

CHAPTER  
6

## 6. Environmental Analysis: New 345/161 kV Briggs Road Substation

### 6.1. PROPOSED INSTALLATION

**A**t the eastern endpoint of the Alma-La Crosse Project, a 345/161 kV substation called the Briggs Road Substation would be built southwest of Holmen in La Crosse County. This substation would allow the new 345 kV transmission line to connect to the existing transmission lines in the La Crosse area. It would be owned and operated by NSPW. The new Briggs Road Substation would be constructed near the intersection of USH 53 and Briggs Road in the town of Onalaska, near Holmen. The applicants have identified two potential substation site alternatives at that location, west and south of the existing DPC 161 kV North La Crosse Substation.

#### 6.1.1. Main equipment

The initial phase of construction and equipment installation at the Briggs Road Substation, the eastern terminus of the La Crosse Transmission Project, would accommodate a future expansion phase when needed. NSPW intends to purchase approximately 40 acres of land and build a substation that would occupy approximately 10 acres of this area. The following equipment would be installed during the initial phase of the substation:

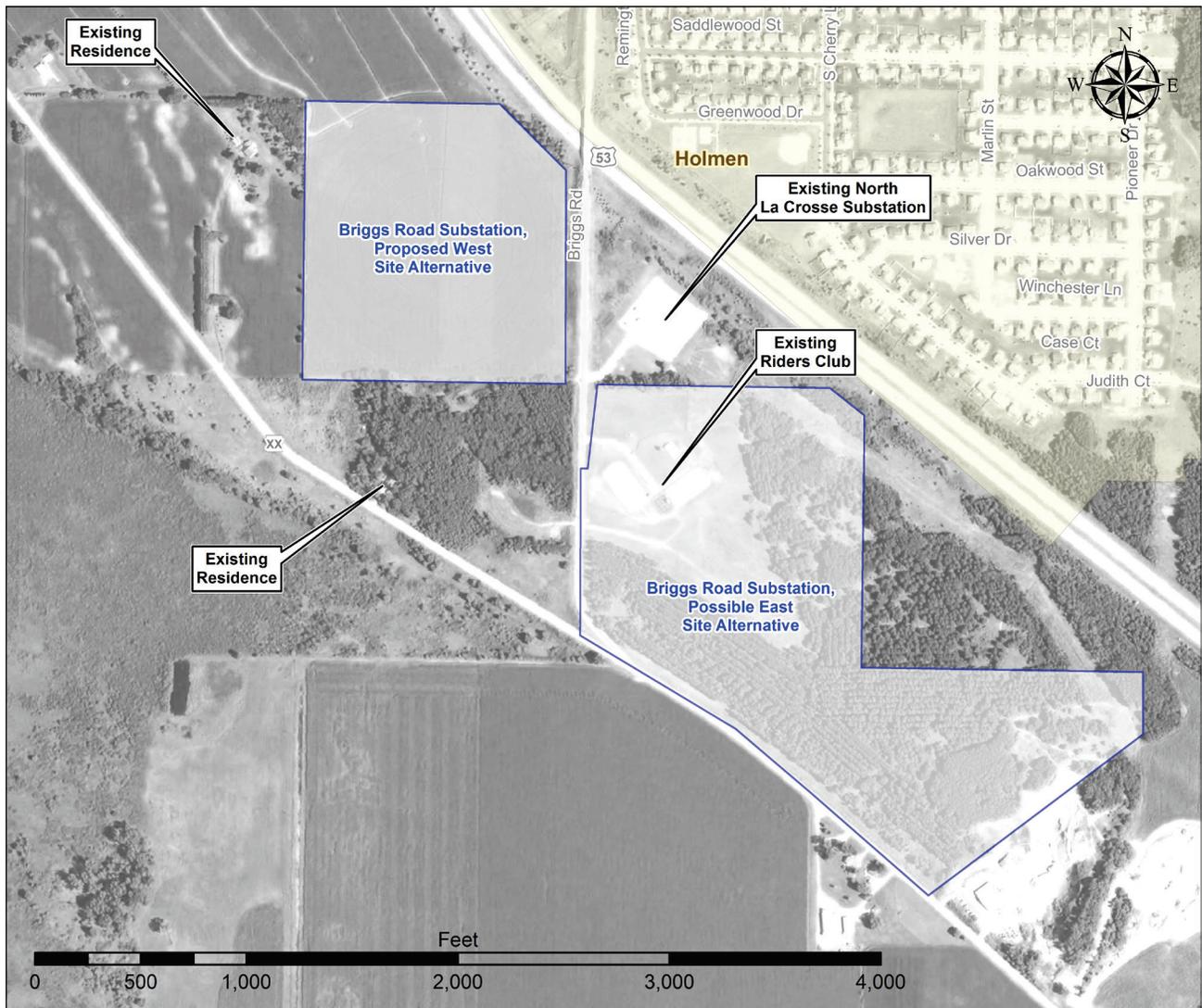
- One 345/161 kV 448 megavolt ampere (MVA) auto transformer with oil containment system
- One 345 kV circuit breaker with associated control cables and foundations
- One 34.5 kV 50 MVAR tertiary reactor with associated breaker, switch, foundations, and protective relaying
- One dead-end with foundations for the 345 kV line terminal
- 345 kV aluminum bus, disconnect switches, switch stands, and bus supports needed for the initial phase; extra switches and stands to limit outages during future 345 kV additions if they occurred; drilled piers for foundations for all support structures
- Sixteen 161 kV circuit breakers with associated control cables and foundations
- Four 161 kV, 80 MVAR capacitor banks with switches, foundations, and protective relaying
- Dead-ends with foundations for the four 161 kV line terminals
- 161 kV aluminum bus, disconnect switches, switch stands, and bus supports needed for the initial phase, configured as a breaker-and-one-half design with seven bays installed and laid out to accommodate five future 161 kV positions as well; drilled pier foundations for all support structures

- Protection and control panels for the 345 kV line, 161 kV lines, and 448 MVA transformer
- One electrical equipment enclosure to house 345 kV and 161 kV protection and control equipment
- AC and DC auxiliary systems

### 6.1.2. Alternative sites

The applicants identified two potential substation sites for the new 345 kV Briggs Substation, the West Site and the East Site. The West Site is a relatively flat, irrigated farm field bounded by Briggs Road to the east, CTH XX to the south, and USH 53 (part of GRR) to the north. The East Site is a rolling, partially-wooded site currently used as a horse rider/rodeo club and a tree farm. Like the West Site, this site is also bounded by Briggs Road to the east, CTH XX to the south, and USH 53 to the north. The North La Crosse Substation also lies to the north of the East Site and is accessed off of Briggs Road. The two alternative substation sites are shown in relation to the proposed transmission routes in Figure Vol. 2-1K. They are shown at greater scale in Figure 1.1-2 in Chapter 1.

Figure 6.1-1 Alternative sites proposed for Briggs Road Substation

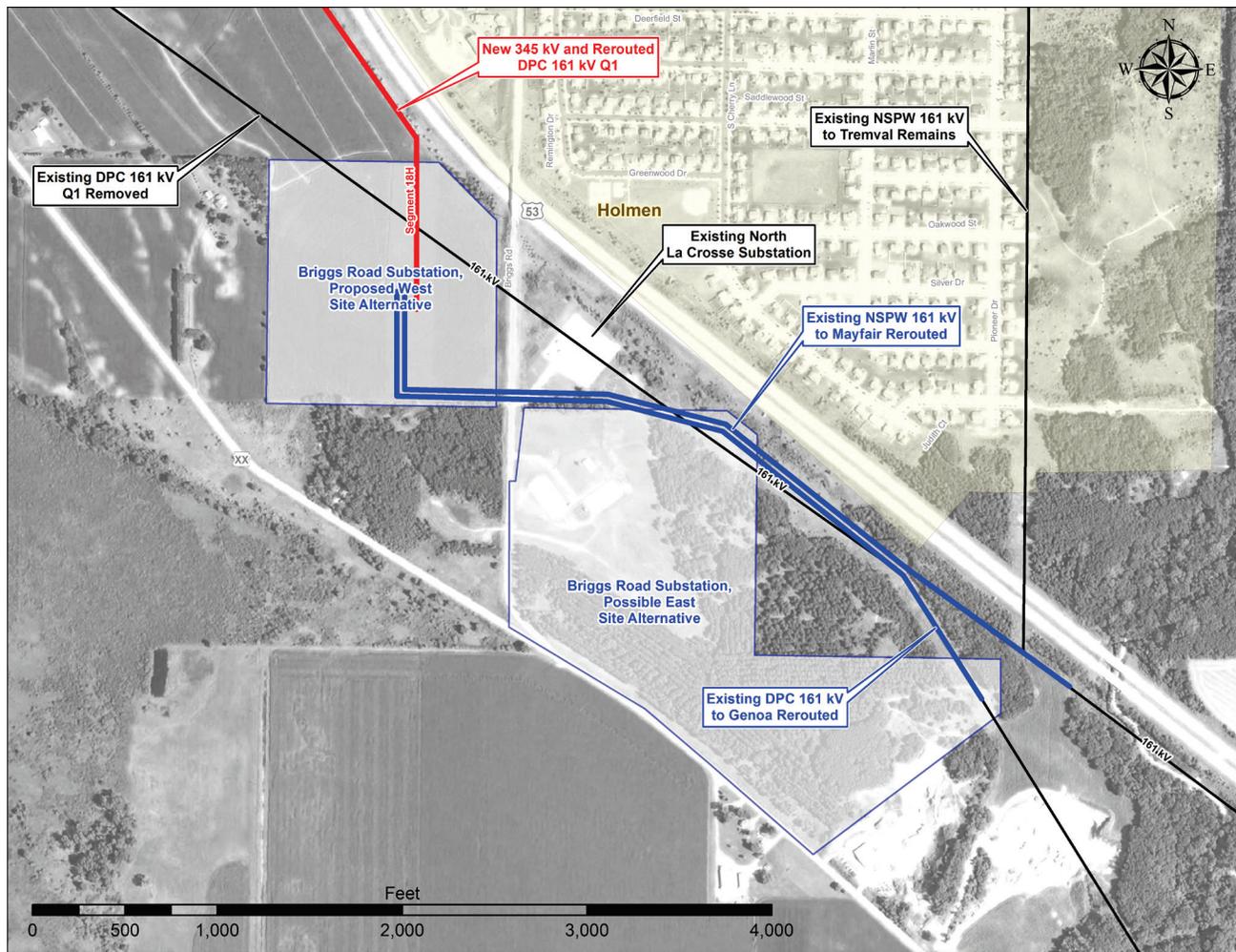


### 6.1.3. Transmission re-routes to enter substation

To connect the new 345 kV line to the local existing electrical system, the Tremval-Mayfair 161 kV line and the Alma-La Crosse (Q1) 161 kV line belonging to NSPW and DPC, respectively, would be re-routed into the new substation.

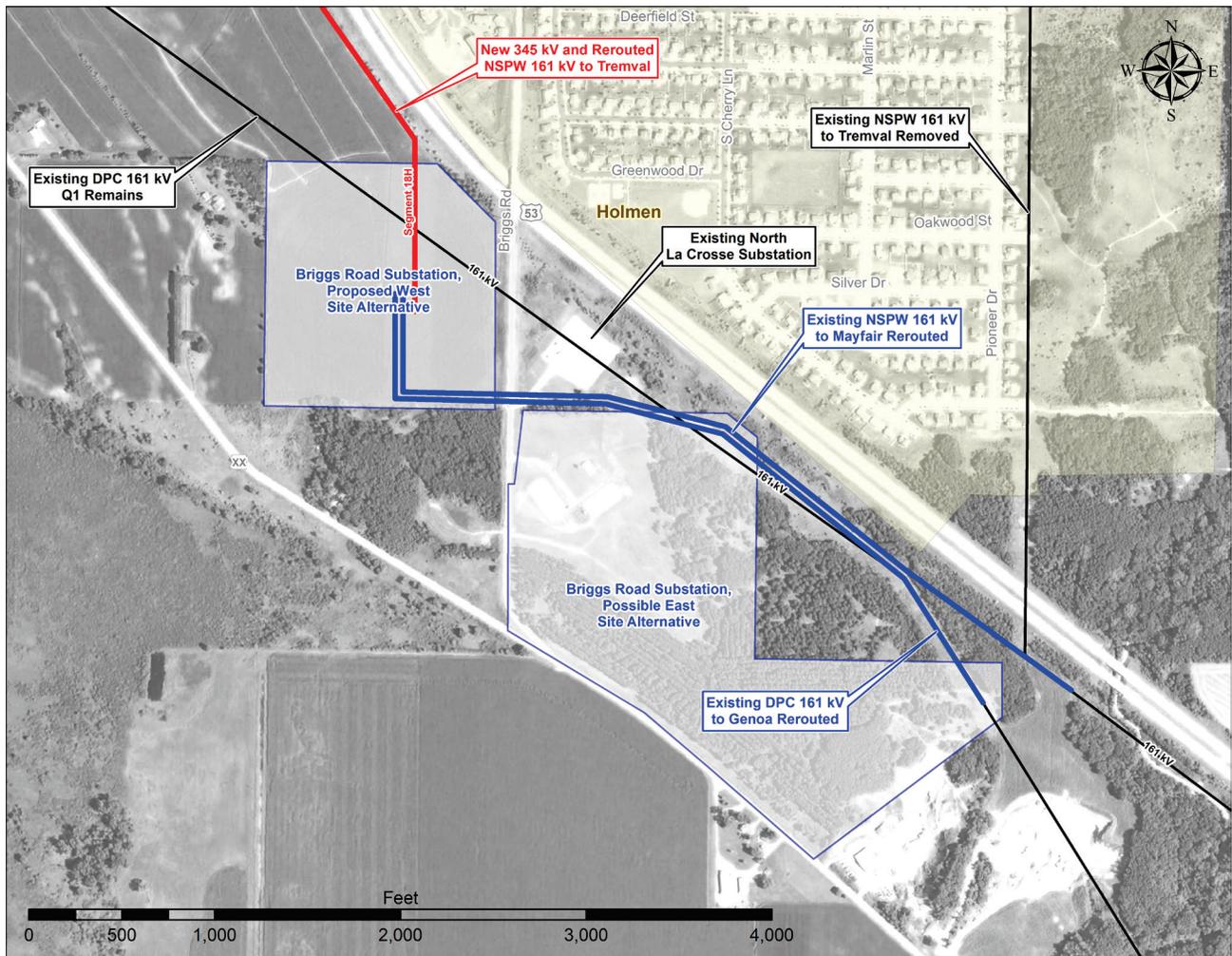
As shown in Figure Vol. 2-1K, for the Q1-Highway 35 Route, the Q1 161 kV line would be re-routed into a double-circuit line with the new 345 kV line west of the Black River and would connect to the new substation as part of the double-circuit line from the north along Segment 18 H. In that case, the existing Tremval-Mayfair 161 kV line would remain in place through Holmen and would connect to the new substation in a loop. The line from the Tremval Substation would leave the existing ROW just south of USH 53 as shown in Figure 6.1-1, cross USH 53 to the west, and extend to the northwest to connect to the substation at either site, a total length of about 0.75 miles. The line to the Mayfair Substation would connect to the substation from the southeast from the existing 161 kV ROW south of USH 53, also a total of about 0.75 miles. The Q1 line to La Crosse would connect to the substation at the south side and extend as a single-circuit line eastward to connect with its original ROW about 1,200 feet east of Briggs Road, a total of about 0.35 miles.

Figure 6.1-2 Re-routes of 161 kV lines and Briggs Road Substation if Q1-Highway 35 Route is approved



Shown in Figure Vol. 2-1K, the Q1-Galesville, Arcadia, and Arcadia-Ettrick Routes for the new 345 kV line would also approach the new substation at either site along Segment 18H. However, for those routes, the existing Q1 line would remain in place and be joined to the substation along its existing ROW to the north and south. Its north connection would involve a single span of about 400 feet. The Tremval-Mayfair line would be joined to the 345 kV line as a double-circuit line north of the Black River and east of CTH AA. So, its connection to the new substation from the north would be as a double-circuit line with the 345 kV line along Segment 18H, as shown in Figure 6.1-2. Its connection to the Mayfair Substation in the south would be from the point on the existing 161 kV ROW south of USH 53 northwest to the area of the substation and eastward into whichever substation site was selected, about 0.75 miles.

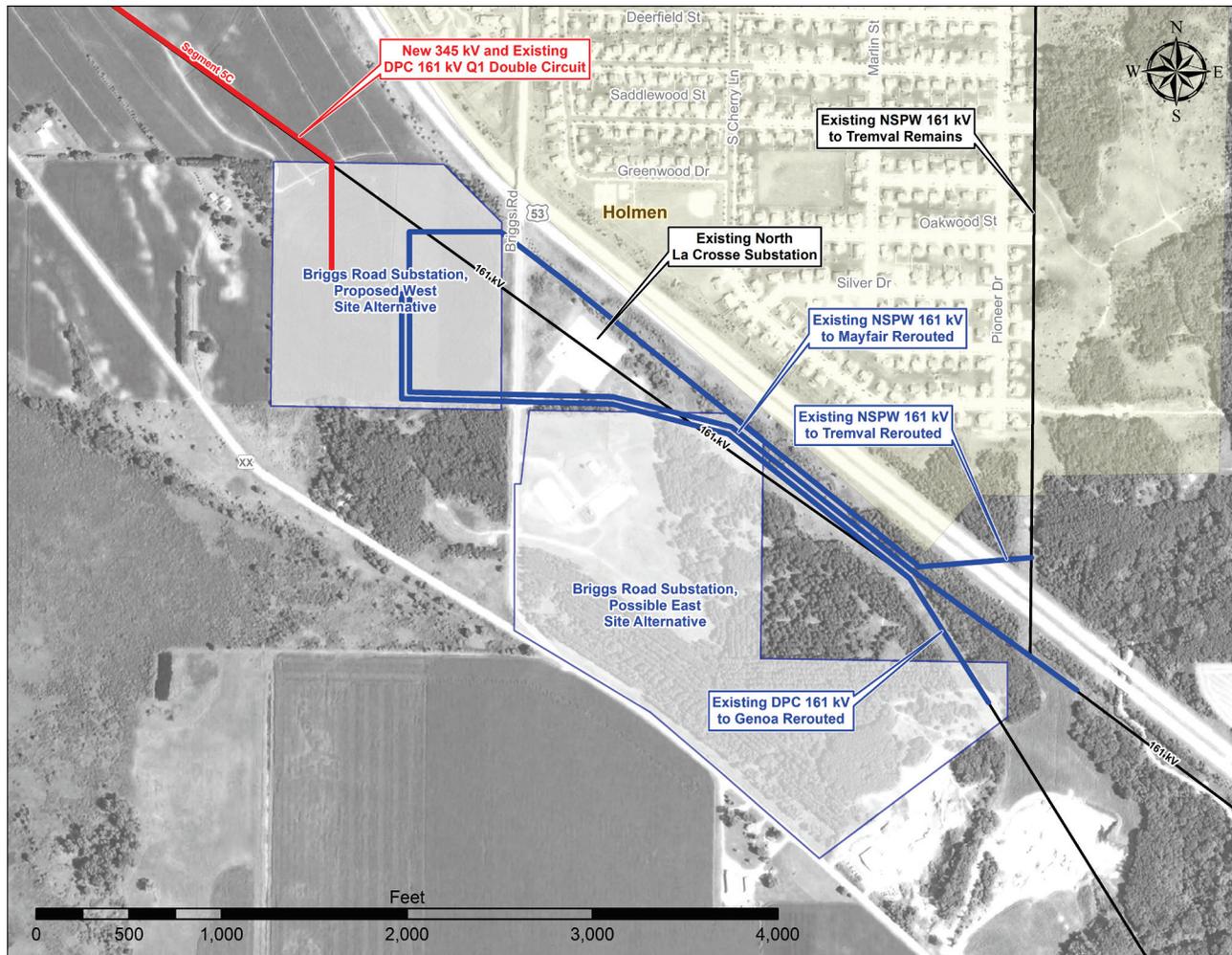
Figure 6.1-3 Re-routes of 161 kV lines and Briggs Road Substation if Q1-Galesville or Arcadia Routes are approved



If the original Q1 alignment through the Black River bottomlands is approved along Segments 5A through 5C, then the Q1 line remains in the same alignment in a double circuit with the new 345 kV line. The line to Tremval also would remain in place but would be re-routed from north of USH 53 northwest to the substation. It would be reconnected southeast of the substation and south of USH 53, as shown in Figure 6.1-3.

Since the East Site of the substation is only 1,600 feet to the east of the West Site, the routes from the Tremval-Mayfair line and the Q1 line from the south would be 1,600 feet shorter. The routes for the new line and the Q1 line from the north would be about 1,600 feet longer.

Figure 6.1-4 Re-routes of 161 kV lines if the original Q1 Route across the Black River is approved



## 6.2. NATURAL RESOURCES AND POTENTIAL IMPACTS

### 6.2.1. Geography

The West Site is relatively flat, irrigated farmland. The East Site is a mildly rolling, hilly, and partially-wooded site occupied by a horse rider/rodeo club. The soils on the West and East Sites are excessively drained soils common to glacial outwash plains and river alluvia. The local soils and landscape are not highly erodible but erosion possibilities exist. Under Wis. Admin. Code ch. NR 216, permits from WDNR are required for construction sites disturbing more than one acre. Wis. Admin. Code ch. NR 151 requires an erosion control plan including approved BMPs.

### 6.2.2. Woodland

Only the East Site alternative is partially wooded, requiring some tree removal. The West Site is flat agricultural land and no forest land would be adversely affected by substation construction.

### 6.2.3. Wildlife and plant habitat changes

Both sites are heavily disturbed by human use, and changes to important wildlife or wild plant habitat are not expected.

### 6.2.4. Endangered and threatened species and communities

The Wisconsin NHI database identifies two threatened non-historic NHI species and five special concern non-historic NHI species occurrences within 2.0 miles of the Briggs Road Substation West Site. Three special concern historic species and seven non-historic natural communities' occurrences were identified within 2.0 miles of the property boundary. Of these occurrences, the extents for three special concern species (one of which is non-historic) intersect the property boundary. Because the site is currently cropped, natural features are not likely present. There are no wetlands or streams on the site.

For the East Site, the NHI database identifies three threatened non-historic NHI species and five special concern non-historic species occurrences within 2.0 miles of the proposed substation. Three special concern historic NHI species and eight non-historic natural communities' occurrences are identified within 2.0 miles of the property boundary. Of all these occurrences, the extents of four special concern species (one of which is historic) intersect the property boundary. Depending on the nature of the equestrian activities and degree of disturbance taking place on the site, some natural features that supply habitat may be present. There are no wetlands or streams on the site.

### 6.2.5. Streams and wetlands

No streams or wetlands would be directly affected by construction on either the West or the East Site.

### 6.2.6. Archeological resources

The Mississippi Valley Archeological Center (MVAC) identified five archaeological sites potentially within or immediately adjacent to the proposed substation sites. Findings included campsites, a village, various artifacts, and grave sites. The resources are located in Table 6.2-1 by WHS Wisconsin Historic Preservation Database (WHPD) listing.

Table 6.2-1 Archeological resources identified on the West and East Briggs Road Substation Sites

Substation Site	Township-Range-Section Information	WHPD State Site Number
West Site	T17N-R8W Section 13, NW ¼ of NW ¼	47LC119
East Site	T17N-R9W, Section 13, SW ¼ of NE ¼	47LC111
	T17N-R8W, Section 13, SW ¼ of NE ¼	47LC657
	T17N-R8W, Section 13, Center	47LC781
	T17-R8W, Section 13, SE¼ and T17N R7W, Section 18, SW¼	47LC19

The site 47LC119 is located west of the West Site substation, and outside the proposed substation footprint and transmission line corridors. According to the WHPD, no archeological surveys have been conducted within the boundaries of the proposed Briggs Road Substation West Site. The area may fall under the federal NHPA Section 106, and the WSHPO has not yet indicated whether additional surveys for the project are needed, but none has been recommended by MVAC.

There are four archaeological sites reported at the East Site. 47LC657 is actually located west of Briggs Road and beyond the site boundary. 47LC781 has been destroyed by Briggs Road realignment work. 47LC111 is a campsite for which MVAC does not recommend further investigation. 47LC19, however, is an extensive, multi-component site for which the WSHPO would likely recommend Phase 1 testing of

areas along the archeological site's current boundaries and mitigation for any portion of the site that would be affected by construction. If the area falls under Section 106 and the East Site is approved by the Commission, the WSHPO would determine what mitigation was necessary.

## **6.3. COMMUNITY IMPACTS**

### **6.3.1. Agriculture**

The West Site is currently used for active cropping operations. Construction of the substation at this site would require cropping to end on approximately 40 acres of farmland at this site.

The East Site currently contains an equestrian riding club center and a pine plantation. While the equestrian activities might need to be relocated with construction of the substation, no agricultural operations would be affected.

### **6.3.2. Land use compatibility**

Existing land use at the proposed West Site is agriculture and, according to the town of Onalaska, future land use for the site is also expected to be agriculture. This would not be possible if the substation occupies the site. Within 0.5 mile of the site, land use in the south is recreational and wetland/woodland, to the west agriculture, and to the north open space and several single-family homes, all in the village of Holmen. USH 53 would physically separate the substation from these land uses. None of these would be expected to be affected.

At the East Site, land use is recreation and tree farming, while land use within 0.5 mile of the site to the south is agriculture and residential, to the west agriculture and forested woodland, and to the east forested woodland. Existing land uses at the site would change but not be eliminated. Land use in the surrounding area would not be expected to be affected, with USH 53 physically separating them from the substation.

### **6.3.3. Zoning and planning**

The two proposed sites are located in La Crosse County and subject to the La Crosse County Zoning Code.

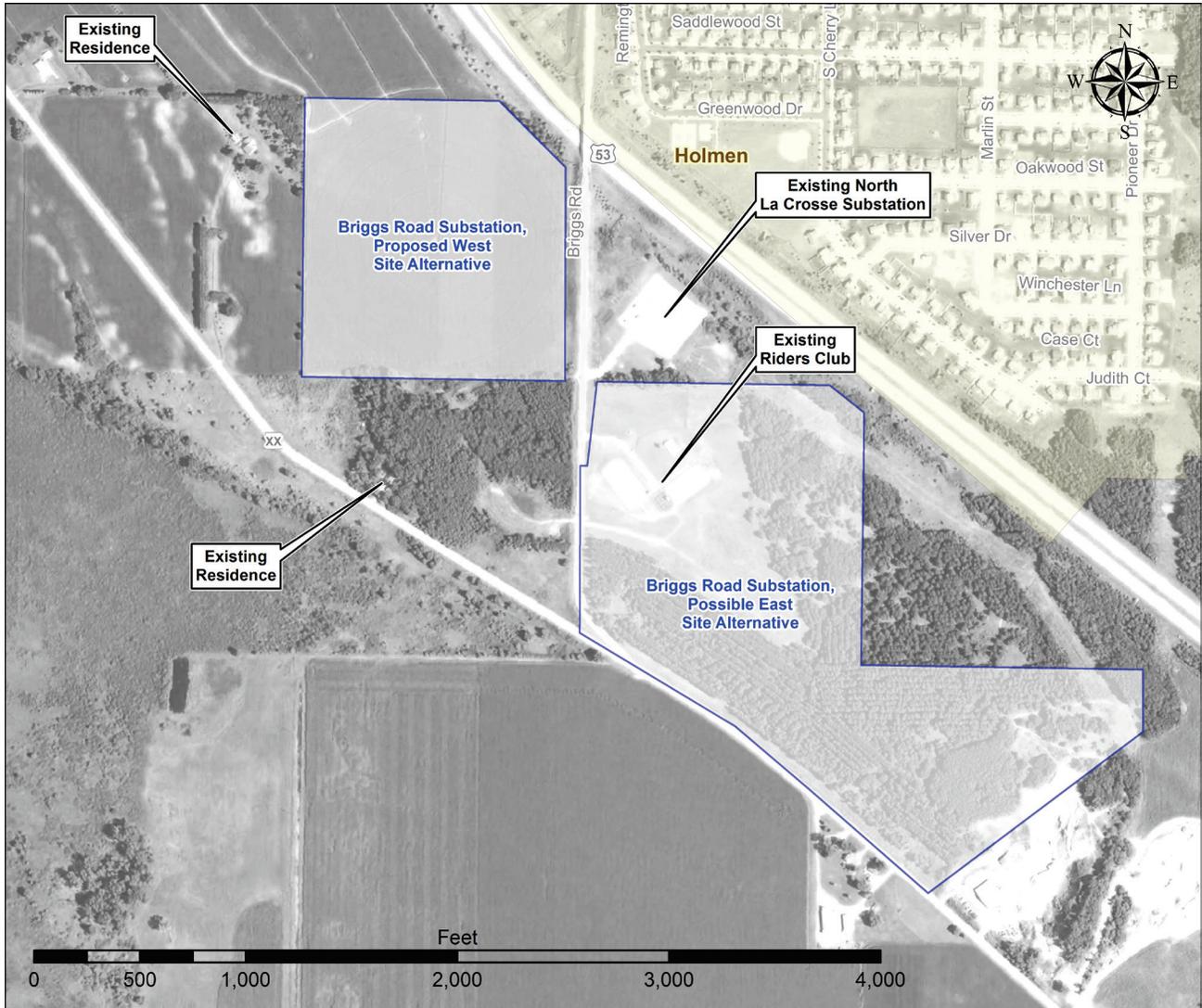
The West Site is currently zoned agricultural transition. In the Zoning Code, a district that is zoned agricultural transition is a growth area anticipated to need water, sewer, or other related services because the lands in it are planned for eventual urban development. There is an orderly process for review, approval, and development of agricultural transition district lands to be rezoned to uses other than agriculture. The area within 0.5 mile south of the West Site is currently zoned industrial. West of the site is transitional agriculture. The area within 0.5 mile north of the site, across USH 53, is zoned single-family residential.

The East Site is also located La Crosse County but is currently zoned industrial. An industrial zoning district allows for a variety of light and heavy industrial uses but excludes residential development. The area within 0.5 mile south and east of the proposed site is also currently zoned Industrial. To the west, the land is zoned agricultural transition. The area within 0.5 mile north of the site, across USH 53, is zoned single-family residential.

### 6.3.4. Proximity to residences

Near the West Site, there is one residence to the northwest, one to the south, and the village of Holmen to the north and northeast. See Figure 6.3-1. The residence to the northwest is approximately 1,000 feet from the proposed substation site, while the house to the south is about 1,100 feet from it. The village of Holmen contains many single-family homes with a cluster of housing directly across USH 53 from the substation site. The closest home to the substation site is approximately 500 feet away.

Figure 6.3-1 Proposed Griggs Road Substation sites and nearby residences



For the East Site, the closest residences to the substation would be those across USH 53 in the village of Holmen.

### 6.3.5. Visual and noise impacts

To mitigate adverse visual impact, NSPW has proposed vegetation to screen the proposed substation from some of the houses in the vicinity. The homes northeast of USH 53 are partially screened from the substation site by a berm and vegetation along the southwest side of USH 53. Homes on the east side of Briggs Road and northeast of USH 53 are screened from the West Site by Briggs Road, which is built on a

raised embankment and they are partially screened from the East Site by vegetation and the existing North La Crosse Substation. No additional screening is recommended for these homes.

According to NSPW, noise levels would be very low and would not likely be audible at the homes near these sites because substation noise levels are low to start with and would likely be masked by highway noise from USH 53. However, the house to the northwest would have the potential to experience heightened noise or visual impact. NSPW has proposed planting some vegetation screening between the substation and the house to the northwest. It has not yet determined exactly where the substation would be situated on the parcel, but its preliminary indications are that, if the West Site is used, the substation itself would be on the eastern side of the site.

The house to the south would be fully screened from either substation site by existing vegetation. No additional screening is recommended by the applicant.

### **6.3.6. Property values**

It is uncertain what effect the proposed substation would have on the residential properties in the area. The two homes closest to the West Site might be affected, depending on the objectives of those who would own or buy them. The homes across USH 53 already have the highway, its heightened profile, and the traffic between them and the substation sites.

### **6.3.7. Electric and magnetic fields**

The estimated EMF levels around the proposed substation would exist around the connecting transmission lines. The closest residence to either the West Site substation or East Site substation would be about 1,000 feet away, which would place it beyond where the EMF levels would attenuate to ambient levels.

## **6.4. SUMMARY**

Overall, the West Site appears to have less impact on woodland and archeological sites, while the East Site would have less impact on agriculture. With the proposed mitigation, the sites would be about equal in visual impact on nearby homes.

## **6.5. OTHER ALTERNATIVE SITES CONSIDERED BY THE APPLICANTS**

During the pre-application route development by the applicants, two alternative locations for the La Crosse-endpoint substation were considered besides the sites at Briggs Road. One was in the Amsterdam area, and the other was in the Galesville area.

The Amsterdam area substation site included parcels in the town of Holland and village of Holmen in La Crosse County northeast of the USH 53/STH 35 interchange. The site is visible on the map in Figure Vol. 2-1J and is bounded by STH 35, USH 53, Amsterdam Prairie Road, and Old Wisconsin 93 Road. The site is generally cropland bounded in places by windbreak tree lines.

The Galesville area substation site included parcels northeast of the intersection of USH 53 and CTH AA, east of Galesville and north of the Black River, in the town of Gale in Trempealeau County. The location and environs can be seen on the map in Figure Vol. 2-1I. The land here is also agricultural, generally in field crops.

Each of these alternative locations would have required continued routing of a 161 kV line along USH 53, the most direct line between CTH AA and Briggs Road. For either alternative substation site, the 345 kV line would reach its eastern terminus, and the existing 161 kV line (Tremval-Mayfair) would continue southward along USH 53. Use of the Amsterdam site could also require rerouting of the existing DPC Q1 161 kV line from that site to the existing North La Crosse Substation, where a new 161 kV terminal might be installed.

Potential impacts at each site would be mainly agricultural, affecting cropland that would need to be taken out of production. There might be some visual concerns among nearby homeowners, and there was also a concern about the 161 kV line affecting homes along USH 53 as discussed in the following paragraph. The Amsterdam site could also affect an archeological campsite historic property listed with the WHS. There are no listed historic properties in the Galesville site area.

The two alternative substation locations were dropped by the applicants from consideration because a 345 kV route along the existing Tremval-Mayfair 161 kV line ROW would put the line 0.25 mile east of USH 53, minimizing proximity to homes. The route segment in that ROW utilized the Briggs Road sites and could be utilized with the proposed Arcadia Route or the proposed Q1-Galesville Route as well as the Q1-Highway 35 Route that included the DPC Q1 161 kV line in a double circuit. The other two substation sites became superfluous in the application development.