6. ENVIRONMENTAL INFORMATION – PROPOSED PROJECT

Minn. Rules 4400.1150, subps. 2E, 2F, and 3 require environmental information for the Project that is intended to meet the needs of the project area. This portion of the Application provides a description of the land use and environmental setting associated with the Project.

The Project has been reviewed by a number of state and federal agencies. All environmental review correspondence related to the proposed 115 kV transmission line route is provided in Appendix C.

6.1 Description of Environmental Setting

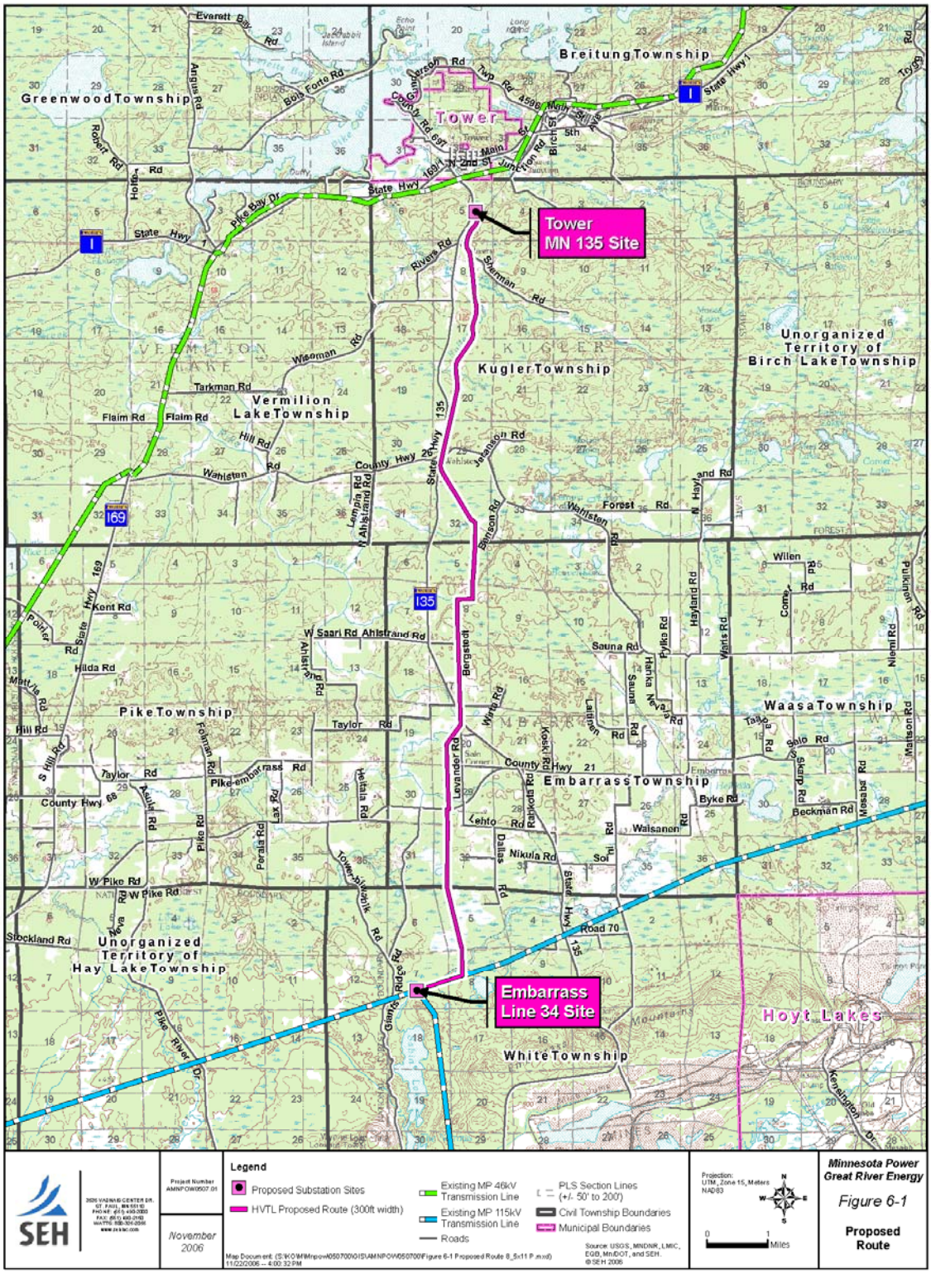
MP and GRE propose to construct approximately 14 miles of 115 kV transmission line, a 115/46 kV substation located near the City of Tower, and a 115/115 kV switching station located at the junction of MP's existing (115 kV) 34 Line and (115 kV) 34 Line Tap (located in White Township, Section 7, Township 59N, Range 15W) to meet the growing electrical load in the project area. The project area includes the cities and towns of Ely, Babbitt, Embarrass, Tower and the Lake Vermilion area. The Proposed Route is located within the townships of Kugler, Embarrass and White as shown on Figure 6-1.

Land use in the Proposed Route is primarily forest, undeveloped wetland, rural residential, and scattered agricultural land. The environmental setting includes hydrologic features such as creeks, ditches, wetlands, and riparian areas. A mix of groundcover is also present along the Proposed Route corridor. The physiographic features (topography, soils, geology) are typical of this area and do not preclude the development of this project.

Wildlife habitat exists in pockets throughout the Proposed Route. There are 12 listed occurrences of rare plants and animals within proximity to the Proposed Route. These include seven occurrences of vascular plants and five occurrences of animals, according to the MDNR Natural Heritage Information System (NHIS) 2006 database (MDNR, 2006).

Information on environmental resources along the Proposed Route is provided in this section. Fieldwork along the Proposed Route needed to prepare this Application was completed in spring 2006.

Figure 6-1 Proposed Route



6.2 Effects on Human Settlement

6.2.1 Public Health and Safety

Proper safeguards would be implemented for construction and operation of the facility. The Project would be designed with local, state, Rural Utilities Service (RUS) and National Electric Safety Code (NESC) standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and right-of-way widths. Construction crews and/or contract crews would comply with local, state, RUS and NESC standards regarding installation of facilities and standard construction practices. Established Applicants' and industry safety procedures would be followed during and after installation of the transmission line, including clear signage during all construction activities.

The proposed transmission line would be equipped with protective devices to safeguard the public if an accident occurs and a structure or conductor falls to the ground. The protective devices are breakers and relays located where the transmission line connects to the substation. The protective equipment would de-energize the transmission line should such an event occur. In addition, the substation facilities would be fenced and access limited to authorized personnel.

The Minnesota Department of Transportation (MNDOT), Office of Aeronautics was contacted (GRE letter of July 13, 2006, Appendix C) requesting information on the possible effects of the proposed Project on airports or airstrips in the project area. In a letter of August 11, 2006 (Appendix C), the MNDOT indicated that the nearest public use airport is the Tower Municipal Airport, located one mile northwest of Tower. The MNDOT Office of Aeronautics indicated that depending on the alternative selected and design of the line, a "Notice of Proposed Construction or Alteration" form may need to be submitted to the Federal Aviation Administration (FAA) for some structures near Tower. MP and GRE will work with the FAA once route and design details are known and assure all FAA requirements will be met.

There is one non-licensed grass strip in the project area in Embarrass Township (NW ¼, Section 5). Operation of the grass strip would not be impacted by construction of the Project on the Proposed Route. The transmission line structures would be located at an elevation below a 20:1 glide slope extending off the east end of the grass strip.

6.2.2 Displacement

The siting of the transmission line and substations will be done in a manner such that no person will be displaced from their residence or business.

6.2.3 Noise

The sources of audible noise from the Project would be the transmission line conductors, the Tower Substation and the Embarrass Switching Station.

Noise Measurement

Noise levels are measured on a logarithmic scale in units of decibels. Because human hearing is not equally sensitive to all frequencies of sound, it is customary to apply a weighting factor so the overall measured sound pressure level will relate as closely as possible to the ear's perception of the sound. The A-weighting network is typically used and the measured sound level is expressed in units of decibels A-weighted (dB(A)). In general terms, a noise level change of 3-dB(A) is imperceptible to human hearing. A 5-dB(A) change in noise level is clearly noticeable and a 10-dB(A) change in noise level is perceived as a doubling of noise loudness. Table 6-1 provides estimates of the noise levels of some common noise sources expressed in dB(A).

Table 6-1 Common Noise Levels

Sound Level db(A)	Noise Source
140	Jet Engine (at 25 meters)
130	Jet Aircraft (at 100 meters)
120	Rock and Roll Concert
110	Pneumatic Chipper
100	Jointer/Planer
90	Chainsaw
80	Heavy Truck Traffic
70	Business Office
60	Conversational Speech
50	Library
40	Bedroom
30	Secluded Woods
20	Whisper

Source: A Guide to Noise Control in Minnesota, MPCA, 1999

Note: Noise levels for the Project's 115 kV transmission line would be between 0 and
19 dB(A), depending on the weather and distance from the line.

Noise Regulations

The Noise Control Requirement in Minnesota Pollution Control Agency (MPCA) Minn. Rules 7030.0030 (Minnesota Pollution Control Agency, Undated) states that noise contributors shall comply with the Noise Area Classifications (NAC) Rule 7030.0040 criteria shown in Table 6-2**.** The noise area classification is based on land use activity at the location of the receiver. For example, household units are defined under NAC (1), bus passenger terminals are defined under NAC (2), and transportation rights-of-way are defined under NAC (3). NAC (1) includes the most noise-sensitive areas such as households, hospitals, churches, and campgrounds.

Table 6-2 Rule 7030.0040 Noise Area Classifications

	Day (0700-2200)		Night (2200-0700)	
NAC	**L_{50}**	**L_{10}**	**L_{50}**	**L_{10}**
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

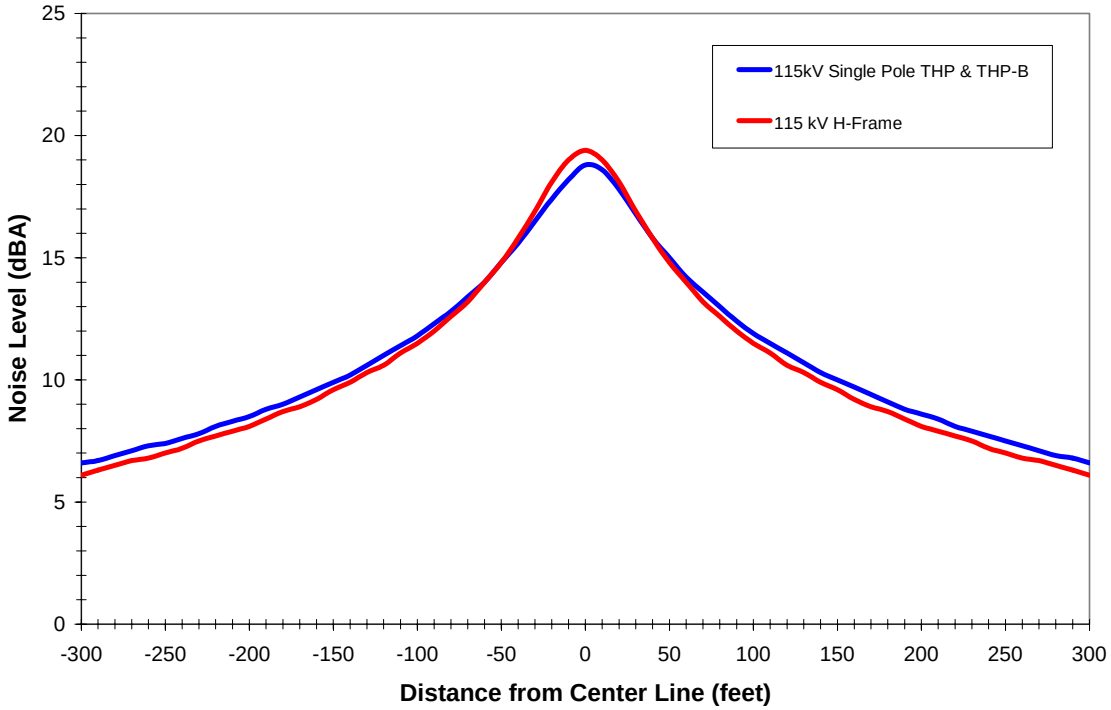
The Minnesota noise rules use statistical sound levels (L Level Descriptors) to account for changes in sound levels over a period of time. The L_{10} is defined as the noise level exceeded 10 percent of the time, for example six minutes in an hour. The L_{50} is the noise level exceeded 50 percent of the time, such as 30 minutes in an hour. The industry standard for utilities is calculated based on L_{50} and L_5 for audible noise emissions. The L_5 is the noise level exceeded five percent of the time, or for three minutes in an hour.

Conductor Noise

Audible noise from conductors is due to point source corona formation (minor breakdown of air insulating a conductor), and is a function of conductor radius, surface condition, line geometry, weather conditions, and operating voltage. Noise from a transmission line reaches its maximum during heavy rain. However, during heavy rain the general background noise level is usually greater than the noise from the transmission line. As a result, people do not normally notice audible noise from a transmission line during heavy rain. During light rain, dense fog, snow, and other times when there is moisture in the air, transmission lines will produce an audible crackling noise at approximately household background levels due to the small amount of electricity ionizing the moist air near the wires. During dry weather, audible noise from transmission lines is barely perceptible.

The proposed Projects' 115 kV line is expected to be essentially inaudible at the edge of the right-of-way during fair weather conditions. Anticipated levels for L_5 wet conductor condition for the proposed 115 kV line, based on the results from the Electric Power Research Institute's EMWORKSTATION: ENVIRO Software Version 3.0 using the Bonneville Power Administration (BPA) noise calculation method are shown in Figure 6-2. Under the worst-case scenario, the L_5 noise level may approach 15 dB(A) at the edge of the right-of-way, which is well below the most restrictive Minnesota noise control rules (see Table 6-2).

Figure 6-2 Audible Noise – Tower 115 kV Project Structures – L_5 Wet Conductor



The BPA has developed a general guideline based upon public response to alternating current (AC) transmission line audible noise. The guideline indicates that numerous complaints can be expected if the line noise exceeds approximately 58.5 dB(A) and that few complaints should be expected if audible noise is limited to 52.5 dB(A). The calculated values for the Project are well below the guidelines mentioned above and audible noise will be barely perceptible during fair weather. In addition, the Applicants are unaware of any complaints related to audible noise, radio or TV interference resulting from the operation of the existing 115 kV transmission lines located near the project area (Virginia, Hoyt Lakes and Babbit, for example) and do not expect that audible noise or radio TV interference will be an issue along the Projects' 115 kV line route.

Substation Noise

The main source of audible noise in a substation is the transformers. Transformers will produce noise whenever they are energized and the level of noise, or its loudness, depends on transformer size, operating condition (cooling fans on or off, etc.), voltage level, and weather conditions. Generally, noise levels during operation and maintenance of substations are minimal.

The Tower Substation and its transformers would be designed and constructed to comply with state noise standards. This substation is surrounded by

commercial (gravel pit) and rural land uses and should not have significant noise impacts on nearby receptors.

No transformers are planned as part of the Project at the Embarrass Switching Station, therefore noise produced from the operation of the switching station under normal conditions will be inaudible beyond the fence line.

6.2.4 Aesthetics

In general, aesthetic impacts are dependent on the response of the viewer. Viewer response is based on the sensitivity and exposure of the viewer to a particular viewshed. Sensitivity relates to the magnitude of the viewer's concern for the viewshed, while exposure is a function of the type, distance, perspective and duration of the view. Sensitivity can be described in terms of "levels of sensitivity." Three levels of sensitivity can be used to identify potential impact areas:

- Low Visual Sensitivity – motorists viewing transmission lines from the perspective of the roads they traverse.
- Moderate Visual Sensitivity – recreationalists, such as bird watchers, hikers, hunters and other individuals whose activity is specific to and who are sensitive to a finite geographic location, and who are sensitive to man-made structures and their impact on the natural environment.
- High Visual Sensitivity – residential viewers who own property within 500 feet of the Proposed Route alignment and are concerned about the structures and how they impact the view of the natural environment.

The transmission line constructed on the Proposed Route (Iron Ore Trail parallel section), would be visible at several points from Highway 135. The transmission line would also be visible along the Bergstedt Road parallel, and at the crossings of Sherman Road, County Highway 26, East Taylor Road and County Highway 21. At these locations there would be low visual sensitivity to motorists. There would be moderate visual sensitivity to users (snowmobilers) of the Iron Ore Trail at the north end of the Proposed Route. The three homes within 500 feet of the Proposed Route will be the most likely to have their viewshed affected by the transmission line, and are therefore considered potentially high visual sensitivity resources.

6.2.5 Socioeconomics

<u>Demographics</u>
Human settlement patterns, in particular European settlement, were historically influenced by the natural resources in the region. Timber resources and the fur

trade were the initial attractions for the earliest settlers to the region in the early and mid 1800s. In the early 1900s, an attempt was made by settlers to develop a farm-based economy on clear-cut timber lands that eventually failed due to poor soils and climate.

During the early 1900s, some of the first iron ore pit operations evolved and expanded as technologies advanced. By the mid-20th century, mining surpassed timber as the primary employer in the project area. Timber production regained a dominant economic and settlement influence as mine operations declined during the latter half of the 20th century.

The City of Tower has historically been a mining town and has more recently become a municipality that supports tourism and development related to Lake Vermilion. The density of residential developments is highest within the City of Tower and around Lake Vermilion to the north and west. The Township of Embarrass has the next highest density of settlement within the Proposed Route. Settlement throughout the Proposed Route is concentrated near roads and likely influenced by land uses including timber production. The absence of lakeshore property and industry within the Proposed Route is evident, as there are no settlement concentrations influenced by these attractions.

The population of the City of Tower was 479 in 2000 with a 5.71% decrease in population from 1990 to 2000. St. Louis County had a population of 200,528 in 2000 with a 1.17% increase in population from 1990 to 2000. There has been no measurable increase in housing density within Tower or the project area during this period. The housing occupancy rate in 2000 included 48.64% owner-occupied in Tower and 41.20% owner-occupied in St. Louis County.

The minority population of St. Louis County includes individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (Presidential Executive Order 12898).

In the 2000 data, the City of Tower had 95.74% in the White population group, 1.49% in the American Indian group, 1.92% in the Hispanic group, and 0.85% classified as other race. In 2000, 48.43% of the population was male and 51.57% was female. The age group composition in 2000 was 78.5% for the 19 and over age group, and 21.5% for the under 19 age group.

In the 2000 data, the St. Louis County population had 94.86% in the White population group, 0.85% in the Black (not of Hispanic origin) group, 2.03% in the American Indian Group, 0.69% in the Asian group, 0.80% in the Hispanic group, 0.22% percent categorized as other race, and 1.35% in more than one race group. Males comprised 49.18% and females 50.82% of the county population in 2000. The age group composition was 73.73% for the 19 and over group, and 26.27% for the under 19 age group.

Economy

Historically, timber production and mining were the economic mainstays of the project area. While timber production remains, mining has declined as a primary employer. Many residents commute, sometimes great distances, to employment opportunities located outside of the project area. Some local industries and employment are available, and the expanding recreational home industry, gaming facilities, and other tourism-based economies have increased and provided opportunities for project area residents. Seasonal residents are relatively few within the project area compared to neighboring areas where lakeshore parcels are present. In summary, the socioeconomics of project area are rural and primarily residential. Commercial and retail operations are uncommon within the project area.

Business patterns for the City of Tower and St. Louis County are based upon the most recent information available (U.S. Bureau of the Census, 2000). In the 2000 data, the City of Tower had a work force of approximately 242 employees with a median household income of $26,429. No specific industries were identified in the data. St. Louis County had a work force of approximately 100,974 employees with an average median household income of $36,306. Again, no specific industries or employers were identified in the data.

6.2.6 Cultural Values

Cultural values include those perceived community beliefs or attitudes in a given area that provide a framework for that community's unity. The communities in the vicinity of the Project (Tower and Embarrass) appear to have cultural values corresponding with the economic activities of timber harvesting, tourism and mining. The major values within the region include individualism and appreciation of natural resources. The Proposed Route runs through St. Louis County, whose residents are predominantly associated with Scandinavian, Slavic, and American Indian heritage. Traditional attitudes and uses of local resources have been changing as the area plays a larger role in recreational tourism. The communities along the Proposed Route also value their heritage and pioneer roots as settlers of the rivers and lakes of the vicinity. Community and county historical societies have embraced heritage tourism as an industry.

Historically, the railroads that cross the region were important for gathering mining and timber products and transporting them to markets. The residents along the Proposed Route likely value the natural environment and the opportunities that natural resource-based industries bring to the region.

6.2.7 Public Services

Public services provided by the City of Tower and Townships of Kugler, Embarrass and White (police, fire protection, waste collection, etc.) will not be

affected by the Project. There are no anticipated impacts on public services in the communities.

6.2.8 Recreation

Recreational facilities located within the Proposed Route include the MDNR Grant-In-Aid snowmobile trail, the Iron Ore Trail. The Iron Ore Trail is co-located with Proposed Route from near the Tower Substation south to a point approximately one mile southeast of County Highway 26.

The City of Tower Cross Country Ski Trail System includes a network of trails developed on city-owned land and is located in the vicinity of the Proposed Route. None of the trails or the network will be impacted by the Project.

6.2.9 Impacts/Mitigation

Impacts

Construction of the Project should result in short-term positive economic impacts in the form of increased spending on lodging, meals and other consumer goods and services. It is not anticipated that the Project will create new permanent jobs, but it will create temporary construction jobs that will provide a one-time influx of income to the area.

Wages and salaries paid to local and regional contractors will contribute to the total personal income of the region. Additional personal income will be generated for residents in the region and the state by circulation and recirculation of dollars paid out by the Applicants as business expenditures and state and local taxes.

Expenditures made for equipment, energy, fuel, operating supplies and other products and services benefit businesses in the area where the Project is located. Indirect impacts may occur through the increased capability of the electric system to supply energy to commercial and industrial users, which will contribute to the economic growth of the region.

There will also be some long-term beneficial impacts from the new transmission facilities. These benefits include an increase to the county's tax base resulting from the incremental increase in revenue from utility property taxes. The availability of reliable power in the area will have a positive effect on local businesses and the quality of services provided to the general public.

Socioeconomic impacts resulting from the Project will be primarily positive, with increased tax revenue and an influx of wages and expenditures made at local businesses during construction.

Mitigation

The Applicants will ensure that safety requirements are met during the construction and operation of the facility. Additionally, when crossing roads or

railroads during stringing operations, guard structures will be utilized to eliminate traffic delays and provide safeguards for the public.

Although the transmission line will be a contrast to surrounding land uses, the Applicants will work with landowners to identify concerns related to the transmission line and aesthetics. In general, mitigation includes enhancing positive effects as well as minimizing or eliminating negative effects. Potential mitigation measures include:

- Determine location of structures, right-of-way and other disturbed areas by considering input from landowners and land management agencies to minimize visual impacts.
- Preserve the natural landscape to the extent practicable. During construction and operation, prevent any unnecessary destruction, scarring or defacing of the natural surroundings in the vicinity of the work.
- Cross waterways in the same location as existing bridges to the extent practicable.
- To the extent practicable, locate new transmission lines parallel to existing rights-of-way and property lines (to the extent that such actions do not violate sound engineering principles or system reliability criteria).
- Place structures at the maximum feasible distance from highway and trail crossings, within limits of structure design.

Landowner compensation will be established by individual easements. Project construction will not cause additional impacts to leading industries within the area. Mitigation measures will include:

- The movement of crews and equipment will be limited to the right-of-way and defined access routes to the greatest extent possible. The contractor will limit movement on the right-of-way to minimize damage to property and will avoid marring the land. If movement outside of the right-of-way is necessary during construction, permission will be obtained.
- The land and facilities will be restored as nearly as practicable to their original conditions following construction.
- Right-of-way easements will be purchased through negotiations with each landowner affected by the Project and payment will be made of full value for any property damage during construction or maintenance as negotiated.
- Fences, gates and similar improvements that are removed or damaged will be promptly repaired or replaced.

No long-term impacts to the human environment are anticipated from the Project. There will be minimal short-term impacts during the clearing of new right-of-way and the installation of the transmission line poles. To mitigate these minimal short-term impacts, existing road and recreational trail rights-of-way will be used for a portion of the Project. Because the Project will provide area electric customers a reliable and efficient future energy supply, the overall effect on human settlement is positive.

6.3 Effects on Land-Based Economies

6.3.1 Agriculture

Agriculture is not a primary land use or occupation source in the region. Historically, the region experienced a peak in agricultural land uses around the turn of the twentieth century, after the region was clear cut of forest cover. The experiment failed due to climate and soil conditions, and farming was widely abandoned within a generation. Despite this trend, there are farms scattered throughout the region. Today, farms in the region produce primarily cattle and hay, with corn (primary livestock forage) produced occasionally.

The potential for Project effects on soils designated as Prime or Unique farmland soils by the Natural Resource and Conservation Service (NRCS) are addressed in Section 6.6.4.

6.3.2 Forestry

Forestry is the predominant land use throughout the region and along the Proposed Route and substation/switching station sites. Public and private forest lands are managed for timber production and growth management practices. Clear-cutting and selective timber management practices are common. Forested wetlands are often harvested in the winter when access is most optimal. The Proposed Route and substation/switching station sites transect or are adjacent to timber production tracts throughout the entire project area.

6.3.3 Tourism

The Tower area is located on Lake Vermilion and is a growing tourist destination due to the highly valued natural resources in the area. Other attractions include the Fortune Bay Casino, the Tower-Soudan Mine State Park, the Iron Ore Trail, the City of Tower Cross Country Ski Trails, the Superior National Forest (SNF), and various state forest lands in the region. The Proposed Route and the proposed Tower Substation site are located adjacent to the Tower Cross Country Ski Trails, but will not transect through, disrupt or affect the trail system. All of the linear alignments in the vicinity of the trails are proposed to be located within existing corridors. The segment of the Proposed Route extending from the ski trails southward to County Highway 26 is co-located along the Iron Ore Trail. None of the other aforementioned tourism destinations are affected by the Project.

6.3.4 Mineable Resources

Although there are aggregate mines in the region, there are currently no mines of economic importance in the immediate area of the Proposed Route or substation/switching station sites. Active iron ore mines are located well south of

the Project on the Mesabi Iron Range. The once active mine near the City of Tower on the Vermilion Iron Range has been converted into the Tower-Soudan State Park, a showcase of mining history for the region. None of the facilities are in close proximity to the proposed Project.

6.3.5 Impacts/Mitigation

There do not appear to be any unavoidable impacts to land-based economies due to the proposed 115 kV transmission Project.

No Project effects are anticipated on farms or agriculturally-based economies in the project area. No cultivated fields will be triangulated, severed, or affected by the Proposed Route or substation/switching station sites. Regional farms and the agricultural economies are anticipated to gain a positive benefit from the Project from improved, reliable electric service.

New right-of-way required for the proposed Project would result in permanent conversion of forested land uses (including forested and shrub-dominated wetlands) to a linear cleared and maintained right-of-way. The nature of this impact is anticipated to be minimal and no effects on timber production, management, or harvesting are anticipated. Timber harvesting and production are expected to continue uninterrupted during and after construction of the right-of-way, and no economic impacts on timber harvesting or measurable timber losses are anticipated as a result of the Project.

No major tourist destinations will be affected by the Project. The Proposed Route may be partially co-located along the Iron Ore Trail, a snowmobile trail. However, the Project is not expected to inhibit or impede future trail use and no major Project effects are expected. Ultimately, tourism will benefit from an improved and more efficient transmission line system and power grid in the area.

Mitigation measures are not anticipated for the land-based economies along the Proposed Route.

6.4 Cultural Resources

6.4.1 Archaeological and Historic Resources

The Project (GRE's funding portion) would receive federal funding from the RUS, a division of the U.S. Department of Agriculture, and may require permitting from the United States Army Corps of Engineers (USACE). Therefore, the Project must comply with all applicable federal mandates, in particular Section 106 of the National Historic Preservation Act of 1966, as amended. The Project also requires permitting from the Commission, and therefore needs to comply with applicable state mandates governing cultural resources. Because there is federal involvement in this Project, consultation with RUS, the USACE (if federal

permitting is required), the Minnesota State Historic Preservation Office (SHPO), and the federally recognized Native American Tribes is required and has already commenced, informally. RUS is in the process of initiating formal consultation with these federal agencies and tribal groups.

In a letter dated December 12, 2005, an initial review of the Project by the SHPO determined that “no properties eligible for or listed on the National Register of Historic Places will be affected” (Appendix C). Subsequently, in September 2006, a letter from a concerned landowner sent to MP and the SHPO indicated that the Project might potentially impact the NRHP-listed Height of Land Portage historic district. Therefore, the SHPO is re-examining the Project. In addition, the federally recognized Bois Forte Tribe and the 1854 Treaty Authority (an inter-tribal natural resource management agency that manages the off-reservation hunting, fishing and gathering rights of the Grand Portage and the Bois Forte Tribe of the Lake Superior Chippewa), have indicated an interest in the Project. Informal consultation with the SHPO, the USACE, the Bois Forte Tribe, and the 1854 Treaty Authority concerning this Project has been initiated by MP/GRE and The 106 Group (utilities’ consultant), and is ongoing.

The project area for the cultural resources review includes all areas where construction or other ground-disturbing activities related to the Project might take place. It includes the 300-foot wide route for the proposed 115 kV transmission line, a five-acre area around the proposed substation and switching station located at either end of the Project, and a 300-foot wide route for the two proposed 46 kV circuits that extend from the proposed Tower Substation site at the northern end of the Project to the existing 46 kV Line #32. If the Commission issues a Route Permit, MP/GRE would construct the 115 kV transmission line within a 100-foot wide right-of-way located within the 300-foot wide Proposed Route.

The purpose of the cultural resources assessment is to assess the project area’s potential for containing previously unidentified archaeological resources, as well as conduct background research to identify whether any recorded properties present within the Project are listed on or eligible for the NRHP.

6.4.2 Background Research

Prior to fieldwork, background research was conducted using the SHPO site files for information on previously identified archaeological sites within one mile of the project area and on cultural resources surveys previously conducted within the project area. In addition, researchers examined historical maps and aerial photographs of the project area. A database query was submitted to SHPO staff to identify any historical properties within 0.25 miles of the project area (Area of Potential Effect (APE)) that are listed on or determined eligible for listing on the NRHP.

6.4.3 Previous Cultural Resource Surveys

Research indicated that two cultural resource studies had been conducted within the project area. Both studies were associated with the Height of Land Portage (also known as *Hauteur de Terre Portage* and Portage of Twelve Poses), which is an NRHP-listed historic district (Lamppa and Lamppa n.d.; Vogel and Stanley 1991). The exact date of the initial study is not known; however, it was prior to 1991, which is the date of the NRHP nomination form for the district. Marvin and Gary Lamppa of the Iron Range Historical Society and Iron Range Railroad and Railway nominated an area known as the Sabin Lake Historic Area. This area contains portions of the Height of Land Portage leading from Sabin Lake, passing the Embarrass River Falls, to a segment of the river that is more navigable (Lamppa and Lamppa n.d.). Although the NRHP nomination was prepared for the Sabin Lake Historic District, it was not listed on the NRHP.

A second study, completed by David G. Stanley and Robert C. Vogel in 1991, field checked the Height of Land Portage from the northern terminus at the Pike River to the southern terminus at Sabin Lake (Vogel and Stanley 1991). Using archival data, they were able to follow the portage, mapping the route on a United States Geological Survey (USGS) topographic map and identifying the integrity of the portage. They determined that segments of the portage still contained high integrity and were even visible from the ground, while other portions, specifically within Section 31 in T60N, R15W, and Sections 25 and 36 in T60N, R16W, have been highly disturbed due to development and logging. Additionally, Vogel and Stanley demonstrated the historical association of the portage to pre-contact and post-contact exploration, fur trade, and settlement to such groups as the Eastern Dakota, Ojibwe, French, British, Initial United States Occupation (1630s–1837), and to Indian Communities and Reservations (1837–1930s). Thus, the Height of Land Portage was nominated to the NRHP in 1991 and was listed in 1992 under NRHP Criteria A and D.

6.4.4 Previously Documented Archaeological Sites

Although it has not been thoroughly investigated archaeologically and it is not officially designated as an archaeological site, the Height of Land Portage historic district (SL-WHT-002, SL-EMB-160, and SL-PIK-039), which transects the current project area near the southern terminus, has the potential for containing as yet unidentified archaeological resources associated with the portage, such as the remains of bivouacs and caches. For this reason, the historic district was listed on the NRHP under Criterion D for its potential to contain archaeological resources that may significantly contribute to the knowledge of this historic district. A brief explanation of the portage’s use and significance is provided above. No other sites have been recorded (confirmed) or reported (not field checked) within the current project area.

One site has been recorded outside of the current project area, but within the one-mile study area. Site 21SL836 is considered a Euro-American occupation consisting of moderately disturbed structural ruins and artifact scatters, representing a homestead dating to the post-contact Railroads and Agricultural Development Period (1870s-1940). This site is located approximately 0.7 mile southwest of the proposed Embarrass Switching Station site.

6.4.5 Previously Documented Architectural History Properties

One NRHP-listed architectural history property has been recorded within the current project area. The Height of Land Portage historic district (SL-WHT-002, SL-EMB-160, and SL-PIK-039) transects the current project area near the southern terminus of the Project. A brief explanation of its use and significance is provided above. A second NRHP- listed architectural history property, the Tower Fire Hall, is located outside of the project area but within the 0.25 mile APE.

6.4.6 Results—Pre-contact Archaeology

The topography of the project area is undulating, consisting mostly of rolling hills and low-lying wetlands, the alternation of which results in several topographically prominent features located between Lake Vermilion and Sabin Lake. The project area is comprised primarily of upland forests and wetlands.

The project area is transected by 5.5 miles of the former DM&IR, which is currently being used as a recreational trail (Iron Ore Trail). The project area along this railway was likely previously disturbed during its construction and is therefore considered to have low potential for intact pre-contact archaeological resources.

The project area transects 7.6 miles of nationally inventoried wetlands, portions of which are located adjacent to the former DM&IR. The areas within and immediately surrounding these wetlands are therefore considered to have low potential for pre-contact archaeological resources.

The remaining portions of the project area consist of forested areas that appear to be largely undisturbed, are in proximity to Sabin Lake, Lake Vermilion, Embarrass, Pike, Two, and East Rivers and associated wetlands, and are topographically prominent. These remaining portions of the project area are considered to have moderate to high potential for intact pre-contact archaeological sites.

6.4.7 Results—Post-Contact Archaeology

Based on the locations of the Height of Land Portage historic district and the DM&IR, there are a number of areas that have moderate and high potential for post-contact archaeological sites. Although the exact nature of the archaeological deposits along the Height of Land Portage is unknown, the portions of the project area that come in close proximity to the portage (Embarrass Switching Station) were treated as having high potential for intact archaeological resources. This is largely due to its NRHP listing and the potential to glean new information from archaeological sites along the portage, which may significantly contribute to knowledge of this historic district.

A Phase I archaeological survey, consisting of pedestrian survey in areas with good surface visibility and shovel testing in areas with poor surface visibility, was conducted (in November 2006) within and immediately adjacent to the proposed footprint of the Embarrass Switching Station. The intent was to locate any unknown archaeological resources, especially those associated with the Height of Land Portage. In addition, a visual reconnaissance was completed within the vicinity of the proposed switching station in the area of the historically documented portage route, to attempt to identify and/or relocate the portage route and any other above ground archaeological features.

At the time of the archaeological survey, mixed deciduous and coniferous forest with dense underbrush and leaf litter produced surface visibility near 0 percent. As a result, archaeological investigations in the vicinity of the proposed switching station utilized subsurface testing at 15-meter (m) (49 ft.) intervals within an area of approximately 4.6 acres (149 m by 132 m). A total of 55 shovel tests were placed within this area and were excavated into sterile subsoil. All sediments were screened through 1/4-inch screen and examined for pre-contact and post-contact period artifacts. No artifacts were identified within the shovel tests in the vicinity of the proposed switching station.

Based on a visual reconnaissance and field check of historical documentation for the portage route with a global positioning system, the vicinity of the proposed Embarrass Switching Station no longer exhibits any visual indicators of the existence of the portage.

Shovel tests within the proposed switching station footprint in the vicinity of the portage revealed no soil disturbances in this area. It is possible that this segment of the portage fell out of use due to environmental factors related to the Embarrass River, or possibly it was not accurately illustrated on historic documentation. Previous investigations along the portage south of the proposed switching station site identified segments of the portage that coincided with portage surveys by Stanley and Vogel (1991) and Birk (1976). Both Stanley and Vogel (1991), and Birk (1976), acknowledge that the segment of the portage that transects the proposed switching station site is likely part of the portage as documented by land surveys in the 1820s. However, Birk (1976) also provides an alternate route that parallels the Embarrass River and connects with the river in the vicinity of the present 115 kV power line corridor. This segment, which exists in present day, may have been utilized more extensively due to its shorter length, and may have replaced the longer overland route that is documented in the 1820s surveys.

The negative results of the current survey, the lack of soil disturbance, and the presence of an alternative trail, indicate no archaeological evidence for the portage in the vicinity of the proposed Embarrass Switching Station.

There is potential for undisturbed archaeological deposits associated with the DM&IR, as well as its predecessor, the Duluth and Iron Range Railroad (D&IR). The D&IR between Tower and Embarrass was constructed between 1886 and 1888 (Prosser 1966); however, it is illustrated on an 1882 composite map for Townships 59N and 60N, Range 15W (Trygg 1964), as well as the 1916 St. Louis County plat map (Hixson 1916) and USDA-ASCS 1936–1939 aerial photographs. The location of the railroad remained the same on the 1981 USGS Biwabik NE Quadrangle; however, the name had changed to the Duluth Missabe and Iron Range Railway, which took place in 1937 (Prosser 1966).

The DM&IR is currently being used as a recreational trail (Iron Ore Trail). However, gauging from current aerial photographs (2003–2004), the former railroad grade appears to be intact and is overgrown with vegetation in areas. Thus, the DM&IR has the potential to contain post-contact archaeological deposits greater than 45 years of age associated with the transportation of logging and mining products. Specifically, these locations would include railroad service buildings and switching areas, where there would be higher potential to recover artifacts associated with railroad and logging activities. One such switching area was observed within the project area on the USDA-ASCS 1936–1939 aerial photographs, south of the Town of Kugler in Section 8, T61N, R15W. Such a location may contain surficial and buried archaeological deposits associated with 75 years of railway activities.

Lastly, post-contact archaeological deposits associated with the logging industry must be taken into consideration. Because much of St. Louis County is covered by dense forest, archaeologically sensitive areas for logging activity can be established through the use of historical maps and aerial photographs. These may provide visual signs of roads or trails within the project area. Because the logging industry was based on the removal and movement of timber, historic roads would be the best source for locating various types of timber-related archaeological sites. Such archaeological properties would include habitation (various types of logging camps), transportation (roads, railroads, dams, bridges), and complex sites (large combinations of the two). Random find spots associated with timber cutting or removal are less likely and more difficult to locate; however, the likelihood for locating such sites is higher within proximity to logging roads and trails (Birk 1998).

6.4.8 Results—Architectural History Properties

Other inventoried and unidentified properties within the 0.25 mile APE, including the DM&IR, have unknown historical values and may be considered eligible for listing on the NRHP.

Properties over 50 years of age within the APE, specifically the former DM&IR, were evaluated to determine their eligibility for listing on the NRHP. Three properties over the age of 50 years are located within the recommended APE:

- The DM&IR is located within an approximately five-mile stretch of the Project's APE. This rail line has been considered eligible for listing on the NRHP in previous studies conducted by the MNDOT (E. Abel to D. Gimmestad, letter, December 5, 2004. On file at the Minnesota Department of Transportation [S.P. No. 38-090-01].)

- A house at 7976 County Road 364 includes a circa-1950 dwelling and a modern garage. This property is recommended as having low potential to be eligible for listing on the NRHP.

- A small complex at 7965 County Road 364 includes a circa-1920 dwelling, a small barn, a shed, and a garage. The removal of the front entry, replacement of windows, and application of vinyl siding have significantly altered the house. This property is also recommended as having low potential to be eligible for listing on the NRHP.

The DM&IR Railroad line from Two Harbors to Tower is considered to be eligible for listing on the NRHP. This line was built as the main line of the D&IR Railroad in 1883–1884. The D&IR line was crucial as the shipping port for iron ore and to the development of the Vermilion Range, and to the continued economic viability of both these areas (E. Abel to D. Gimmestad, letter, December 5, 2004. On file at the Minnesota Department of Transportation [S.P. No. 38-090-01].) It is eligible for the NRHP under Criterion A for its significance in the areas of Commerce and Transportation and within Minnesota's Iron Range historic context. Within the project area, the DM&IR line is surrounded by new-growth pine and other trees and has been converted into a recreational snowmobile trail. Its continued use as a linear transportation corridor enhances its historical integrity and the segment is recommended as a contributing segment to the overall line.

Significant under NRHP Criterion A for its associations with the iron extraction industry, the key historical characteristic that defines this historic resource and its historic associations is its route, which conveyed iron ore from the Soudan Mine to the port of Two Harbors. Within the project area, the DM&IR line tracks have been removed and the bed is now used as a gravel snowmobile trail. New growth trees are planted close to the railroad bed, creating a change from its historic appearance, where the line would likely have had a wider right-of-way and have included a landscape more recently cleared of timber. Despite the changes to the setting and materials, the rail line retains its sense of direction and route. Subject to Route Permit approval and final engineering design, the proposed transmission line alignment would be placed on the east side of the railroad bed, approximately 50 feet from the centerline. Utility lines running parallel with railroads are not out of character for these resources and the removal of vegetation near the railroad would not be uncharacteristic of the historic setting. Because the proposed transmission line would have no impact

on the primary characteristic of the line—its route—The 106 Group recommends a finding of no adverse effect to this historic resource.

6.4.9 Traditional Cultural Properties and Native American Religious Practices

The project area lies within the “1854 Treaty Area,” otherwise known as the Ceded Territory. As part of the 1854 Treaty Agreement, the Chippewa Indians of Lake Superior and the Mississippi ceded this area to the United States Government. The treaty protected the Bands’ right to hunt and fish in the Ceded Territory. In 1988, the Fond du Lac, the Bois Forte, and the Grand Portage Bands of the Lake Superior Chippewa negotiated an agreement, which was ratified by the Minnesota State Legislature, stating the Bands would exercise limited treaty rights within the Ceded Territory in exchange for a yearly monetary payment. Today, those treaty rights are implemented by the 1854 Treaty Authority, an inter-tribal natural resource management agency that manages the off-reservation hunting, fishing, and gathering rights of the Grand Portage and the Bois Forte Tribe of the Lake Superior Chippewa (Chippewa Treaty 1854). Both the Bois Forte Tribe and the 1854 Treaty Authority have indicated an interest in the proposed Project and informal consultation with them is ongoing. Also, RUS is in the process of initiating formal consultation with all of the appropriate federally-recognized tribes.

6.4.10 Tribal Consultation

On October 11, 2006, MP/GRE and The 106 Group met with Rose Berens, the Bois Forte Tribal Historic Preservation Officer (THPO) and Director of the Bois Forte Heritage Center and Cultural Museum; Bill Latady, Curator at the Bois Forte Heritage Center and Cultural Museum; and Dave Woodward, the 1854 Treaty Authority Cultural Resources Specialist, to discuss the preliminary results of the cultural resources assessment and attempt to identify areas of cultural significance within the Project that may need to be investigated during future stages of survey work. Rose Berens and David Woodward agreed with The 106 Group’s methodology for determining areas of high and moderate archaeological potential, but recommended that the Phase I survey to be conducted within the project area include a systematic pedestrian survey of the entire project area (excluding areas inundated with water), to attempt to locate any above ground features that may not be depicted on historical maps or aerial photographs. Rose Berens also invited The 106 Group ethnographer and archaeologists to meet with elders and spiritual leaders for the Bois Forte Tribe in an attempt to identify other areas of traditional cultural significance that may be located within the project area. The 106 Group also extended an open invitation to any member of the Bois Forte Tribe and 1854 Treaty Authority to visit the project area during any archaeological fieldwork scheduled in 2006 and spring 2007.

6.4.11 Agency Consultation

On October 17, 2006, MP and The 106 Group met with Dennis Gimmestad, the SHPO Review and Compliance Officer; David Mather, the SHPO National Register Archaeologist; and Brad Johnson, the USACE St. Paul District Archaeologist, to discuss the preliminary results of the cultural resources assessment, the recommendations made by the Bois Forte Tribe and the 1854 Treaty Authority in the October 11 meeting, and determine the appropriate level of survey effort for this Project. Concerning archaeology, David Mather also agreed with The 106 Group's recommendations of areas that have high or moderate archaeological potential, and agreed with the recommendation of the Bois Forte Tribe and 1854 Treaty Authority that a systematic pedestrian survey of the project area be conducted. In addition, Mather suggested that the Phase I survey of the proposed Embarrass Switching Station site, which is in proximity to the NRHP-listed Height of Land Portage, and a visual reconnaissance survey of the area surrounding the proposed switching station be conducted (completed November 2006).

Regarding architectural resources, Dennis Gimmestad recommended that the proposed 0.25-mile APE be re-examined and narrowed, if possible. Once completed, the structures located within the revised APE should be examined to determine if a Phase I architectural history survey is needed. Gimmestad also recommended that the former DM&IR be evaluated to determine its eligibility for listing on the NRHP. If eligible, the potential effects to the property should be analyzed. In addition, Gimmestad recommended an analysis of potential effects the proposed Project may have on the cultural landscape of the Height of Land Portage.

A Phase I archaeological survey of the project area will be conducted in spring 2007. This survey will include a pedestrian survey of the entire corridor (excluding areas inundated with water). Subsurface testing will be conducted in areas identified during the pedestrian survey as having high potential to contain archaeological sites, and that will or may be impacted by construction activities.

6.4.12 Impacts/Mitigation

As discussed above, the proposed Embarrass Switching Station site is located in the vicinity of the Height of Land Portage. A Phase I survey conducted in November 2006 (at and around the switching station footprint) indicated no archaeological findings, therefore no impacts to cultural resources sites in the proposed switching station site area are anticipated.

An additional Phase I survey will be conducted in spring 2007 along the Proposed Route to determine whether any cultural resources are present within the proposed transmission line construction area. If any archaeological sites are identified during the spring survey, the particular site will be avoided and the poles placed outside the specified buffer zone.

The Applicants will make every effort to avoid impacts to identified archaeological and historic resources. In the event that an impact would occur, the Applicants will consult with SHPO and invited consulting parties (particularly the Bois Forte and other state and federal permitting or land management agencies). While avoidance of the resource would be the preferred action, mitigation for Project-related impacts on NRHP-eligible archaeological and historic resources may include an effort to minimize Project impacts on the resource and/or additional documentation through data recovery.

6.5 Natural Environment

Natural resources along the Proposed Route are shown on Figure 6-3.

6.5.1 Air Quality

The only potential air emissions from a transmission line result from corona, which may produce ozone and oxides of nitrogen. This can occur when the electric field intensity exceeds the breakdown strength of the air. For a 115 kV transmission line, the conductor surface gradient is typically below the air breakdown level. As such, it is unlikely that any measurable emissions would occur from the conductor surface. Therefore, the 115 kV transmission line Project is not expected to impact air quality.

6.5.2 Water Resources

There are no large lakes (>60 acres) within the Proposed Route or substation sites. The north end of the Proposed Route near the City of Tower is within the watershed of a small creek system comprised of West Two Rivers Creek and Fullers Creek, which merge and flow north to Lake Vermilion. The middle section of the Proposed Route encompasses the upper reaches and watershed of the Pike River, which flows west. The main channel and two branches of the Embarrass River are located within the south end of the Proposed Route and flow in a southwesterly direction within the area.

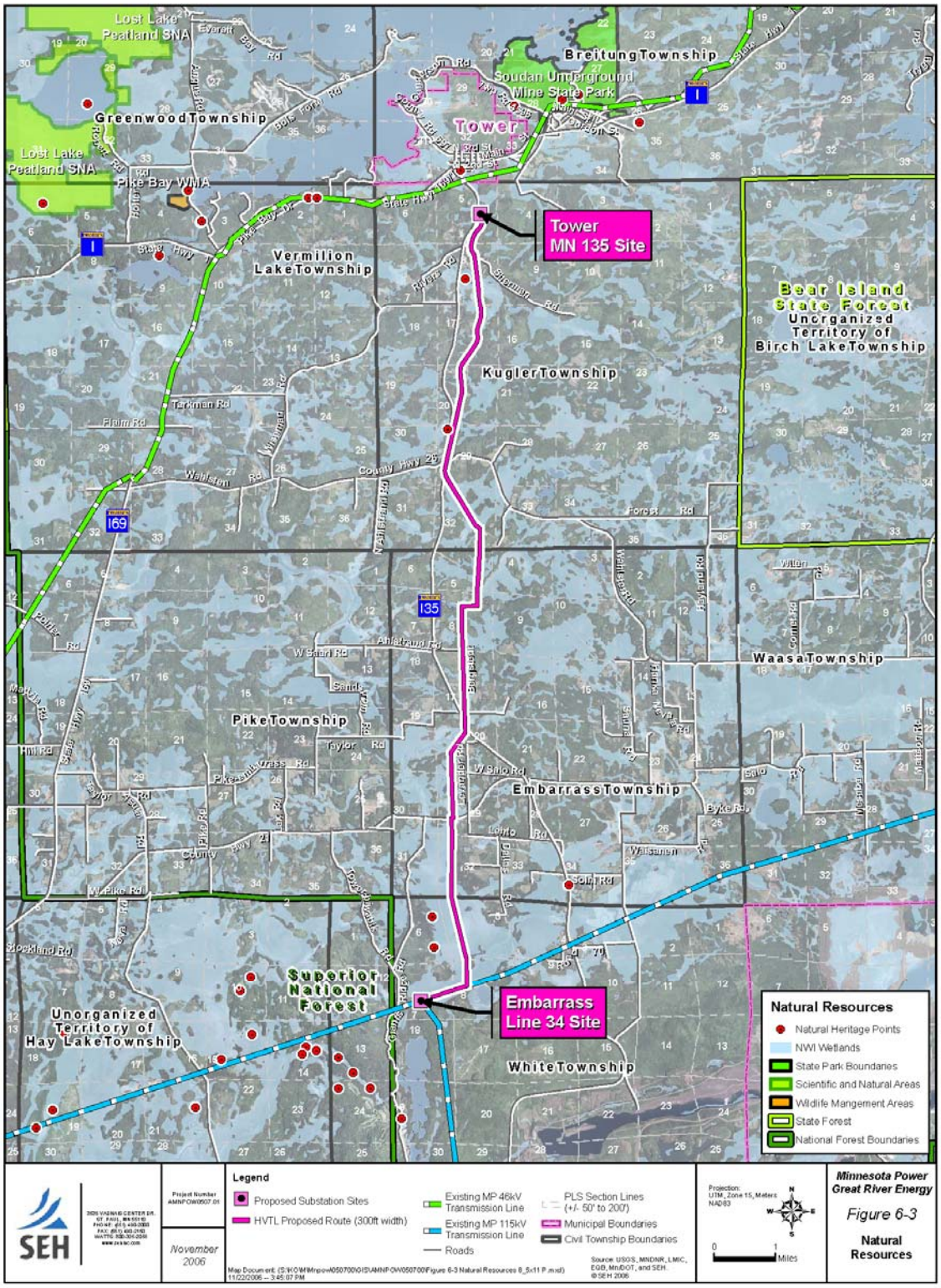
According to the designated floodplain maps of the Federal Emergency Management Agency, 100-year floodplains are present along the channels of all three of the above-mentioned rivers including the Fullers Creek and West Two Rivers Creek system, Pike River and its upper tributaries, and the Embarrass River in the proximity of the Proposed Route.

The Proposed Route will transversely cross Fuller’s Creek twice, transversely cross the Pike River, and transversely cross the Embarrass River. No longitudinal crossings are proposed.

Given the nature of the Project, minimum to no floodplain fill or disturbance is anticipated and the effects of the installment of any poles within the floodplain are expected to be negligible.

The wetlands within the Proposed Route are mapped on the National Wetland Inventory (NWI) (United States Fish and Wildlife Service (USFWS) 1979, 1983) and were confirmed in a 2005 and 2006 field reconnaissance. Wetlands are common and widespread throughout northern Minnesota, and the project area is no exception.

Figure 6-3 Natural Resources



Wetlands within the Proposed Route are typically large, influenced and defined by topography, and often interconnected. The larger wetlands trend on an east-west axis but are also highly-configured shaped polygons. Small, isolated depressions are also present, but less common. These small isolated basins typically occur within forest settings or former forest that has been converted.

Wetlands are summarized in the descriptions below by Wetland Type (Shaw and Fredine, 1956) and observational data collected during the reconnaissance.

Type 1 Wetlands, Seasonally Flooded Basins

Type 1 wetlands are rare in any setting, and this is true in the Proposed Route. One Type 1 wetland observed was dominated by Canada blue-joint (*Calamagrostis canadensis* – USFWS Status Obligate (OBL)) and was disturbed by timber clear-cutting operations.

Type 2 Wetlands, Wet Meadows

Type 2 wetlands are also uncommon, although several Type 2 wetlands were present along the Proposed Route, often associated with larger wetland types. Canada blue-joint and sedges (*Carex* spp.) are the dominant vegetative species present. Wiregrass sedge (*Carex lasiocarpa* – OBL), in particular, often grow extensively and monotypically within many of these Type 2 wetlands. Type 2 wetlands are seasonally flooded.

Type 3 Wetlands, Shallow Marsh

Type 3 wetlands are also relatively uncommon and are often part of a larger wetland complex with other types. Type 3 wetlands more often are flooded for longer periods than Types 1 and 2 wetlands and may contain vegetation that reflects this extended wet period. Cattail species (*Typha* sp.) were observed as the dominant vegetation along with sedges and Canada blue-joint. Pickerelweeds (*Pontederia* sp.) and arrowhead (*Sagittaria* sp.), two species common to deeper water marshes, were also observed.

Type 4 Wetlands, Deep Marsh

Type 4 deep marshes are not common and nearly all of the Type 4 habitat occurs in association with other wetland complexes and/or deep open water along rivers or creeks. Cattail, pickerelweed and arrowhead are common vegetative species within the Type 4 wetlands within the Proposed Route.

Type 5 Wetlands, Shallow Open Water

The absence of lakes and open water habitats results in little to no Type 5 habitats within the Proposed Route.

Type 6 Wetlands, Shrub Swamp

Type 6 shrub swamp is one of the two most common wetland types within the Proposed Route. Type 6 wetlands are common in large, connected wetland complexes and within small isolated basins. Type 6 wetlands are dominated by a

shrub canopy comprised of speckled alder (*Alnus incana* – OBL). Red-osier dogwood (*Cornus sericea* – Facultative Wet (FACW)) and occasionally one or more of several species of willow (*Salix* spp.) found in the region are also present within the shrub canopy of the Type 6 wetlands. Sedges, Canada blue-joint, common marsh marigold (*Caltha palustris* OBL), marsh fern (*Thelypteris palustris* – OBL), sensitive fern (*Onoclea sensibilis* – FACW), and spotted joe-pye-weed (*Eupatorium maculatum* – OBL) are common in the herbaceous ground cover vegetation of the Type 6 wetlands. Type 6 wetlands are seasonally flooded and provide excellent wildlife habitat in the region.

Type 7 Wetlands, Wooded Swamp

Type 7 wooded swamps are present within the Proposed Route and often are associated with or are part of a larger wetland complex. Two distinct vegetative communities are found within Type 7 wetlands along the Proposed Route. The most common of the two is mixed forest swamp with a mixture of deciduous and conifer species, including black ash (*Fraxinus nigra* OBL), balsam poplar (*Populus balsamea* – FACW), black spruce (*Picea mariana* – FACW), tamarack (*Larix laricina* – FACW), and balsam fir (*Abies balsamea* – FACW). Canada blue-joint and ferns are often present in the herbaceous ground layer.

Pure stands of black ash comprise the other Type 7 vegetative community within the Proposed Route. Here, the tree canopy consists of a monotypic stand of black ash. The shrub and ground cover layers within these black ash swamps are similar in composition to the mixed forest swamp type.

Type 8 Wetlands, Bogs

Type 8 wetlands are the second-most abundant wetland type found within the Proposed Route. The tree canopies, when present, are dominated by black spruce and tamarack. Willow and alders are present within any shrub communities found in the bogs. The most distinctive and unique feature of the bogs, a floating mat comprised of sphagnum moss (*Sphagnum* spp. – NI), forms the ground cover layer. Many different species of sedges, grasses and herbs are also present within the sphagnum mat. Bog birch (*Betula pumila* – OBL), leatherleaf (*Chamaedaphne calyculata* – OBL), Labrador tea (*Ledum groenlandicum* – OBL), and cotton-grass (*Eriophorum vaginatum* – OBL) are common to the Type 8 wetlands.

6.5.3 Vegetation

Vegetative communities along the Proposed Route were reviewed during the field reconnaissance by consultant biologists.

Vegetative communities within and surrounding the Proposed Route and substation sites are primarily comprised of forested uplands, forested wetlands, and herbaceous wetland communities common to northeastern Minnesota. Nearly all of the forest cover is second growth and much of it is subject to timber

management including clear-cutting, plantings, and growth management practices. Scattered cleared upland tracts are also present mostly in the form of pastures, hayfields, or building sites. Old growth mixed conifer forest is present along the west side of the Proposed Route within the City of Tower Cross Country Ski Trails area along the west side of the Iron Ore Trail. Old growth upland mixed conifer forest is also present in the vicinity of the southern terminus of the Proposed Route in White Township.

6.5.4 Fish and Wildlife Resources

There are no state-managed fish and wildlife resources along or adjacent to the Proposed Route or substation sites such as MDNR Wildlife Management Areas (WMAs), State Natural Areas (SNAs), Shallow Game Management Lakes, Designated Trout Streams, or other public state lands managed for fish and wildlife. No federal resources, including Waterfowl Production Areas (WPAs), Wildlife Refuges, National Preserves, or other designated resources are affected. Although county and local governments may also have wildlife management areas, public hunting accesses, and similar managed lands, no such lands are affected or adjacent to the Proposed Route.

6.5.5 Threatened and Endangered Species

The MDNR NHIS was reviewed for potential occurrences of state-listed rare, threatened, or endangered species and sensitive natural resources within the Proposed Route and substation sites. The NHIS was initially reviewed in 2005 for the Certificate of Need process and was reviewed again in July of 2006 for this Route Permit application. The NHIS was updated after the 2005 review, resulting in a renumbering of the occurrences to a new code system and some new additional occurrences in the region. Only the occurrences that are in close proximity to or within the Proposed Route are addressed below. The MDNR requested that the nature and location of the NHIS occurrences be kept confidential to protect the species or features from harm or destruction.

The USFWS was contacted (letter of July 13, 2006, Appendix C) to request input on the potential for Project effects on species listed under the federal Endangered Species Act, the Migratory Bird Treaty Act (MBTA), and the Fish and Wildlife Coordination Act. The USFWS Region 3 Wildlife Biologist indicated that they no longer will provide comment letters for this level of project planning, and will instead provide comments through a phone conversation or by electronic mail (e-mail). Comments were received by phone and recorded in a record of conversation on August 24, 2006 (Appendix C).

<u>State-Listed Species and Natural Heritage Database Occurrences</u>
The 2006 NHIS database included several occurrences in close proximity to or within the Proposed Route.

There are a total of nine NHIS occurrences within a half mile radius of the Proposed Route and substation sites. Descriptions of each occurrence, starting from the north terminus southward, are provided below.

The first two occurrences are located in downtown Tower (Occurrences EO ID #4226 and #3904). Occurrence #4226 is a state-listed Species of Special Concern (SSC) plant species located in a woodlot in town outside of the Proposed Route and substation sites' scope of effect. Occurrence #3904 is a state-listed endangered plant occurring in a wetland basin north of the Proposed Route and substation sites' scope of effect.

Progressing southward, one NHIS occurrence is located in Kugler Township on the east side of Highway 135 and west of the Proposed Route (Occurrence EO ID #14832). This occurrence was previously identified in the 2005 Certificate of Need Application and is a marsh bird species that is not listed under the Minnesota Endangered Species statutes. The species, the American bittern (*Botaurus lentiginosus*) was heard vocalizing from a wetland during the 2005 field reconnaissance in a nearby wetland. This occurrence does not warrant any further consideration; it is an uncommon and secretive bird occasionally seen in Minnesota.

A cluster of four NHIS occurrences are present further to the south in Kugler Township north of the County Highway 26 crossing (Occurrences EO ID #5451, #5750, #4594, and #19011). All of these occurrences are SSC or unlisted plant species occurring in a publicly-owned wetland (local government-owned) known as the Wahlsten Bog Peatland. The occurrences date back to the 1950s and there is no recent information or updates on the status and specific locations of these occurrences. Regardless of the locations, the Proposed Route is co-located on the Iron Ore Trail in this area, and little to no wetland impacts or impacts to these occurrences (if they are still present) are anticipated.

The last two NHIS occurrences are located near the southern terminus of the Proposed Route in White Township. Occurrences #22895 and #22997 are both SSC *Botrychium* fern species that prefer disturbed soils. These were growing in an abandoned logging road when they were documented in 1997. Both occurrences are slightly offset to the west of the Proposed Route and if they are still present, no impacts are expected.

<u>Federally-Listed Threatened and Endangered Species</u>

St. Louis County is within the breeding range of the bald eagle (*Haliaeetus leucocephalus* – federal status, delisted Threatened) and the distributional ranges of the gray wolf (*Canis lupus* – federal status, Threatened) and the Canada lynx (*Lynx canadensis* – federal status, Threatened). The MDNR NHIS also shows federally-listed species occurrences; however, review of the 2006 records shows no designated bald eagle nesting areas within a one-mile radius

of the Proposed Route or substation/switching station sites. This is most likely due to the low density of lakes in the immediate vicinity.

There are numerous occurrences of the Canada lynx, including breeding records, throughout St. Louis County and northeastern Minnesota. The majority of these occurrences are in or around the SNF. The nearest cluster of records occurs northeast of Tower in Breitung Township, several miles from the Project. Occasional records are known and scattered in the vicinity of the Project outside of the SNF. No breeding records, known breeding habitats or dens, or observations of lynx are known or present within the Proposed Route or substation/switching station sites.

The gray wolf is widely distributed and common throughout the project area and northeastern Minnesota. The gray wolf is a candidate for proposed delisting due to the successful recovery of this animal since it was listed under the federal Endangered Species Act in the mid 1970s.

6.5.6 Impacts/Mitigation

Air Quality

No impacts to air quality are expected from the Project, therefore no mitigation is proposed.

Water Resources

Potential impacts or Project effects on water resources as a result of the proposed Project are anticipated to be wetland impacts, minor floodplain encroachments, and erosion/sediment control.

Wetland impact avoidance measures that will be implemented during design and construction of the transmission line will include spacing and placing the power poles at variable distances to span and avoid wetlands. Unavoidable wetland impacts as a result of the placement of poles will be limited to the immediate area around the poles. Much of the construction in wetland areas will occur in the winter to minimize impacts. If necessary, wooden mats or the Dura-Base Composite Mat System will be used to protect wetland vegetation. All requirements of the USACE (wetlands under federal jurisdiction—see letter of January 23, 2006, Appendix C), MDNR (Public Waters/Wetlands), and St. Louis County (wetlands under the jurisdiction of the Minnesota Wetland Conservation Act) will be met.

Impacts to floodplains, in particular the placement of power poles of structures, will be avoided to the maximum extent by placing these structures above the floodplain contours outside of the designated floodplain, and by spanning the floodplain with the transmission line.

Because proposed construction activities at the substation and switching station will result in the disturbance of one acre or more of soils, a National Pollutant Discharge Elimination System (NPDES) stormwater permit will be required. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared that will include erosion control plans and Best Management Practices (BMPs) that will be implemented. To minimize contamination of water due to accidental spilling of fuels or other hazardous substances, all construction equipment would be equipped with spill cleanup kits.

The wood poles used for this Project will be pretreated with pentachlorophenol or creosote to increase the wood durability and life expectancy of the poles. Degradation of these wood preservatives occurs through aerobic soil degradation, aerobic and anaerobic aquatic degradation, and photolysis. However, the respective half-life for these processes range from less than 20 minutes to 63 days, the preservatives are not very mobile in soil or water, and are subject to biodegradation to its elemental state near the pole. Therefore, there will be no long-term impacts from the use of these preservatives.

Vegetation

No impacts to the old growth forest parcels or to the forest communities are anticipated, mostly due to the nature of the Project. The co-location of the Proposed Route along existing linear corridors is expected to result in little to no impacts on the forest communities or other natural vegetative communities.

Native vegetation that is compatible with the operation and maintenance of the transmission line will be maintained within the transmission line right-of-way. If necessary, native species would be seeded to revegetate areas disturbed during construction.

Fish and Wildlife Resources

The Proposed Route and substation/switching station sites do not affect, transect, or potentially impact any publicly managed fish and wildlife habitats including WMAs, SNAs, Shallow Game Management Lakes, MDNR-Designated Trout Streams, federal Wildlife Refuges, National Preserves, or other state, federal, or locally managed and designated fish and wildlife resources.

Minimal impacts to fish and wildlife resources are expected as a result of the Project. No mass land-clearing activities are proposed that would cause significant potential impacts to nesting birds protected under the MBTA.

Large birds such as raptors are sometimes impacted by power lines through electrocution. This is primarily an electric distribution line issue, as electrocution occurs when birds with large wingspans come in contact with either two conductors, or a conductor and ground (e.g., structure support arms). Transmission line designs used by MP and GRE for this Project will not create electrocution hazards. Additionally, the Proposed Route or substation/switching

station sites are not proximal to unique habitats, concentrations, or flight path corridors of migratory birds. Although incidental bird collision with poles or wires after construction is possible, it is unlikely due to the lack of known bird concentrations in the immediate area.

The following measures can be used to help avoid or minimize impacts to area vegetation and wildlife resources during and after the completion of the proposed transmission line:

- Implement sound water and soil conservation practices during construction and operation of the Project to protect topsoil and adjacent water resources and minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, and stabilizing restored soil.

- Minimize tree felling and shrub removal that are important to area wildlife.

- Implement raptor protection measures, possibly including placement of bird flight diverters on the line at primary water crossings after consultation with local MDNR staff.

- Revegetate disturbed areas with native species and wildlife conservation species where applicable**.**

A portion of the proposed transmission line will follow the Iron Ore Trail, and minimal impacts to the natural vegetation and associated wildlife will occur. Potential impacts to rare and unique natural resources in the section of the Proposed Route requiring new right-of-way will be primarily limited to impacts associated with transmission pole installation.

Threatened and Endangered Species

The USFWS commented (phone conversation of August 24, 2006, Appendix C) that no effects on Critical Habitats or individuals of federally-listed Threatened or Endangered Species are anticipated as a result of the Project. The USFWS anticipated no other impacts to lands that are under their jurisdiction as well, and anticipated that the Project will comply with the federal MBTA.

Because of the nature of the Project, no impacts on the Canada lynx or the gray wolf are anticipated. The co-location of the Proposed Route along existing linear corridors is expected to result in minimal or negligible amounts of habitat losses for these species.

The USFWS anticipates that the Project will not affect Critical Habitats for and individuals of the gray wolf, Canada lynx, or bald eagle and that mitigation for federally listed species will not be necessary.

6.6 Physiographic Features

6.6.1 Topography

The Vermilion Range formation dominates the northern end of the Proposed Route and substation site near the City of Tower and provides more elevational relief in the immediate area. South of Tower, the topography is lower with small gently rolling hills and flat large wetland basins (peat deposits).

6.6.2 Geology

The Quaternary glacial geology of the region has influenced the physiography of the project area. A relatively thin layer (<40 feet) of glacial till is overlain on Precambrian bedrock, portions of which are exposed at the surface.

6.6.3 Soils

Soils in the project area are comprised of peat, muck, and clay-based hydric soils in the wetlands and a relatively thin layer of glacial till over bedrock in the uplands. The Soil Survey of St. Louis County is still in draft form, has not been published to date, and is not expected to be published within the next three to four years. A draft copy of the soil survey was provided by the St. Louis County NRCS office and is used for this discussion.

According to NRCS data in the draft Soil Survey, the Proposed Route transects several soil map units classified as Highly Erodible or Potentially Highly Erodible. These soils may be more unstable, subject to water and wind erosion, and may require additional soil BMPs when disturbed. These NRCS classifications apply primarily to agricultural programs implemented by the NRCS.

All of the soil units within wetlands are classified as hydric soils by the NRCS.

As discussed in Section 6.5.6, an NPDES stormwater permit will be obtained for the larger scale soil disturbances (> one acre) at the substation and switching station sites. Appropriate erosion control BMPs will be applied when soils are disturbed during construction, including implementation of erosion control plans outlined in the SWPPP.

6.6.4 Prime, Unique, and Farmlands of Statewide Importance

The draft Soil Survey of St. Louis County was reviewed for potential effects of the proposed Project on soils and on Prime, Unique or Farmlands of Statewide Importance (FSI). The NRCS farmland classification database was reviewed to identify soil map units with designated farmland classifications that are transected by the Proposed Route and substation/switching station sites. According to the NRCS, there are no soils designated as Prime or Unique affected by the Proposed Route (letter of August 16, 2006, Appendix C).

One soil map unit designated as FSI is mapped within and transected by the Proposed Route or substation/switching station sites (Table 6-3).

Table 6-3 Farmland of Statewide Importance within the Proposed Route

	Map Unit	Locations
Proposed Route	Cloquet loam, 2 to 8 percent slopes	Sec. 8, 20, 29, T61N, R 15W Sec. 32, T60N, R15W

According to the NRCS, FSI are defined as:

> *"soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed to acceptable farming methods"*

The terms "when treated and managed to acceptable farming methods" clarifies that although soil units may be mapped as FSI, many are not actively farmed or have been improved to produce agricultural products. Typically mitigation is only necessary when FSI units are actively farmed and are designated for agriculture through state legislative mandate. The listed FSI map unit transected by the Proposed Route or substation/switching station sites is not actively farmed or under any special agricultural designations.

6.6.5 Impacts/Mitigation

Potential impacts of construction are soil compaction and exposing the soils to wind and water erosion. Impacts to physiographic features should be minimal during and after installation of the transmission line structures and the substation and switching station, and these impacts will be short term. There should be no long-term impacts resulting from the Project.

Soils will naturally revegetate following construction disturbance. In certain erodible areas, seeding/mulching of the right-of-way may be required to minimize erosion. Areas of larger disturbance (one acre or more), in particular at the substation and switching station sites, will be addressed in the NPDES and SWPPP prepared for the Project. Mitigation under the NPDES includes implementation of the SWPPP with the appropriate erosion control methods developed specifically for the site.

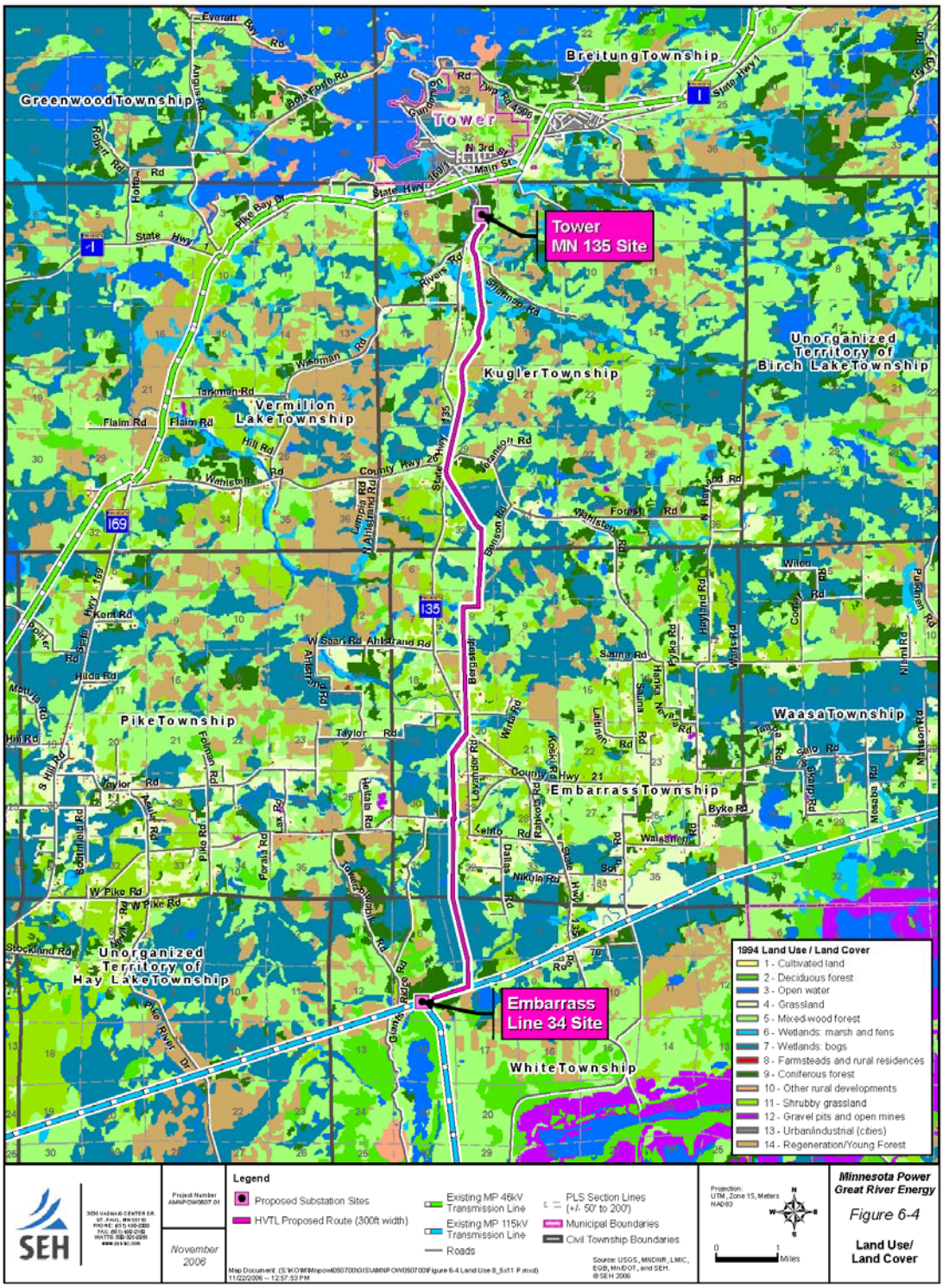
Due to the lack of Prime or Unique farmland in the area, the lack of actively farmed FSI map units, or special agricultural designations, a Farmland Conversion Rating analysis will not be requested from the NRCS and no mitigation for farmland effects will be necessary.

6.7 Land Use

Land uses along the Proposed Route are predominantly forest, rural residential, and wetlands as shown on Figure 6-4. The northern portion of the Proposed Route and the substation site is relatively rural with scattered houses and extensive timber production tracts. Wetlands are widespread in this area and bog habitat is common within many wetlands.

The scattered agricultural parcels present are mostly pastures and hay production fields. Timber production tracts and wetlands are the most abundant land use.

Figure 6-4 Land Use/Land Cover



6.7.1 Municipal Land Use Categories

Land use along the proposed route does not include any municipal land use areas.

6.7.2 Zoning

According to the St. Louis County Comprehensive Plan (SLCCP) and related zoning ordinances, the Proposed Route is located within two Land Use Districts. The Forestry Agricultural Management District is the primary classification and the Multiple Use Non Shoreland is the secondary classification land use affected by the Project. Uses defined under both classifications state that utilities and electric generating facilities are authorized by Conditional Use permits.

6.7.3 Public Lands and Recreational Areas

Public Lands

Significant portions of northern Minnesota are comprised of state and federal land, and, to a lesser degree, municipal and county public lands. The majority of these public lands are natural resource-based, providing renewable sources of timber, recreation, and management and protection of natural resources. The majority of the public lands in northern Minnesota is comprised of National Forests, State Forests, and tax forfeiture or school trust parcels.

Within and adjacent to the Proposed Route, there are numerous tax forfeiture tracts that are vacant lands often leased for timber production. These parcels are also typically accessible by the public for recreational purposes unless otherwise posted. Whereas the proposed transmission line may transect or abut some of these tax forfeiture parcels, no negative project impacts are anticipated on these vacant lands.

Boundaries of two units of the SNF occur approximately four miles to the east and three miles to the southwest of the Proposed Route. The eastern unit boundary axis parallels the entire Proposed Route and the southwesterly unit is located near and west of the southern terminus of the Proposed Route. There are no SNF lands within or immediately adjacent to the Proposed Route. No other federal public lands occur in the area, including military bases, national wildlife refuges, or national parks.

State forest parcels comprise the majority of state public lands in the Tower and Embarrass areas. Several units of the Bear Island State Forest occur in the area surrounding the Proposed Route. The nearest unit is located in Kugler Township south of County Road 400, approximately one half mile to the east of the Proposed Route segment along the Iron Ore Trail. Another unit is located approximately one mile east of the junction of Highway 135 and County Road 303 in Embarrass Township. Other units in the region are three or more miles

from the Proposed Route. The Proposed Route will not affect or transect any MDNR State Forest units.

The Proposed Route alignment is adjacent to the City of Tower Cross Country Ski Trails, a network of trails on city-owned land in Kugler Township along the west side of the Iron Ore Trail. None of the trails or public lands within the ski area will be crossed or affected by the Proposed Route.

Recreational Areas

All of the public lands addressed above provide both passive and developed opportunities for recreation, and recreation is considered one of the multiple uses served by these public lands. In addition, a city park with ballfields is located in the Town of Embarrass on the west side of County Road 364. The Township Hall is also located within this park. No impacts on the city park are anticipated as a result of the Proposed Route.

The previously discussed Iron Ore Trail is also a regional recreational resource. The St. Louis & Lake Counties Regional Railroad Authority has identified the former DM&IR Railroad grade (Iron Ore Trail) between Embarrass and Tower as a possible future location for a leg of the Mesabi Bike Trail. A letter dated November 17, 2005 from the “Authority” states in regard to this Embarrass to Tower area, “We have not furthered this work and at this time, is only a conceptual location for the trail.” The “Authority” further states that the Mesabi Trail is presently located adjacent to MP transmission lines and that the trail and transmission corridors are compatible. No negative impacts are anticipated to the Iron Ore Trail as a result of the Proposed Route or substation/switching station sites.

6.7.4 Impacts/Mitigation

The Project is expected to have minimal effects on or changes to land uses, especially in portions of the Project that will be co-located with existing roads and trail rights-of-way. The Project is compliant with the conditions set forth for utility lines and electric transmission facilities in the SLCCP and related ordinances. No mitigation is anticipated.