternatives in this segment.

Figure 8.3.4.6-1 Summary of DNR plant communities and MCBS Sites of Biodiversity Significance within ROW of each route alternative - Segment 3



Source: Minnesota Department of Natural Resources MCBS Sites of Biodiversity Significance do not include sites designated as "below."

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J

Mitigation

General mitigation measures that could be employed to minimize impacts to rare and unique resources are discussed in Section 7.6. See Section 7.7 for a discussion of the measures that could be utilized to minimize the impacts of avian collisions with transmission lines. Within Segment 3, threatened and endangered species are found within one mile and within the ROW of each route alternative. As waterbodies and watercourses would most likely be spanned, impacts to threatened and endangered aquatic species are not anticipated.

Impacts to sweet-smelling Indian-plantain, which has not been documented within the ROW of any route alternative in this segment, could be minimized by avoiding or spanning moist riverbanks, wet meadows along streams, and marsh edges. Impacts to Davis' sedge, which has not been documented within the ROW of any route alternative in this segment, could be minimized by avoiding or spanning alluvial forests associated with major river valleys of the Mississippi River drainage. Impacts to the glade mallow, which has not been documented within the ROW of any of the route alternatives in this segment, could be minimized by spanning streambanks and floodplains. Impacts to James' sedge and spreading sedge, which have not been documented within the ROW of any of the route alternatives in this segment, could be minimized by avoiding or spanning forested areas dominated by sugar maple and basswood. Impacts to the tuberous Indian-plantain could be minimized by choosing a route alternative where this species has not been documented within the ROW (Appendix F) or by avoiding or spanning native moist prairies and bluff prairies. Impacts to Blanding's turtles could be minimized by spanning large wetland complexes with adjacent sandy uplands. Impacts to the wood turtle could be minimized by spanning areas of alder thicket, grassland, and agricultural land adjacent to rivers and streams or by choosing a route alternative where this species has not been documented in the ROW (Appendix F). Impacts to loggerhead shrike could be minimized by avoiding or spanning open grassland areas with some shrub component. Impacts to the timber rattlesnake could be minimized by avoiding or spanning forested bluffs, rock outcrops, and bluff prairies. Impacts to peregrine falcons and bald eagles could be minimized by avoiding documented nesting sites. Surveys for threatened or endangered species could be conducted in suitable habitat within the permitted route corridor as directed by the agencies. If rare species are unavoidable, a Takings Permit from the DNR may be required along with other conditions.

Impacts to the bat colony could be minimized by choosing a route alternative where this animal assemblage is not present within one mile (Appendix F). Impacts to the freshwater mussel concentration areas are not anticipated because all watercourses will be spanned.

There are DNR native plant communities and MCBS sites within one mile and within the ROW of each route alternative within this segment. Impacts to native plant communities and MCBS sites could be minimized by choosing route alternative 3B-003, which has the least acreage of native plant communities and MCBS sites within the ROW. The placement of structures within DNR native plant communities and MCBS sites could be avoided or minimized by spanning them to the extent possible. Where structure placement cannot be avoided in these DNR native plant communities, MCBS sites, and designated railroad prairies, rare species associated with these habitats could be affected. As stated above, surveys for rare species may be necessary in areas where rare habitat is unavoidable.

8.3.4.7 Flora and Fauna – Analysis of Segment Alternatives for the North Rochester Substation to Mississippi River Segment

Flora

Vegetation community cover types associated with the route alternatives in Segment 3 are dominated by cropland and grassland, and also have significantly more forested cover than the other two route segments. See Figures 8.3.4.7-1 and 8.3.4.7-2 for a comparison of vegetation community cover between the P and A routes. The relative coverages of the vegetation types shown in these figures approximate the vegetation coverages for all P and A route alternatives. As indicated in the figures, variability in overall vegetation cover between the P and A route alternatives is not great. The route alternatives in Segment 3 have much higher forested cover than the route alternatives in the other two segments.

The State of Minnesota has a total of eleven species of noxious weeds on their primary list, as identified in Section 7.7. Goodhue, Olmsted and Wabasha Counties do not have secondary county-specific lists.

This segment terminates at the crossing of the Mississippi River. Additional details on the vegetation communities and potential project impacts at the river crossing are provided in Section 8.4.

Common plant species and plant communities known to occur in this segment are described in Section 7.7. Data on vegetation that currently exists and that historically existed in the project area for this segment were gathered from the DNR MCBS. The route alternatives in this segment are located within the Rochester Plateau and the Blufflands Subsections of the Paleozoic Plateau Section (DNR 2009a). Historically, the predominant vegetation communities in the Rochester Plateau Subsection included tallgrass prairie and bur oak savanna. Vegetation and habitats in the Rochester Plateau are described in greater detail in Chapter 7.7. The predominant vegetation communities in the Blufflands Subsection included tallgrass prairie and bur oak savanna along ridge tops and dry upper slopes. Red oak, white oak, shagbark hickory, and basswood forests were present along moist slopes, and red oak, basswood, and black walnut forests were present in protected valleys (DNR 2009). General impacts to vegetation along the route alternatives are described in Section 7.7.1.3. Vegetation and habitats in the Blufflands are described in greater detail in Chapter 7.7.

Impacts may include both temporary and permanent effects. The impacts include localized physical disturbance caused by construction equipment during site preparation, such as grading, excavation, and soil stockpiling. There may be clearing of local vegetation for access roads. In forested areas, trees or shrubs that interfere with safety and equipment operation would be removed. Permanent vegetative changes would take place at each new pole footprint (55 square feet) and within the ROW that occurs in the forested communities.

Figure 8.3.4.7-1. General vegetation community cover along the P route alternatives - Segment 3

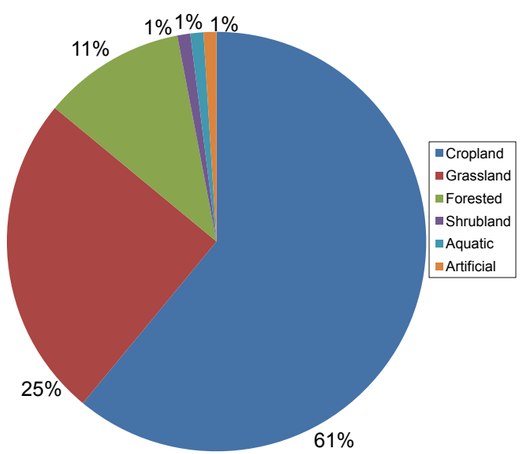
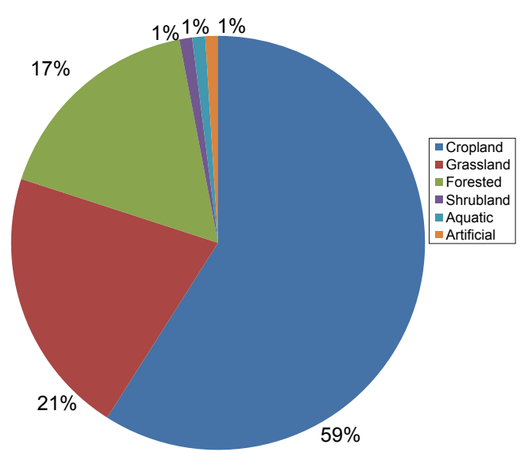


Figure 8.3.4.7-2. General vegetation community cover along the A route alternatives - Segment 3



Fauna

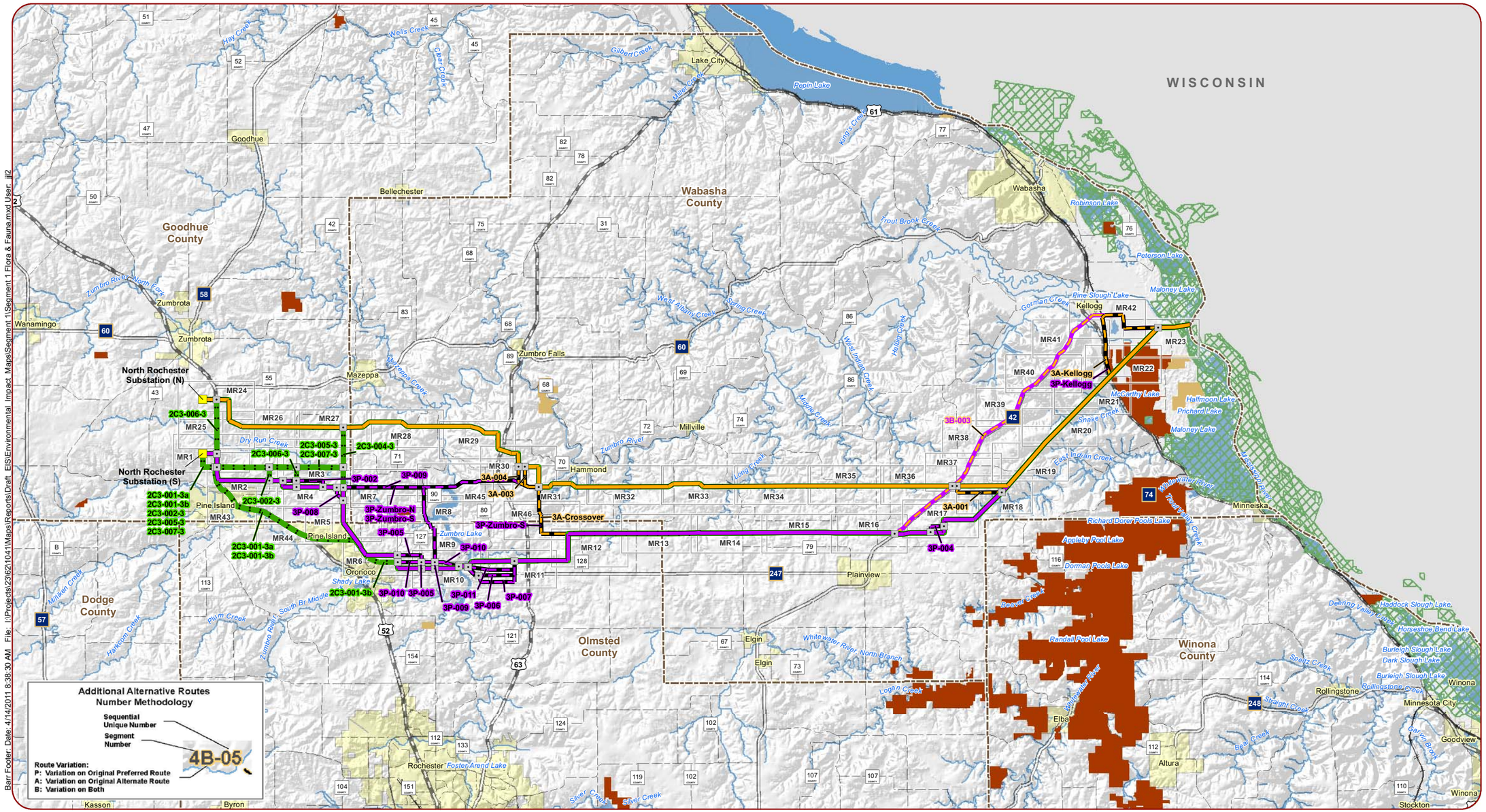
Wildlife Resources Common to All Route Alternatives in Segment 3

A number of wildlife resources occur along the route alternatives for this segment. Wildlife resources are shown on Map 8.3-36. All route alternatives cross an estimated 0.5 mile of the Upper Mississippi River National Wildlife and Fish Refuge (Refuge). The crossing of the Refuge is near the point where the proposed 345 kV transmission line would cross the Mississippi River from Kellogg, Minnesota into Alma, Wisconsin. All route alternatives converge south of Kellogg, Minnesota and follow the same route to the river crossing. The Refuge is a 240,000-acre wildlife conservation area located in and along 261 miles of the Upper Mississippi River. It is also a designated Important Bird Area (IBA) (Audubon 2010). The Refuge is discussed in detail in Sections 6.0, 7.7 and 8.4.

Similarly, all but three route alternatives cross an estimated 0.9 mile of the 128-acre McCarthy Lake Wildlife Management Area (WMA). The WMA is managed by the DNR to maintain diverse wildlife communities. It is currently crossed by an existing 161 kV transmission line. Route alternatives that cross McCarthy Lake WMA would share the ROW by expanding the existing 161 kV transmission line. The three route alternatives that would not cross McCarthy Lake WMA include 3P-Kellogg, 3A-Kellogg, and 3B-003. Route alternatives 3P-Kellogg and 3A-Kellogg would parallel the Canadian Pacific Railroad along the east side of US-61, beginning approximately 2.6 miles south of Kellogg. They would continue north approximately two miles, then turn east following road and property lines to the point where all route alternatives converge for the Kellogg crossing. Route alternative 3B-003 would follow Wabasha County Hwy 42 from near North County Road 14 northeast US-61 south of Kellogg. Approximately 0.5 mile after crossing US-61, route alternative 3B-003 would join route alternatives 3P-Kellogg and 3A-Kellogg, continuing east to the convergence with all other routes.

The existing 161 kV transmission line crossing McCarthy Lake WMA would remain regardless of the route alternative chosen. In other words, construction of the 345 kV line along route alternatives 3P-Kellogg, 3A-Kellogg, or 3B-003 would not result in the removal of the existing 161 kV line. Construction of the 345 kV transmission line along MN trunk highway 42 (route alternative 3B-003) would create an approximately 11-mile long new HVTL corridor 1.5 to 2 miles northwest of the existing 161 kV transmission line. This would be a separate new potential hazard, in the form of avian collisions or electrocutions, to bird migration parallel to the North American Mississippi River migratory flyway. Similarly, route alternatives 3P-Kellogg and 3A-Kellogg would create an approximately 4.7-mile new HVTL corridor within two miles of the existing 161 kV transmission line. Widening the existing 161KV transmission line ROW to accomodate the 345 kV line enlartes the existing potential hazard to bird migration, but does not create new, separate conditions where avian wildlife would encounter transmission lines.

In addition, two IBAs occur in the vicinity of most route alternatives in this segment. They are the Whitewater Valley IBA and the Upper Mississippi River National Wildlife and Fish Refuge IBA (discussed above). The Whitewater Valley IBA contains a variety of habitats that support at least 242 species of birds, many of which are listed as species of conservation concern. In addition, it is contiguous with the Upper Mississippi Wildlife National Wildlife and Fish Refuge IBA which serves as a major migratory corridor. McCarthy Lake WMA is also located within the Whitewater Valley IBA. All route alternatives except 3B-003 cross the Whitewater Valley IBA along an



Barr Footer: Date: 4/14/2011 8:38:30 AM File: I:\Projects\23\62\10\41\Maps\Reports\Draft_EIS\Environmental_Impact_Maps\Segment 1\Segment 1 Flora & Fauna.mxd User: jjl2

MR1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

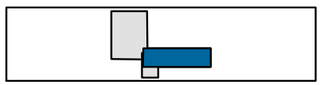
For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
- P Route
- A Route

Additional Alternative Routes
- Variation on P Route
- Variation on A Route
- Variation on Both
- Parallel Alignment

- Project Substations
- County Boundaries
- Fish Technology Center
- Fisheries Research Station
- National Fish Hatchery
- National Wildlife Refuge
- Waterfowl Production Area
- Wildlife Management Area
- Scientific and Natural Area
- Designated Wildlife Lakes

Map 8.3-36
Flora & Fauna Map
Segment 3, North Rochester Substation to Mississippi River



existing 161 kV transmission line corridor for approximately 7,500 feet near the north end of McCarthy Lake WMA.

Although it is not designated as wildlife habitat, the Zumbro River, which is crossed by all route alternatives near the Mississippi River crossing point, provides habitat for many aquatic species including fish and waterfowl.

The western ends of all route alternatives in Segment 3 pass through or near an area that the DNR suspects may harbor white-tail deer with chronic wasting disease (CWD). See Section 7.7 for a discussion of the impacts of CWD on wildlife. In January 2011, the DNR authorized the harvest of up to 1,200 deer from private land in order to collect a sufficient sample to determine the incidence and spread of CWD in the area. The area of the deer harvest stretches from Wanamingo, Zumbrota and Zumbro Falls southward to Kasson, Byron and Rochester (DNR 2011q).

As discussed in Section 7.7, research indicates that the biological agent conveying CWD, known as a prion, may persist in soils for several years. While there is growing evidence that the risk of CWD spreading to humans is low (Saunders et al. 2008), it is conceivable that CWD could be spread to other deer through soil. CWD prions would generally be near the surface, but may be deeper where dead deer have been buried. In any event, the risk that construction of the proposed transmission line would increase the spread or incidence of CWD is low. It is unlikely that CWD prions are widespread throughout the soils along the route alternatives. The likelihood of construction-related excavation and exposure of CWD prion-contaminated soils is also low. Moreover, deer are unlikely to utilize active construction areas, and would therefore avoid exposure to contaminated soils, if present.

Wildlife Resources Near the P Route Alternatives

Four Aquatic Management Areas (AMAs) are located within one mile of all P route alternatives, with the exception of 3B-003. Two separate units of East Indian Creek AMA are located 2,600 and 4,700 feet south of most of these route alternatives. Two separate units of the Snake Creek AMA are located in proximity to all P route alternatives, with the exception of 3B-003. One is 450 feet south of the route alternatives, and the other is 4,000 feet south of them. East Indian Creek and Snake Creek are also DNR-designated trout streams.

In addition to designated conservation and management areas, several land easements that provide potential wildlife habitat occur within one mile of the P route alternatives. A total of 383 CRP lands occur within one mile of most of these route alternatives, and 27 of these are within the 1,000-foot route width of these route alternatives. No CREP lands or federally designated WRPs occur within one mile of the P route alternatives.

Wildlife Resources on A Route Alternatives

As with the P route alternatives, the A route alternatives have other conservation and management areas within one mile. Four AMAs are located in proximity to the A route alternatives, although none of these are located within the 1,000-foot route width or crossed by the proposed centerlines of the route alternatives. Long Creek AMA is located approximately 2,500 feet north of the A route alternatives. West Indian Creek AMA is located approximately 4,000 feet north of the route alternatives. Two separate units of the Snake Creek AMA are located in proximity to the A route alternatives; one is approximately 450 feet south of the A route alternatives, and the other is approximately 4,000 feet south of the route alternatives.

The A route alternatives cross two state-designated trout streams, Hammond Creek and Long Creek. They also cross the Zumbro River in a rural area with little human activity and no existing infrastructure. No state-designated SNAs, WPAs, or designated GBCAs occur within one mile of the centerlines of the A route alternatives.

Potential wildlife habitat in the form of land easements also occur within one mile of the A route alternatives. A total of 401 CRP lands occur within one mile of the centerlines of these route alternatives. Nineteen of these are within the 1,000-foot route width of these route alternatives. No CREP lands or federally designated WRPs occur within one mile of the A route alternatives.

Section 7.7 identifies and discusses potential temporary and permanent impacts to fauna, as well as avian specific impacts, that may occur in the project area as a result of transmission line construction. The Upper Mississippi River National Wildlife and Fish Refuge and McCarthy Lake WMA are crossed by most route alternatives. Both have existing transmission line corridors within them. Temporary and permanent impacts to wildlife would occur in both areas during the construction and operation of the proposed transmission line.

Impacts may include permanent removal of potentially suitable habitat (structure footprints), temporary habitat alteration or disturbance associated with construction activities, direct harm or mortality for wildlife unable to avoid construction activities (bird eggs, nestlings, small mammals, amphibians, and reptiles), and temporary displacement of wildlife caused by increased human activity. These impacts are not expected to impact the survival or viability of local wildlife populations. Moreover, other unaffected habitats are available nearby to support displaced individuals. If necessary, field surveys to obtain more route specific wildlife data would be completed once a route is permitted.

All water bodies would be spanned by the transmission line; therefore, direct impacts to lakes and rivers would be avoided. Impacts to fisheries would be minor to negligible because of conservation measures and practices that would reduce the potential for surface runoff and sedimentation to aquatic habitats. No AMAs are located within the route alternatives, and none would be intersected by the project ROW. Therefore, no impacts to AMAs are anticipated. It is possible that some trees may need to be cleared along the banks of state-designated trout streams where the transmission line crosses. Tree removal at the crossings may reduce shading; however, the impact is unlikely to cause population-level effects to trout or other aquatic species.

Mitigation of potential impacts within the Upper Mississippi River National Wildlife and Fish Refuge are discussed in detail in Sections 6.0, 7.7, and 8.4. Special consideration is being given to the structure designs at the Mississippi River crossing near the Refuge and Upper Mississippi NWR IBA. The applicant has been and will continue to work with the USFWS, the Minnesota DNR, and the Wisconsin DNR on designing river crossing structures to minimize potential avian impacts. Based on coordination to date, several potential structure designs have been produced (Section 8.4). In general, structure designs that minimize ROW width tend to be higher while lower structures require more ROW width. The applicant and resource agencies have arrived at an informal and general consensus that the preferable configuration is one that minimizes structure height and consolidates crossing wires in the fewest number of horizontal planes. The applicant and resource agencies will continue to coordinate on the ROW and structure configurations at the Refuge.

Additional coordination on mitigation of potential impacts in sensitive wildlife habitats will continue through the federal EIS process, the Wisconsin state permitting process, and the USFWS Special Use Permit process.

8.3.4.8 Water Resources – Analysis of Segment Alternatives for the North Rochester Substation to Mississippi River Segment

Several sources of data (see Appendix B) were reviewed to identify water resources within the 150-foot and 200-foot ROWs (referred to as ROW below) and 1,000-foot route width of each route alternative within Segment 3. Map 8.3-37 and the detailed maps in Appendix A identify the water resources within the vicinity of each route alternative in this segment.

Several rivers, streams, and ditches (collectively referred to as "watercourses" below) would be crossed by the route alternatives within this segment. The main watercourses that run through this segment include the Zumbro River,

Snake Creek, East Indian Creek, West Indian Creek, Silver Spring Creek, Gorman Creek, Hammond Creek, Long Creek, Middle Creek, Dry Run Creek, and the Mississippi River; all of these watercourses are listed on the Public Water Inventory (PWI) (Map 8.3-37).

Portions of East Indian Creek, Long Creek, and Hammond Creek are designated trout streams and portions of East Indian Creek, Snake Creek, and a couple unnamed streams are designated trout stream tributaries (Map 8.3-37).

There are three Minnesota Pollution Control Agency (PCA) impaired watercourses within this segment; these include the Zumbro River, West Indian Creek, and the Mississippi River. All of the route alternatives within this segment would require between two and four impaired stream crossings (Map 8.3-37, Figure 8.3.4.8-1).

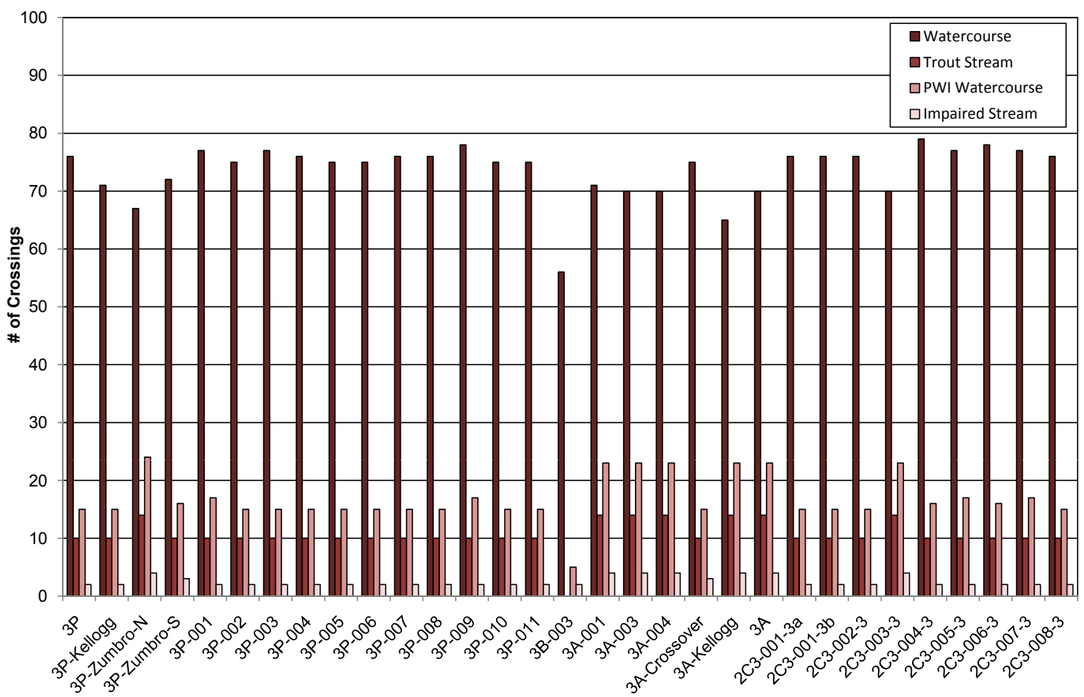
All route alternatives would require crossing U.S. Lock and Dam Pool #5, a PWI basin located in the Mississippi River (Map 8.3-37). In addition, all route alternatives except 3P-Zumbro-N, 3P-Zumbro-S, all of the A route alternatives, and 2C3-003-3 would require crossing Lake Zumbro, which is designated as a PWI basin and is also listed on the PCA impaired waters list.

Figure 8.3.4.8-1 summarizes the total number of watercourses, trout streams, PWI watercourses, and impaired streams that would be crossed by each route alternative in this segment. The route alternatives within this segment have between 56 and 79 watercourse crossings within their ROW, with route alternative 3B-003 having the fewest watercourse crossings (Figure 8.3.4.8-1). Route alternative 3B-003 would not require any trout stream crossings, while all other route alternatives in this segment would require between 10 and 14 trout stream crossings (Figure 8.3.4.8-1). Route alternative 3B-003 also has the fewest PWI watercourse crossings (5 crossings), while all other route alternatives in this segment would require between 15 and 24 PWI watercourse crossings (Figure 8.3.4.8-1).

Wetlands within the ROW of the route alternatives in this segment consist mostly of small freshwater emergent wetlands and forested wetlands, with a few small freshwater ponds and shrub dominated wetlands also present. Figure 8.3.4.8-2 summarizes the total acres of wetland and forested wetland that are present within the ROW of each route alternative in this segment. Route alternatives 3P-Kellogg, 3B-003, and 3A-Kellogg have the fewest acres of wetland within the ROW (between 14 and 23 acres) (Figure 8.3.4.8-2). These three route alternatives also have the fewest acres of forested wetland in the ROW (between 7 and 10 acres) (Figure 8.3.4.8-2). In contrast, route alternatives 2C3-001-3a and 2C3-001-3b have the most acres of wetland (45 acres) and forested wetland (19 acres) within the ROW (Figure 8.3.4.8-2).

Although wetlands would be spanned to the extent possible, wetlands wider than 1,000 feet may require placement of one or more poles within them. Route alternative 3B-003 does not have any wetlands wider than 1,000 feet within

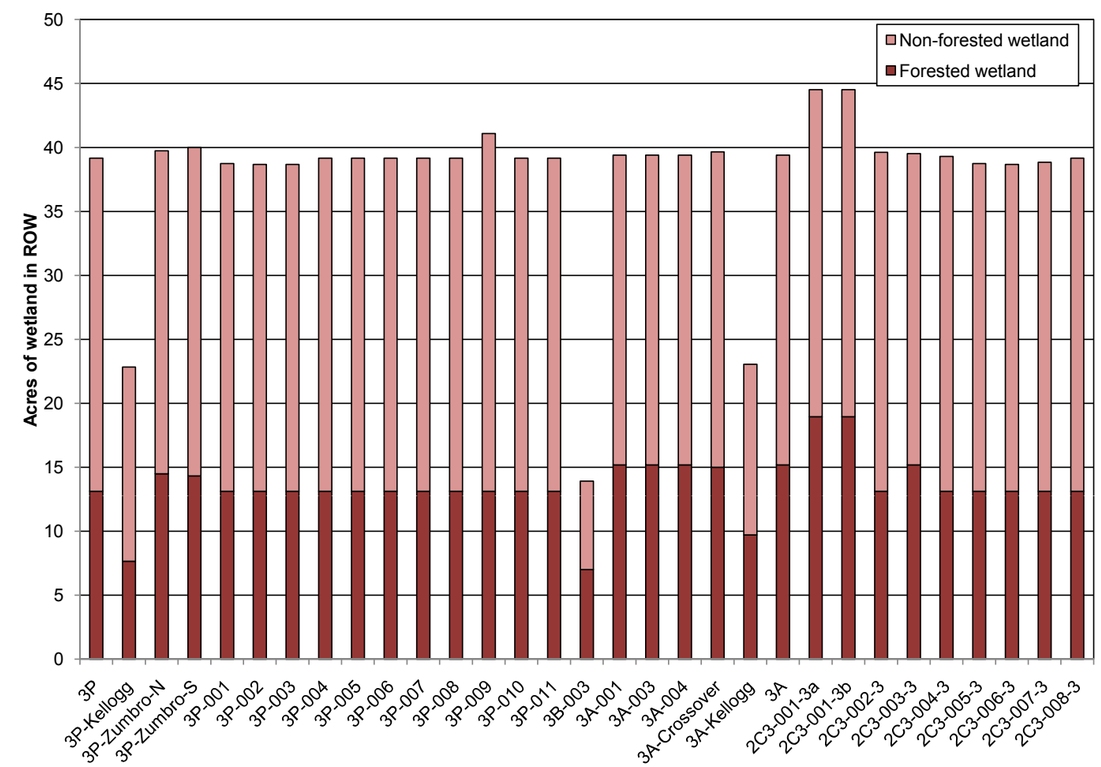
Figure 8.3.4.8-1 Number of watercourse, PWI, trout stream, and impaired stream crossings necessary for each route alternative - Segment 3



Source: Minnesota Department of Natural Resources – Division of Waters
Trout streams include designated trout streams and tributaries to trout streams.

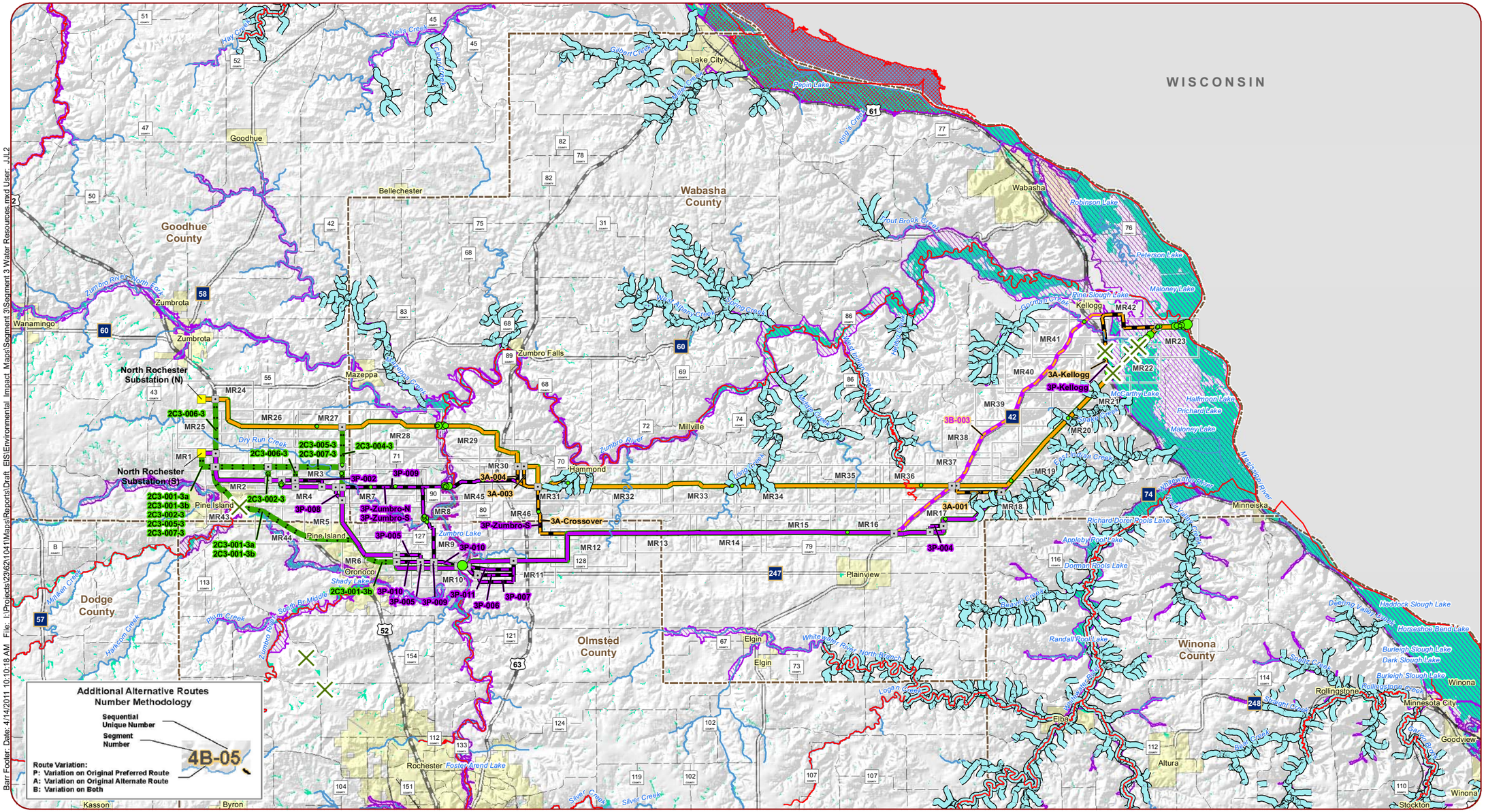
*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

Figure 8.3.4.8-2 Acres of forested and non-forested wetland within proposed ROW of each route alternative - Segment 3



Source: U.S. Fish and Wildlife Service – National Wetland Inventory

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.



MR1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

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

Original Alignments
- P Route
- A Route

Additional Alternative Routes
- Variation on P Route
- Variation on A Route
- Variation on Both
- Parallel Alignment

- Project Substations
- County Boundaries
- Q3 FEMA Floodplain
- Trout Streams

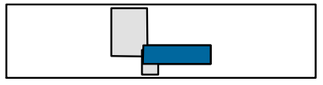
Wild and Scenic Rivers
- Recreational
- Scenic
- Wild

- Wetland Crossings > 1,000 Feet

Wetland Area (acres) within 150-foot ROW
- 0.0 - 0.5
- 0.6 - 1.0
- 1.1 - 2.0
- 2.1 - 3.0
- 3.1 - 6.1

- Public Water Inventory Watercourse
- Impaired Streams
- Public Water Inventory Basins (includes lakes and wetlands)
- Impaired Lakes
- Designated Wildlife Lakes
- NWI Wetlands

Map 8.3-37
Water Resources Map
Segment 3, North Rochester Substation to Mississippi River



Barr Footer: Date: 4/14/2011 10:10:18 AM File: I:\Projects\23\62\10\41\Maps\Reports\Draft EIS\Environmental Impact Maps\Segment 3\Segment 3 Water Resources.mxd User: JJL2

the ROW and route alternatives 3P-Kellogg and 3A-Kellogg both have only one wetland wider than 1,000 feet within the ROW. The remaining route alternatives in this segment have between three and four wetlands wider than 1,000 feet within the ROW.

Mitigation

General mitigation measures that could be employed to minimize impacts to water resources are discussed in Section 7.8. Within this 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 likely be spanned, no structures would be placed within these features and direct impacts to watercourses and lakes are anticipated to be minimal. Potential indirect impacts to these resources, such as increases in turbidity, could be minimized through use of BMPs and by choosing route alternative 3B-003, which has fewer watercourse crossings, trout stream crossings, and PWI watercourse crossings than the other route alternatives in this segment. Route alternatives 3P-Zumbro-N and 3P-Zumbro-S could minimize impacts to the Zumbro River because an existing HVTL already crosses the Zumbro River at this location.

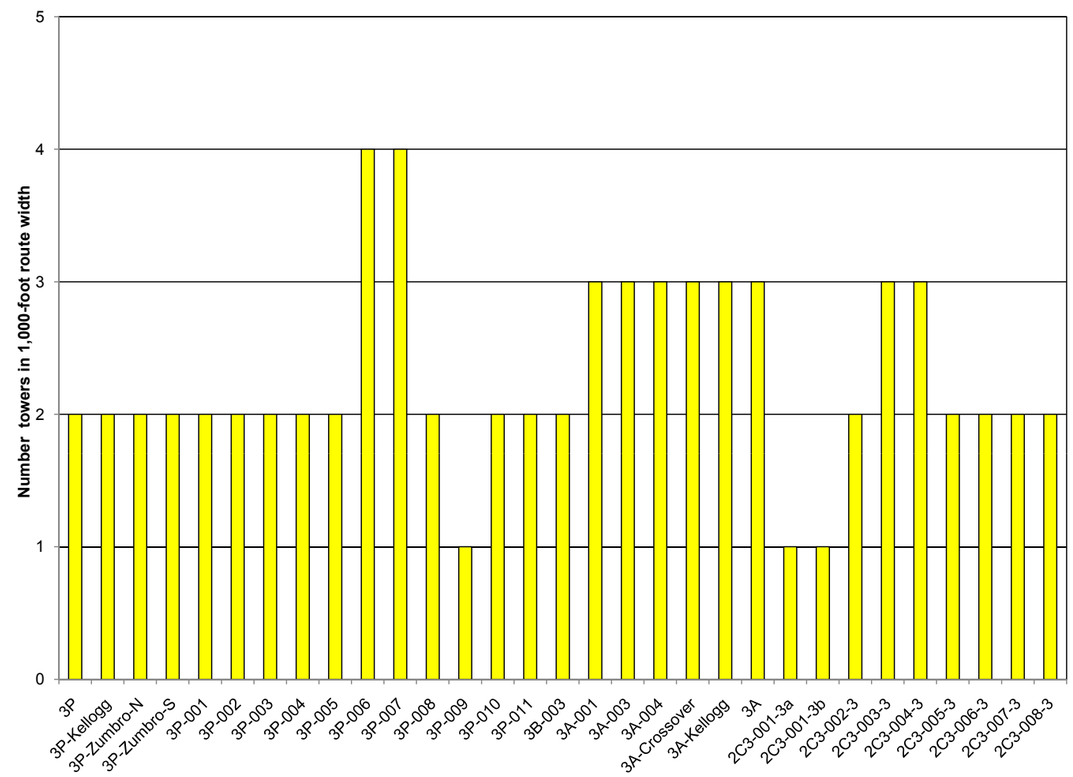
Temporary impacts to wetlands may occur if they need to be crossed during construction. Utilizing BMPs and choosing route alternative: 3P-Kellogg, 3B-003a, or 3A-Kellogg, which have the least acres of wetland within the ROW and 1,000-foot route width, could minimize temporary impacts to wetlands. Permanent impacts to wetlands may occur if structures need to be placed within wetland boundaries. Choosing route alternative 3B-003, which does not have any wetlands wider than 1,000 feet in the ROW, could minimize these impacts. Permanent impacts to wetlands may also occur if the wetlands within the 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 one of the following route alternatives: 3P-Kellogg, 3B-003a, or 3A-Kellogg could minimize these impacts because these route alternatives have the fewest acres of forested wetland within the ROW.

8.3.4.9 Electronic Interference – Analysis of Segment Alternatives for the North Rochester Substation to Mississippi River Segment

The nature of impacts related to interference are not likely to vary notably between the route alternatives in this segment. Impacts are expected to be greatest very close to the line for amplitude modulated (AM) radio reception and minor for all other types of reception. The placement of structures may also result in line-of-sight interference. Structure placement could be coordinated so that they do not interfere with microwave communication corridors. Figure 8.3.4.9-1 shows the number of communication towers within the 1,000-foot route width of each route alternative in Segment 3. The towers within the 1,000-foot route width of the route alternatives in this segment are primarily privately owned land mobile towers and cellular towers; however, Antenna Structure Registration (ASR) towers are also present.

Section 7.9 provides an overview of the potential impacts from electronic interference and outlines general steps that could be taken to mitigate impacts from interference.

Figure 8.3.4.9-1 Number of communication towers within 1,000-foot route width of each route alternative - Segment 3



Source: Federal Communications Commission – edited by AECOM and Barr

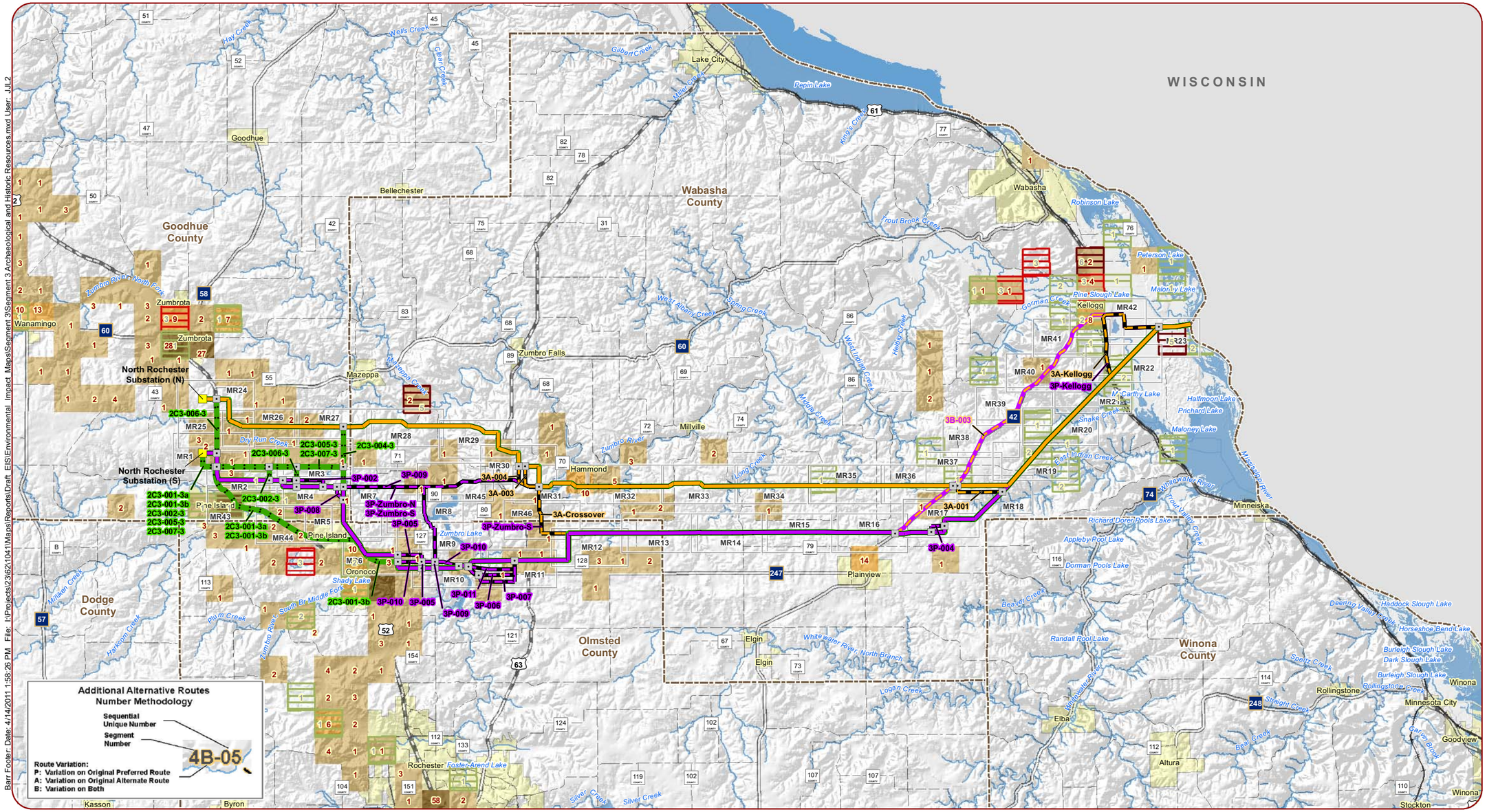
*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

8.3.4.10 Cultural Resources – Analysis of Segment Alternatives for the North Rochester Substation to Mississippi River Segment

Available Minnesota State Historic Preservation Office (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 within Segment 3. Publishing specific locations of cultural resources leaves those resources vulnerable to unauthorized removal or disturbance. To reduce the potential for unauthorized disturbance of known cultural resources, SHPO includes only township, section and range (TSR) in its publicly-available records for certain resources. For the purposes of the project's impact analysis, it has been assumed that the resource is potentially within the relevant area if any part of the SHPO TSR data for a recorded resource is within one-half mile of a proposed route centerline.

Potential historical and archaeological resource impacts for each of the proposed route alternatives for Segment 3 (shown in Map 8.3-38 and Appendix A) are summarized in Figures 8.3.4.10-1 and 8.3.4.10-2.

Figure 8.3.4.10-1 compares the number of archaeological sites within one-half mile on either side of the proposed centerline for each route alternative in this segment. Along most of the P route alternatives, seven archaeological sites have been documented within one mile of the route centerline; two of these sites are listed as single artifacts, two are listed as earth works and artifact scatter, one is listed as artifact scatter, and two are listed as lithic scatter. Of the lithic scatter sites, one has been determined as not eligible for listing on the National Register of Historic Places (NRHP). One site is listed as a lithic scatter that is recommended to be eligible for listing on the NRHP. Eligibility of the remaining sites has not been determined (Minnesota Valley Archaeological Center (MVAC) 2008). Two of the P route alternatives, 3P-Kellogg and 3P-Zumbro-N pass near 10 and 9 sites, respectively.



Barr Footer: Date: 4/14/2011 1:58:26 PM File: I:\Projects\23\62\10411\Maps\Reports\Draft_EIS\Environmental_Impact_Maps\Segment 3\Segment 3 Archaeological and Historic Resources.mxd User: JJL2

MR1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

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

Original Alignments
- P Route
- A Route

Additional Alternative Routes
- Variation on P Route
- Variation on A Route
- Variation on Both
- Parallel Alignment

- Project Substations
- County Boundaries

Archaeological Sites
- 1 - 2
- 3 - 4
- 5 - 6

Historical Sites
- 1 - 5
- 6 - 20
- 21 - 164

Map 8.3-38
Archaelogical & Historic Resources Map
Segment 3, North Rochester Substation to Mississippi River

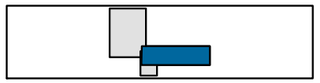
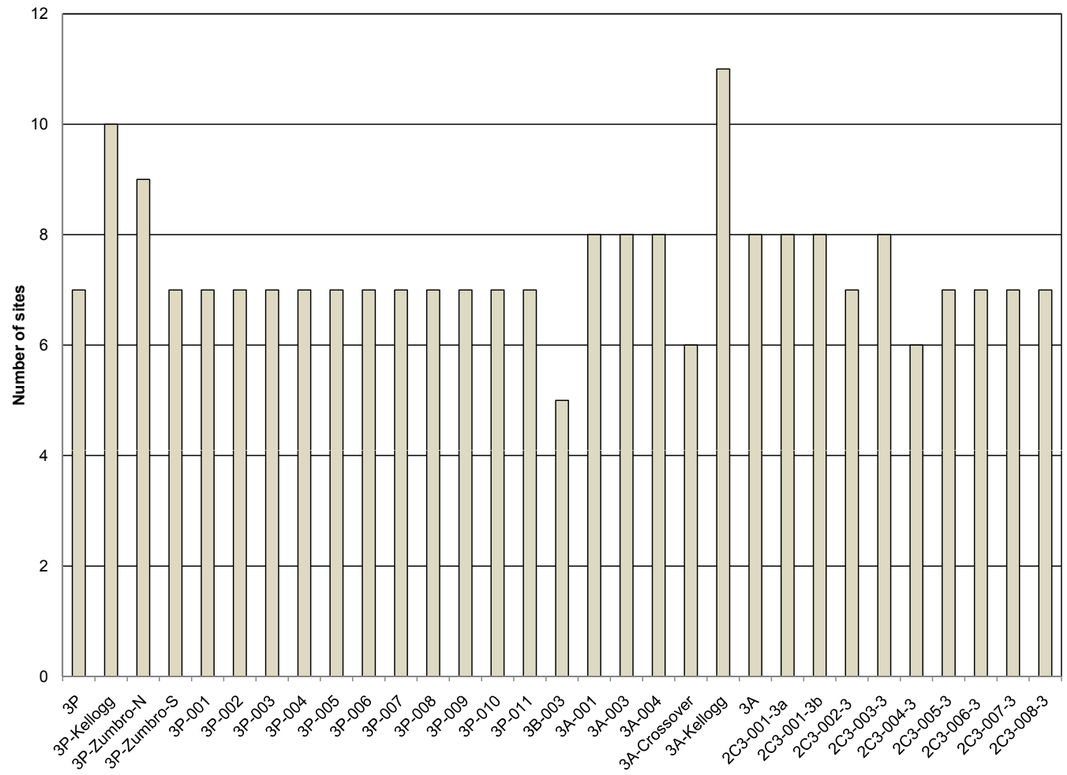
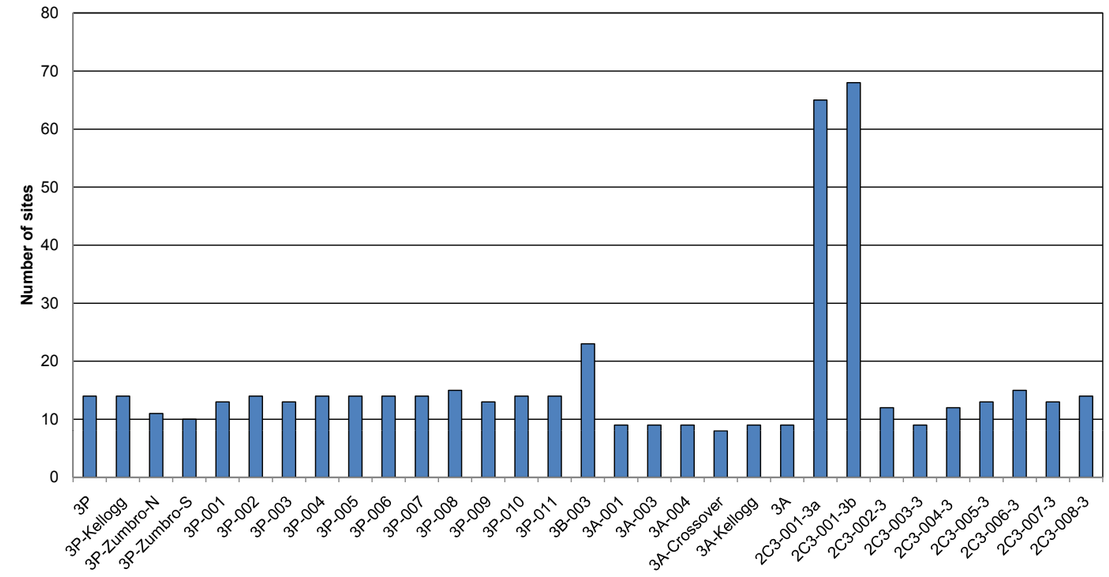


Figure 8.3.4.10-1 Number of archaeological sites within one-half mile of each route alternative - Segment 3



*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

Figure 8.3.4.10-2 Number of historic sites within one-half mile of each route alternative - Segment 3



*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

Along most of the A route alternatives, eight archaeological sites have been documented within one mile of the route centerline. One of the sites was listed as a lithic scatter that has been determined as not eligible for listing on the NRHP. Eligibility of the remaining sites has not been determined (MVAC 2008). Two of the A route alternatives, 3A-Kellogg and 3A-Crossover pass near 11 and 6 sites, respectively.

The B and C route alternatives have potential impacts to archaeological sites that range from six to eight sites.

Actual impacts to any archaeological sites will not be known until a route and alignment are selected. However, the applicant would work to design an alignment of the transmission line that would avoid archaeological resources (see the Mitigation discussion below).

Figure 8.3.4.10-3 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 P route alternatives are approximately equivalent in the number of nearby historic sites, potentially affecting 13 to 15 sites. The 3P-Zumbro-N and 3P-Zumbro-S route alternatives would affect up to 11 sites.

The A route alternatives are also approximately equivalent in the number of nearby historic sites, potentially affecting nine sites. Most of the B and C route alternatives would also affect 9 to 15 sites. Two notable exceptions are route alternatives 2C3-001-3a and 2C3-001-3b, which would affect 65 and 68 historic sites, respectively.

There are no NRHP sites located within one-half mile of the P or A route alternatives.

Mitigation

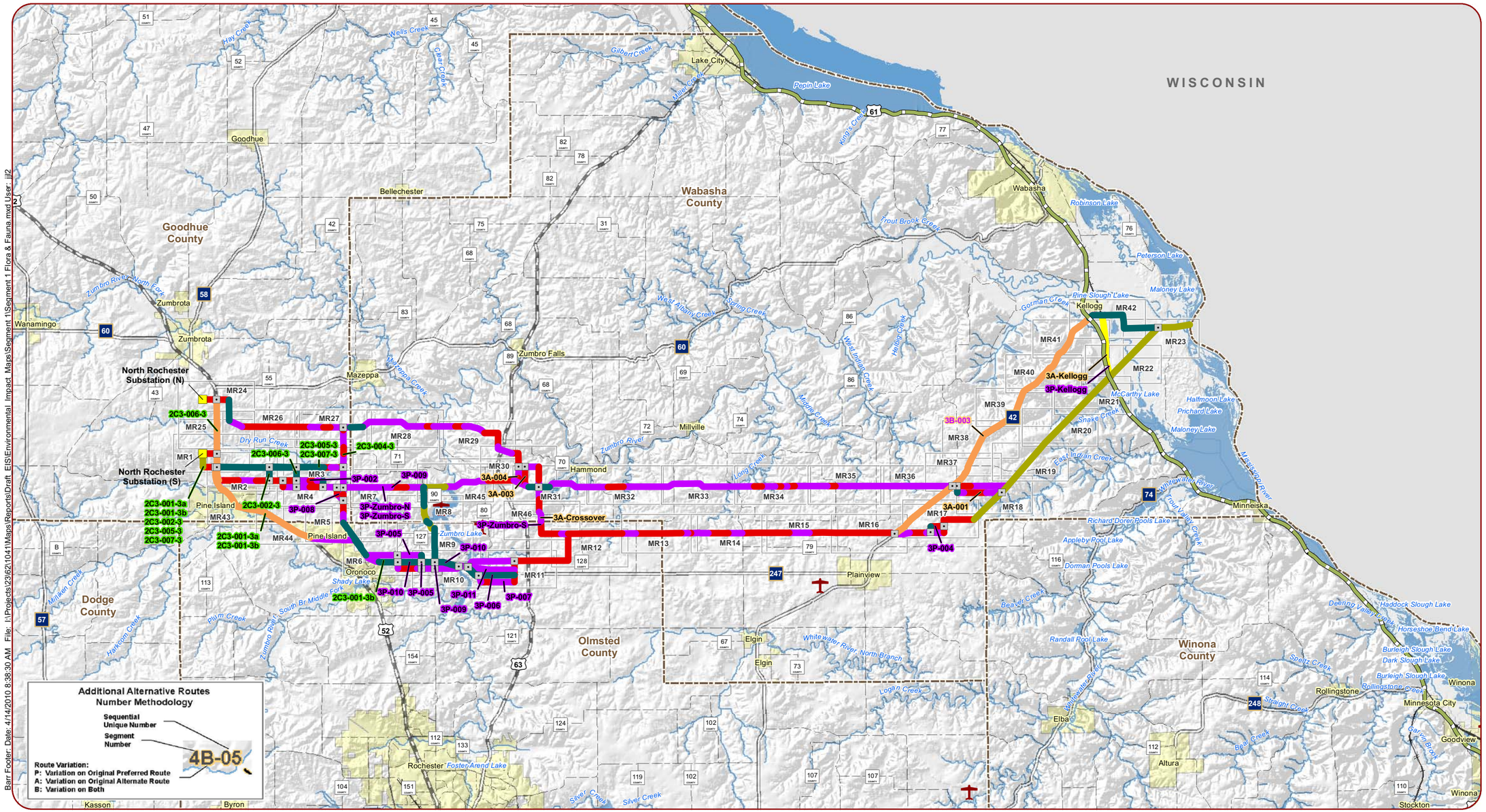
Project planning and engineering efforts would strive to avoid any sites within the proposed route width for each alternative. Route alternatives 3A-Crossover and 2C3-004-3 have the fewest archaeological sites potentially within one-half mile of the route centerline. Route alternative 3A-Crossover also has the fewest historical architectural sites potentially within one-half mile of the route centerline. However, the proximity analysis is based on the SHPO TSR information; actual proximity to archaeological and historic sites is not known. Therefore, 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 would be. Specific mitigation plans cannot be made until a complete NHRP assessment of potentially affected sites has been made.

For cultural resources within the route width, once a route is permitted by the Commission, archaeological investigations would be required to locate resources sites and to develop specific mitigation plans. Mitigation plans could entail compensation for the losses of properties that are eligible for listing on the NRHP. Section 7.10 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.

8.3.4.11 Transportation and Public Services—Analysis of Segment Alternatives for North Rochester Substation to Mississippi River

ROW Sharing

Sharing ROW with existing infrastructure satisfies Minnesota's policy of non-proliferation and reduces the additional ROW needed for the transmission line and can minimize impacts to adjacent property (see Section 4.4). In areas where ROW is shared, however, there is the potential for impacts to transportation along the shared corridors. The possible impacts are discussed



Barr Footer: Date: 4/14/2010 8:38:30 AM File: I:\Projects\23\62\10411\Maps\Reports\Draft_EIS\Environmental_Impact_Maps\Segment 1\Segment 1 Flora & Fauna.mxd User: jjl2

MR1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

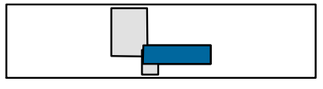
For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Project Substations
County Boundaries
Airport
Scenic Byway

ROW Sharing
Pipeline
County or Township Road
Major Highway
Municipal Street
Railroad
Trail
Transmission LIne

Non-ROW Sharing
Field Line
Cross Country

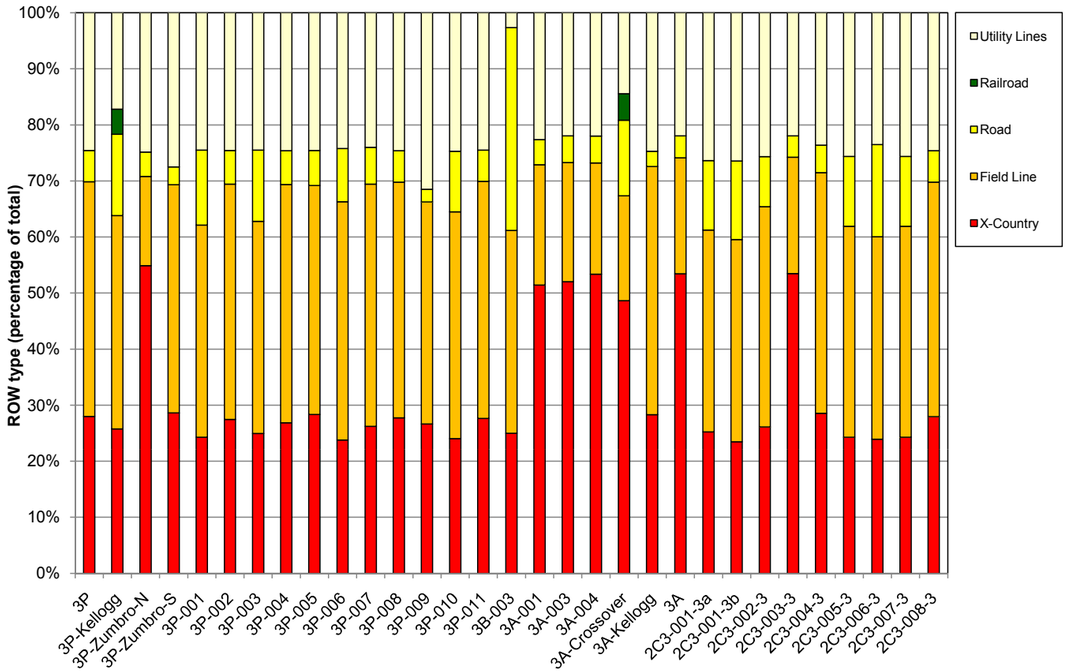
Map 8.3-39
Transportation Map
Segment 3, North Rochester Substation to Mississippi River



Section 8.3

Segment 3 – North Rochester Substation to Mississippi River

Figure 8.3.4.11-1 Comparison of shared ROW along each route alternative - Segment 3



Source: Field Survey observations, comments from project public meetings and aerial photograph interpretation by AECOM (Barr, 2010));

*Note: Values include areas that parallel both a utility and road or trail. A more detailed breakdown of ROW types can be found in Appendix J.

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

generally in Section 7.11 and specific impacts associated with proposed route alternatives for Segment 3 are discussed below.

Map 8.3.4-39 shows areas where the ROW for the proposed route alternatives would share ROW with existing transportation, transmission line, or pipeline infrastructure. Figure 8.3.4.11-1 shows the percentage of total line distance where ROW is shared with existing infrastructure under each route alternative in this segment. Areas where proposed route alternatives follow field lines (survey lines, natural division lines and agricultural field boundaries), or cut cross country through fields, pastures, and forest have been highlighted. In these areas, there is no opportunity to use ROW sharing to minimize the amount of ROW that must be acquired from private land owners.

Figure 8.3.4.11-1 shows that unlike Segments 1 and 2, Segment 3 is characterized by fewer existing corridors and fewer opportunities for ROW sharing. All of the route alternatives proposed in this segment follow field lines or cut cross county for 60 to 70 percent of the total route distance.

Roadways and Emergency Services

The proposed route alternatives in this segment run parallel to a variety of different roadway types including county roads (CR) and highways (Hwy), state highways (MN Hwy) and United States highway (US Hwy). Impacts to roadways, railroads and emergency services are expected to be limited to temporary disturbances during construction.

From the North Rochester Substation to the Mississippi River, the 3P route alternative primarily follows field and property lines. However, the route parallels US Hwy 52 for approximately one mile shortly after leaving the North Rochester Substation siting area. ROW sharing is also proposed for a short distance along 230th Avenue and along 53rd Avenue NW. Within this segment, the 3A route alternative primarily follows field and property lines. However, this route alternative parallels local roads for two short stretches (195th avenue, 375th avenue) and requires crossing at US Hwy 52 and US Hwy 63. Based on consultation with DOT and local transportation planning agencies, the 3P and 3A route alternatives are not expected to impact future road expansion or infrastructure along these roadways.

A review of readily available transportation planning documents for the affected counties did not indicate any additional conflicts with roadway expansion or development plans for any of the route alternatives considered along this segment.

Railroads

Where the applicant's preferred and alternate route share an alignment, the route alternatives cross one railroad, the Canadian Pacific Railroad, approximately 3.5 miles southwest of the Mississippi River crossing. Impacts to rail transport along these route alternatives would be minimized as discussed in Section 7.11.

Airports and Landing Strips

The Lake Zumbro Seaplane Base is a privately owned airport located in Olmstead County within one mile of the 3P-Zumbro-N and 3P-Zumbro-S route alternatives. Proposed route alternative 3P-009 also passes within one mile of the Lake Zumbro Seaplane Base.

Mitigation

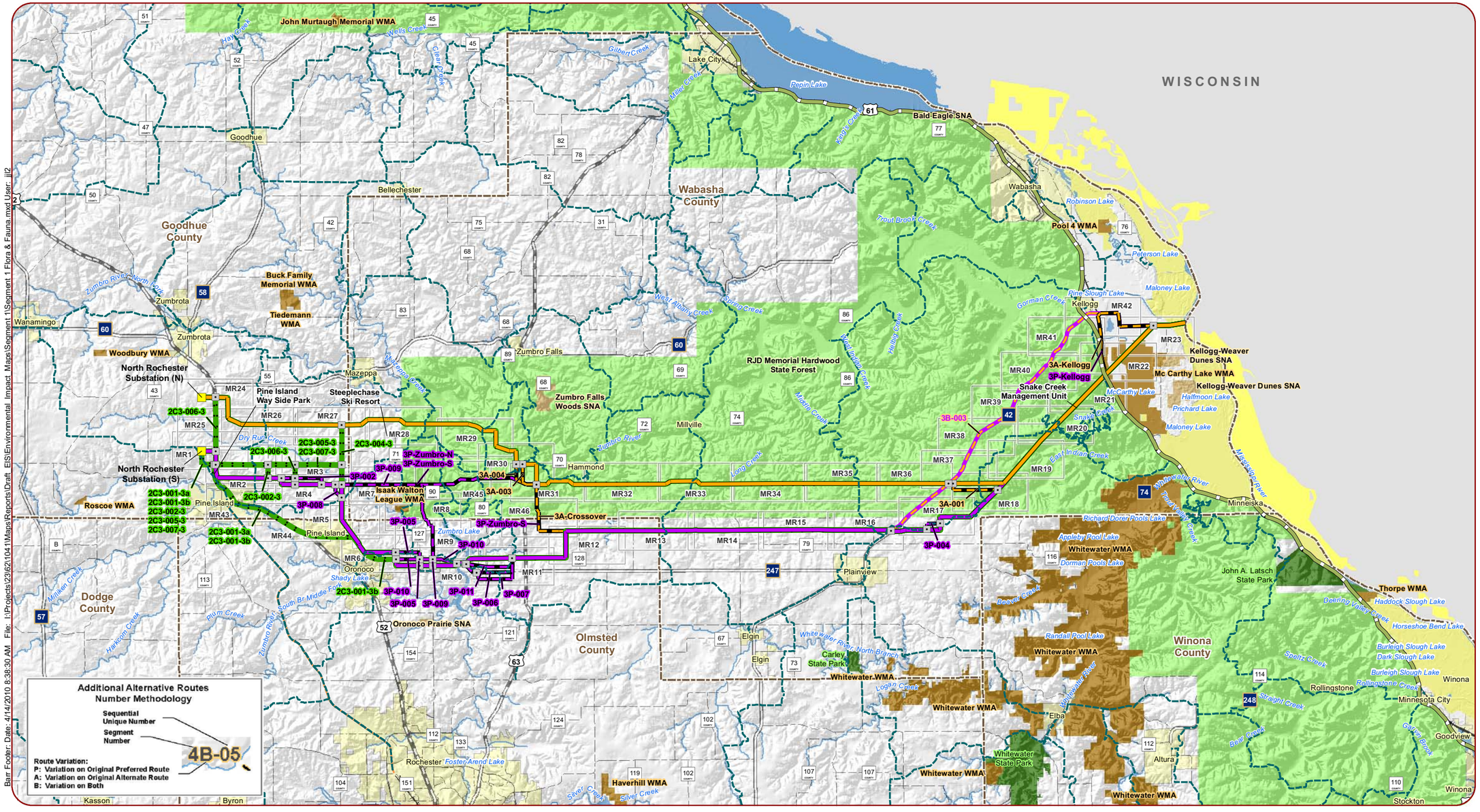
General mitigation measures to minimize impacts to transportation and public services are discussed in Section 7.11. Within this segment, impacts to transportation include potential short term, temporary impacts to roadways during construction, potential effects on future road expansion/modification, potential impacts to railroad operations and potential disturbance to the Lake Zumbro Seaplane Base (3P-Zumbro-N, 3P-Zumbro-S, and 3P-009). Based on consultation with the Minnesota Department of Transportation (DOT), the 3P route alternative and 3A route alternative are not expected to impact roadway expansion plans. Mitigation measures discussed in Section 7.11 will be undertaken to avoid impacts to railroad operations. Impacts to the Lake Zumbro Seaplane Base can be avoided by choosing a route alternative that allows adequate distance between the transmission line and the seaplane base. Alternately, modified structures could be used to meet the maximum height limitations where the line is in close proximity to the seaplane base.

8.3.4.12 Recreation Resources – Analysis of Segment Alternatives for the North Rochester Substation to Mississippi River Segment

Several sources of data (see Appendix B) were reviewed to identify recreation resources within proximity of each route alternative within Segment 3. Map 8.3-40 and the detailed maps in Appendix A identify the recreation resources within the vicinity of each route alternative. The main recreation resources in this segment include one WMA, a National Wildlife Refuge (NWR), a scenic byway, a state forest, a local park, a ski resort, Lake Zumbro, the Zumbro River, and snowmobile trails.

The route alternatives in this segment have 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, recreation resources may experience viewshed impacts from the transmission line.

The McCarthy Lake WMA is located within Segment 3. Most of the route alternatives in this segment would run through the northern part of the McCarthy Lake WMA along an existing transmission line corridor (Map 8.3-40). However, route alternatives 3P-Kellogg and 3A-Kellogg would just run along the northwest



MR1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

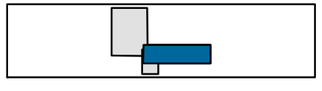
For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
- P Route
- A Route

Additional Alternative Routes
- Variation on P Route
- Variation on A Route
- Variation on Both
- Parallel Alignment

- Project Substations
- County Boundaries
- Scenic_Byway
- State Existing Trail
- Snowmobile Trail
- Scientific and Natural Area
- Wildlife Management Area
- State Park
- State Forest
- Wildlife Refuge

Map 8.3-40
Recreation Map
Segment 3, North Rochester Substation to Mississippi River



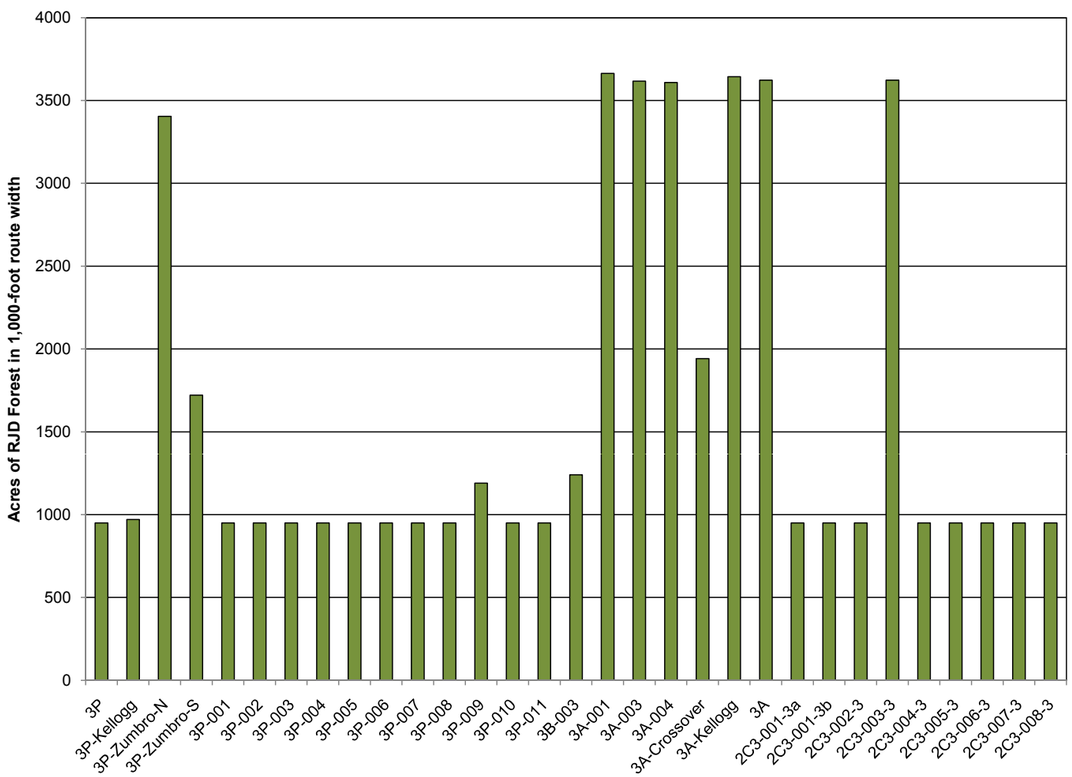
boundary of the WMA for approximately one mile, while route alternative 3B-003 would completely bypass the WMA by running at least one half mile north of the WMAs northern boundary (Map 8.3-40).

All of the route alternatives in this segment would cross approximately one half mile of the Upper Mississippi River National Wildlife and Fish Refuge along an existing transmission line corridor (Map 8.3-40). See Section 7.7 for further discussion on the Upper Mississippi River National Wildlife and Fish Refuge.

All route alternatives in this segment would cross US 61, where it is designated at the Great River Road National Scenic Byway (Map 8.3-40). Route alternatives 3P-Kellogg and 3A-Kellogg would also run along the Scenic Byway for approximately 1.5 miles (Map 8.3-40).

The Richard J. Dorer Memorial Hardwood Forest (RJD Forest) runs though Segment 3 (Map 8.3-40). The RJD Forest falls within the 1,000-foot route width of all route alternatives in this segment. However, the following route alternatives: 3P-Zumbro-N, 3A-001, 3A-003, 3A-004, 3A-Kellogg, 3A, and 2C3-003-3, have significantly higher acreage of RJD Forest within the 1,000 route width relative to the other route alternatives in this segment (Figure 8.3.4.12-1). All route alternatives except 3B-003 would run through the Snake Creek Management Unit (Map 8.3-40), which has several miles of trails designated for hiking, cross country skiing, motorcycles, ATVs, and snowmobiles.

Figure 8.3.4.12-1 Acres of RJD Forest in 1,000-foot route width - Segment 3



Source: Minnesota Department of Natural Resources

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

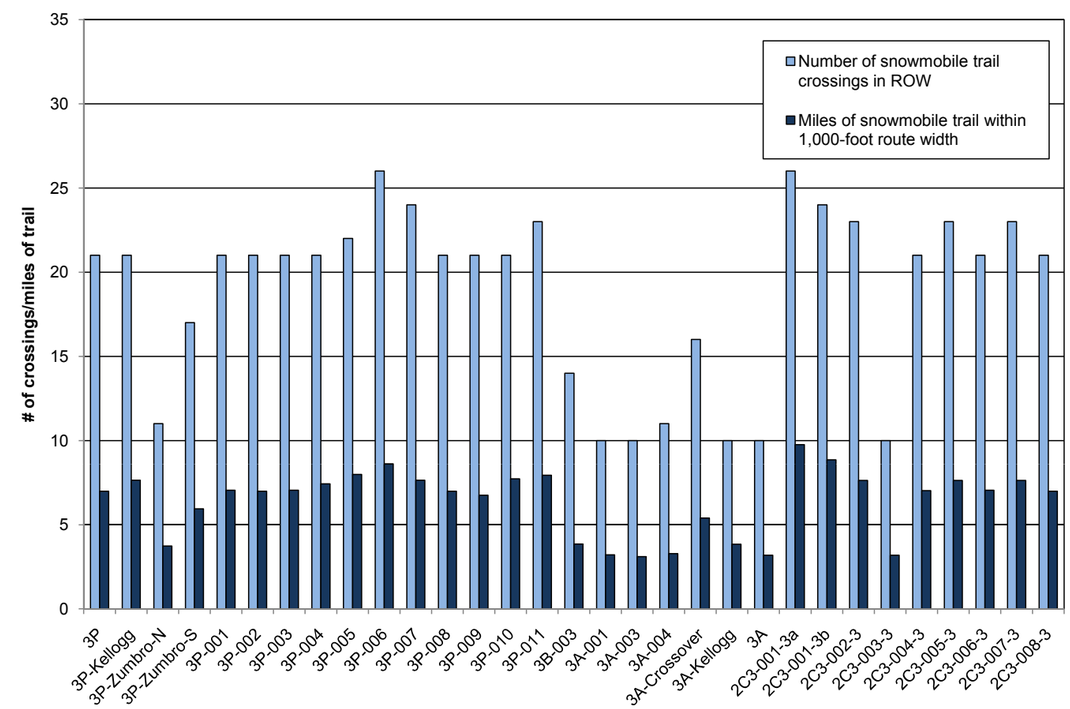
There is one local park, Pine Island Wayside Park, located within the vicinity of this segment. Pine Island Wayside Park is not located within the ROW of any route alternatives in this segment. However, Pine Island Wayside Park is located within the 1,000-foot route width of route alternatives 2C3-001-3a and 2C3-001-3b (Map 8.3-40).

The Steeplechase Ski Resort is located west of the Zumbro River and south of Mazeppa (Map 8.3-40). Steeplechase offers approximately 40 acres of skiing and snowboarding with over 19 trails and four chairlifts. In the non-winter months, Steeplechase also offers mountain biking trails. All of the A route alternatives and 2C3-003-3 would run through the northern portion of Steeplechase Ski Resort.

All route alternatives in this segment would cross the Zumbro River (Map 8.3-39), which provides recreational opportunities such as boating, fishing, and swimming. In addition, all route alternatives in this segment except 3P-Zumbro-N, 3P-Zumbro-S, all of the A route alternatives, and 2C3-003-3 would cross Lake Zumbro (Map 8.3-40). Lake Zumbro provides recreational activities including boating, fishing, water skiing, tubing, and swimming.

Snowmobile trails are abundant throughout the project area (Map 8.3-40). All route alternatives in this segment would have between 10 and 26 snowmobile trail crossings within the ROW and between 3.1 and 9.8 miles of snowmobile trail within the 1,000-foot route width. The following eight route alternatives have fewer snowmobile crossings within the ROW and fewer miles of

Figure 8.3.4.12-2 Snowmobile trails along each route alternative - Segment 3



Source: Minnesota Department of Natural Resources

*Note, a portion of each of the "C" route alternatives would have a parallel alignment between Segments 2 and 3. Because of this, impacts in these areas are double counted. See Section 8.2.4 for further information on parallel alignments. The calculated impacts for the portions that are double counted are available in Appendix J.

snowmobile trail within the 1,000-foot route width relative to the other route alternatives in this segment: 3P-Zumbro-N, 3B-003, 3A-001, 3A-003, 3A-004, 3A-Kellogg, 3A, and 2C3-003-3 (Figure 8.3.4.12-2).

Mitigation

The McCarthy Lake WMA would be visually impacted by most of the route alternatives in this segment. Choosing route alternative 3P-Kellogg, 3A-Kellogg, or 3B-003 could minimize impacts because these route alternatives would not run directly through the WMA.

Because all route alternatives in this segment would cross the Great River Road National Scenic Byway, visual impacts to this recreation area would be similar across route alternatives. However, choosing a route alternative other than 3P-Kellogg and 3A-Kellogg could minimize impacts since these two route alternatives would not only cross the Scenic Byway, but would also run alongside it.

Recreational areas in the RJD Forest would be visually impacted by all route alternatives in this segment. However, choosing a route alternative other than 3P-Zumbro-N, 3A-001, 3A-003, 3A-004, 3A-Kellogg, 3A, and 2C3-003-3, could minimize impacts to recreational areas in the RJD Forest because the 1,000-foot route widths of these seven route alternatives run through significantly more forest than the remaining route alternatives in this segment. Furthermore, choosing route alternative 3B-003 could avoid impacts to the recreational resources associated with the Snake Creek Management Unit.

Recreational resources in the Pine Island Wayside Park could be visually impacted if route alternatives 2C3-001-3a or 2C3-001-3b were chosen due to the proximity of these route alternatives to the park. Impacts to recreational resources in the Pine Island Wayside Park could be minimized if any other route alternative were chosen.

Visual impacts to recreation activities at Steeplechase Ski Resort could result if one of the A route alternatives or 2C3-003-3 were chosen. These route alternatives may also interfere with the development of future trails in the northern portion of Steeplechase. Choosing a route alternative that does not run through Steeplechase could minimize impacts to this recreation facility.

Although all route alternatives in this segment would cross the Zumbro River, route alternatives 3P-Zumbro-N and 3P-Zumbro-S could minimize visual impacts to recreational resources on the Zumbro River because there is already an existing HVTL corridor present at this location. Choosing a route alternative that does not cross Lake Zumbro could minimize visual impacts to recreation resources on Lake Zumbro.

The transmission line would be visible from snowmobile trails for any of the route alternatives in this segment. Snowmobile trails may be temporarily impacted during construction where the transmission line would cross or parallel the trail. The applicant would work with local clubs and the DNR to ensure that proper safety measures are taken during construction and to avoid pole placement in trails. Choosing a route alternative with fewer snowmobile crossings in the ROW and the fewer miles of snowmobile trail within the 1,000-foot route width could minimize impacts to this recreational resource.

8.3.4.13 Air Quality—Analysis of Segment Alternatives for North Rochester Substation to Mississippi River Segment

Discussion of potential air quality impacts is provided in Section 7.13. Potential air quality impacts from transmission line operation 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, and operation of the proposed transmission line is not expected to create any potential for the concentration of these pollutants to exceed existing air quality standards. Minor short-term emissions associated with construction will also occur, regardless of the route alternative chosen. Thus, the nature of impacts to air quality is not expected to vary notably from one route alternative to the next.