Environmental Assessment for the Nemadji Trail Energy Center Project

Dairyland Power Cooperative

USDA Rural Utilities Service

October 2020

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
ACHP	Advisory Council on Historic Preservation
ADID	advanced delineation and identification studies
Agl	above ground level
APE	Area of Potential Effect
AHI	Architecture and History Inventory
ARI	Archaeological Report Inventory
ASI	Archaeological Sites Inventory
ATC	American Transmission Company
BACT	Best Available Control Technology
BGEPA	Bald and Golden Eagle Protection Act
BNSF	Burlington Northern Santa Fe
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CA	Certificate of Authority
Caucus	Wisconsin Legislative Black Caucus
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
C&I	Commercial & Industrial
CCGT	combined cycle gas turbine
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CPCN	Certificate of Public Convenience and Necessity

Abbreviation	Term/Phrase/Name
Dairyland	Dairyland Power Cooperative
DATCP	Department of Agriculture, Trade and Consumer Protection
DNE	Does Not Exceed
EMF	Electric and magnetic fields
EPA	United States Environmental Protection Agency
ERDC	Engineer Research and Development Center
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Rate Insurance Maps
FRS	Facility Registry Service
GHGs	greenhouse gases
GIS	Geographic Information Systems
GPS	Global Positioning System
GTG	gas turbine generator
HDPE	high-density polyethylene
HRSG	heat recovery steam generator
IEC	International Electrotechnical Commission
IPaC	Information for Planning and Consultation
kV	Kilovolt
kV/m	kilovolt per meter
Large C&I	Large Commercial and Industrial
LiDAR	Light Detection and Ranging

Abbreviation	Term/Phrase/Name
LMP	locational marginal price
mG	Milligauss
MBTA	Migratory Bird Treaty Act
MGD	Millions of gallons per day
MISO	Midcontinent Independent System Operator
MP	Minnesota Power
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants and Maximum Achievable Control Technology
NHD	National Hydrography Dataset
NLEB	Northern long-eared bat
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPH	Notice of Presumed Hazard
NR	Natural Resources
NRCO	National Renewable Cooperative Organization
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NTEC	Nemadji Trail Energy Center
NTEC Study Area	Overlap of Dairyland and MP service territories, suitable for alternative site location

Abbreviation	Term/Phrase/Name
NWI	National Wetland Inventory
OHWM	Ordinary High Water Mark
OSHA	Occupational Safety and Health Administration
Owners	Dairyland Power Cooperative and Minnesota Power
PAH	polycyclic aromatic hydrocarbons
Plant	NTEC plant
PM	Particulate matter
PRMR	Planning Reserve Margin Requirement
Project	One on one combined cycle natural gas turbine
PSCW	Public Service Commission of Wisconsin
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
ROW	right of way
RUS	Rural Utilities Service
SAMP	special area management plans
SF_6	sulfur hexafluoride
Siting Study	Site selection study to identify and evaluate potential Project sites
SMEC	Southern Minnesota Energy Cooperative
SPCC	Spill Prevention, Control, and Countermeasures
SSE	South Shore Energy, LLC.
SSURGO	Soil Survey Geographic Database

Abbreviation	Term/Phrase/Name
STG	steam turbine generator
SWIS	special wetland inventory studies
SWL&P	Superior Water Light & Power
TCP	Traditional Cultural Property
TSD	treatment, storage, and disposal
UCAP	Unforced Capacity
USACE	United States Army Corps of Engineers
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
U.S.C.	United States Code
WAC	Wisconsin Administrative Code
WCMP	Wisconsin Coastal Management Program
WDNR	Wisconsin Department of Natural Resources
WisDOT	Wisconsin Department of Transportation
WPDES	Wisconsin Pollutant Discharge Elimination System
WRAM	Wetland Rapid Assessment Methodology
WWI	Wisconsin Wetland Inventory

1.0 PURPOSE AND NEED

Dairyland Power Cooperative (Dairyland) is proposing to participate with South Shore Energy, LLC (SSE), a subsidiary of ALLETE, Inc. (together the "Owners"), an operating division of ALLETE Inc., in a one on one combined cycle natural gas turbine (CCGT) with an in-service date in 2025 (the Project). Dairyland has conducted an extensive round of resource planning activities culminating in a Sustainable Generation Plan. A key component of the plan is a share[1] of a highly efficient, state of the art, one on one combined cycle plant named the Nemadji Trail Energy Center (NTEC). The NTEC facility is a cornerstone enabling Dairyland's Sustainable Generation Plan which is weighted very heavily with renewable sources. This Project will be designed to be highly flexible and capable of operating in peaking and intermediate load modes to fulfill energy and capacity requirements for Dairyland, alongside its renewable additions.

Dairyland participated in several renewable requests for proposals (RFPs) in conjunction with the National Renewable Cooperative Organization (NRCO) and conducted its own RFP in support of finding the best available dispatchable capacity and energy source to mesh with Dairyland's extensive reliance on intermittent renewable projects. In addition, Dairyland along with the other potential NTEC participants conducted an extensive siting and self-build technology assessment, which helped inform the best options for further consideration in the Dairyland plan.

During the planning process Dairyland conducted numerous presentations and discussions with its distribution cooperative managers, Dairyland Board Committees and the Dairyland Board of Directors. In addition, Dairyland conducted a strategic planning process with its Board of Directors and Cooperative Managers culminating in the Dairyland Strategic Plan. A cornerstone of Dairyland's strategic plan is the Sustainable Generation Plan of which the Project is a significant part. Dairyland's Board having evaluated the resource options available to Dairyland authorized the pursuit of a share of the Project at its January 2016 board meeting.

1.1 Project Description

The Project includes a fired output of approximately 625 MW 1x1 CCGT electric generating unit consisting of one H-Class gas turbine generator, one heat recovery steam generator (HRSG) with duct firing, and one steam turbine generator (STG). NTEC will burn natural gas with the capability to be retrofitted to use fuel oil as a backup fuel. NTEC will be between approximately 26 acres to 75 acres,

[1] Dairyland's share in the facility will ultimately be determined by the size of the turbine selected and the additional generation needs Dairyland identifies.

depending on the site selected for the Project, and would be located near Superior, Wisconsin. A general simulation of the Project is shown in Figure 1-1. The Project will be cooled using dry cooling by finned heat exchangers. The Project will include a 345-kilovolt (kV) transmission line tap at the existing Arrowhead to Stone Lake Transmission Line as well as a switching station located southeast of the potential plant sites. This transmission line will be between approximately 3.7 miles to 7.1 miles, depending on the site selected and constructed.

Figure 1-1: Nemadji Trail Energy Center

For a dry cooling heat rejection system, cooling would be provided by the following:

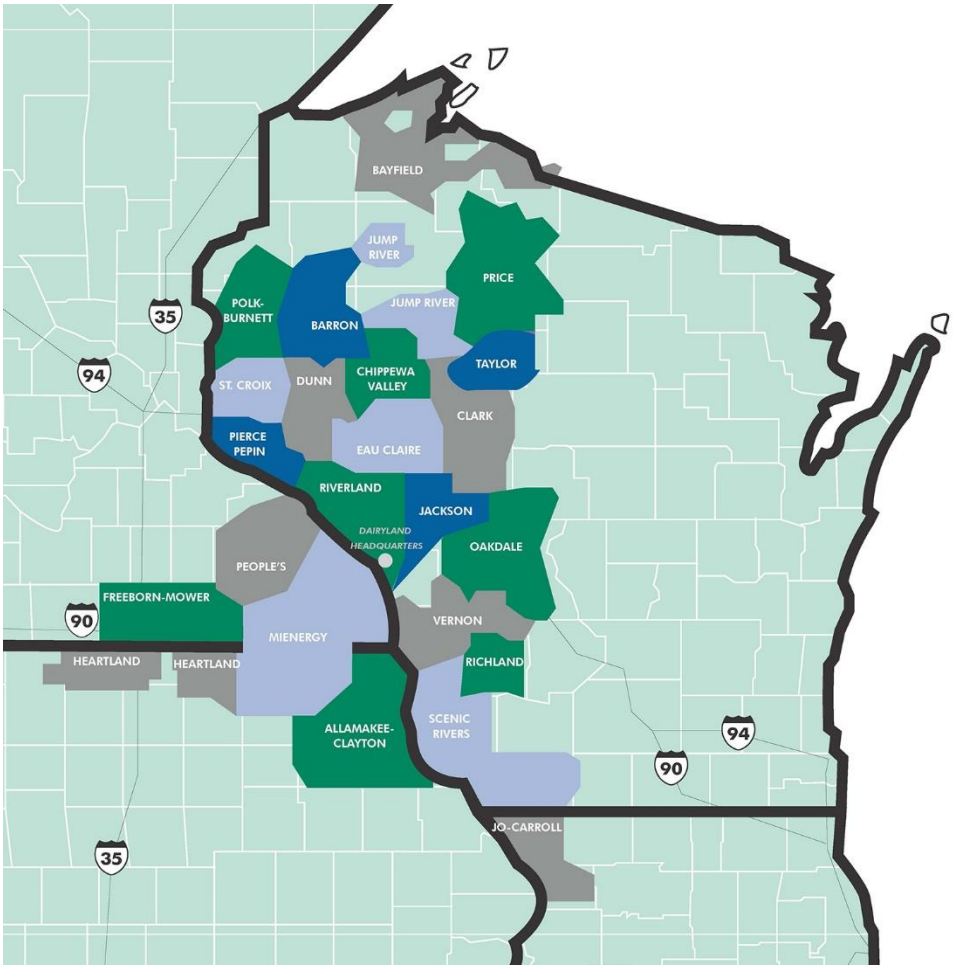
- A large finned heat exchanger with fans (fin fan heat exchanger) moving ambient air across the outside of the tubes and fins (like a radiator in a car) would be used to reject the energy in the steam leaving the steam turbine.
- A separate finned heat exchanger with fans would be used to reject the energy in the heat transfer fluid used in the auxiliary cooling loop. This auxiliary cooling loop is used for miscellaneous plant cooling duties such as lube oil cooling, compressed air cooling, generator cooling, and other similar duties associated with heat generated in equipment during operation.

- A third finned heat exchanger with fans may also be included to cool the blown down water from the HRSG to acceptable limits for the process wastewater discharge for the facility.

1.2 Profile of Dairyland Power Cooperative

Dairyland is a generation and transmission cooperative and was formed to produce and deliver electricity to rural electric cooperatives in 1941. Dairyland, headquartered in La Crosse, Wisconsin, serves approximately 600,000 customers in four states – Wisconsin, Minnesota, Iowa, and Illinois (Dairyland, 2019; Figure 1-2). Dairyland has 24 member cooperative systems (Wisconsin – 18 members; Iowa – 2 members; Minnesota – 2 members; Illinois – 1 member; Iowa/Minnesota – 1 member) and serves 17 municipal customers in the Upper Midwest (Wisconsin, Iowa, and Minnesota) with a service area that encompasses 62 counties in four states.

Figure 1-2: Dairyland Power Cooperative Member Systems' Service Area



Dairyland has or contracts for generating resources to produce electricity with coal, natural gas, hydro dams, wind, landfill gas, and solar. Dairyland delivers electricity over 3,200 miles of transmission lines

and 300 substations located throughout the system's 44,500 square mile service area. Dairyland and its members are part of a larger group of Touchstone Energy Cooperatives that work together to find innovative energy solutions and educate consumers about energy efficiency, safety, renewable energy, the cooperative business model, and the value of electricity.

1.3 Profile of Minnesota Power

Although not a rural electric cooperative and therefore not regulated by the U.S. Department of Agriculture (USDA), Rural Utilities Service (RUS), SSE will be a Project participant with Dairyland for construction of the Project. SSE is a subsidiary of ALLETE, Inc., and Minnesota Power (MP) is a division of ALLETE, Inc. In initial studies, MP was a partner. Since the conclusion of initial studies, SSE has taken over as Owner with Dairyland. Since MP was a Project partner during initial studies, MP is described in the following sections related to the siting study for the Project.

MP serves approximately 145,000 residential and commercial customers, and serves 16 municipalities (MP, 2017; Figure 1-3). MP is a transmission-owning member of the Midcontinent Independent System Operator, Inc. (MISO) and participates in the organized markets under the MISO tariff.

1.4 Purpose and Need for the Proposed Project

Dairyland's vision is to exceed member expectations as a safe, sustainable premier power cooperative. The objective is to provide safe and reliable power to its members at a low and reasonable cost. From a resource planning perspective, Dairyland needs to secure capacity and energy resources that meet the system peak and demand for electricity for the years to come. This includes accounting for required system reserve margins in MISO and covering Dairyland's forecasted losses to ensure reliability and resource adequacy during unforeseen events such as uncertainties in extreme weather and forced outages for generators. Dairyland needs to add new generating capacity to the current resource mix to serve growing load within the service territories that the member cooperatives serve (including the newly acquired member cooperative load of approximately 175 MW, in Minnesota and Illinois, from Interstate Power and Light) and to replace generation that was recently retired. The addition of the NTEC will also enable Dairyland to facilitate the addition of new renewable electricity sources to the power portfolio by complementing their intermittent nature.

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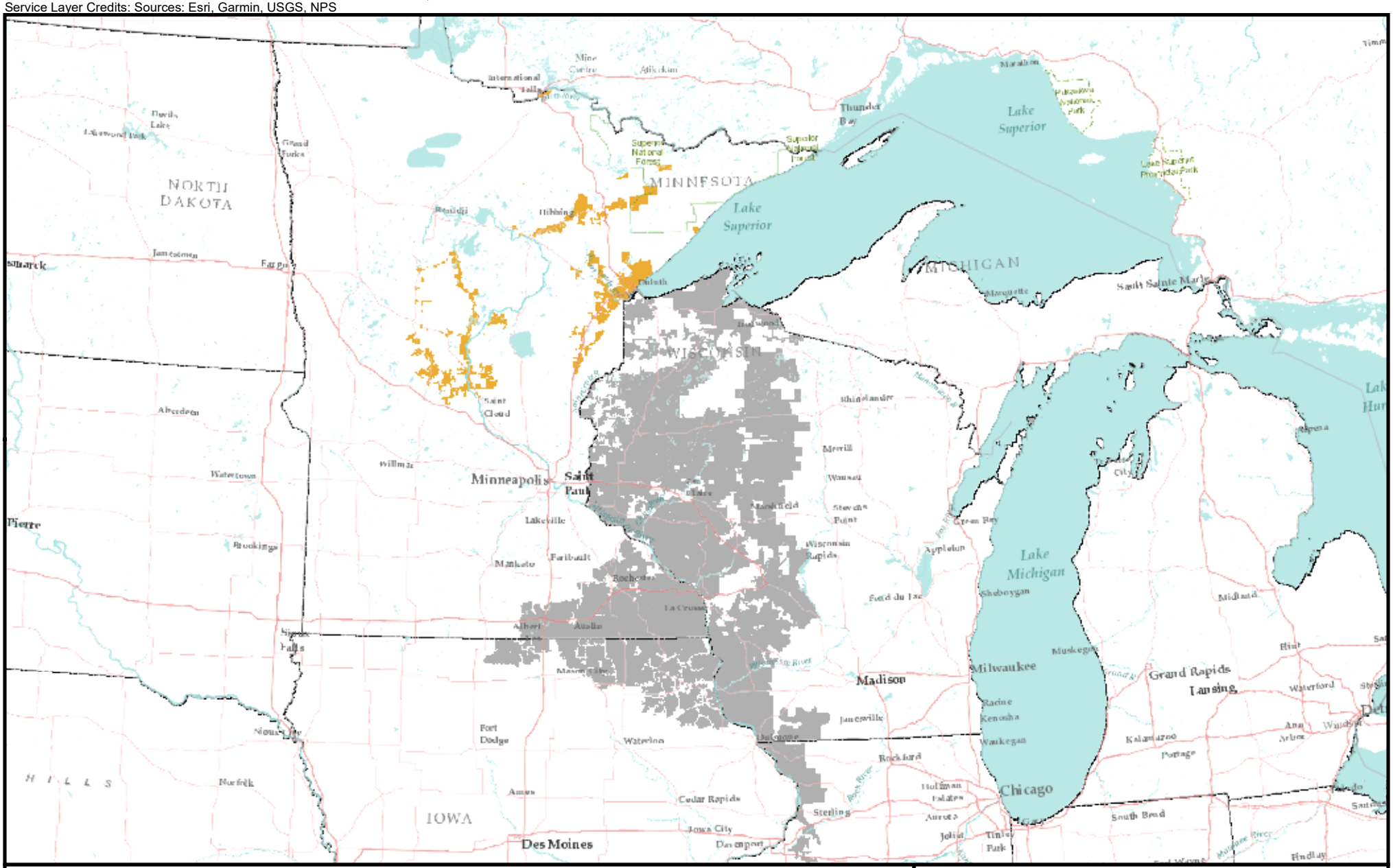
Service Layer Credits: Sources: Esri, Garmin, USGS, NPS



State Boundary

Service Territory

- Dairyland Power Cooperative
- Minnesota Power

NORTH

85 42.5 0 85

Miles

Figure 1-3
Dairyland Power Cooperative
and Minnesota Power Service Areas
Nemadji Trail Energy Center
Douglas County, WI

Source: Dairyland Power Cooperative, Minnesota Power, ESRI

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1.4.1 Demand Forecast

Dairyland provides wholesale electric service to 24-member distribution cooperatives and classifies sales to member cooperatives as Class A. Dairyland's energy sales increased at an average of 1.1% annually over the last five years, while Dairyland's peak grew at an average of 1.8% over the same period, due mainly to the growth of the Large Commercial and Industrial (C&I) class. Energy for the Large C&I class has grown from 15.0% (2011-2015) of Class A sales five years ago to 17.0% of Class A sales now. While the Large C&I class is growing at a higher rate, Dairyland's residential customers still account for 61.3% of Class A energy sales and 80.7% of customers (Figure 1-4). In addition to providing service to its member distribution cooperatives, Dairyland provides wholesale service to 17 municipal utilities and classifies the sales as Class D (3 of the 17 are served by Dairyland indirectly through Class A cooperatives).

Dairyland conducts load forecasting on a 2-year cycle, with the last available forecast for the Board of Directors' January 2016 decision to participate in NTEC, finalized in the fall of 2014. Dairyland's energy and peak were forecasted to grow at a 1.2% and 1.0% annual rate, respectively, over the 20 years included in the 2014 Load Forecast. Figure 1-4 provides Dairyland's energy sales composition by class as of 2015.

Figure 1-4: Dairyland Class A Energy Sales Composition 2015

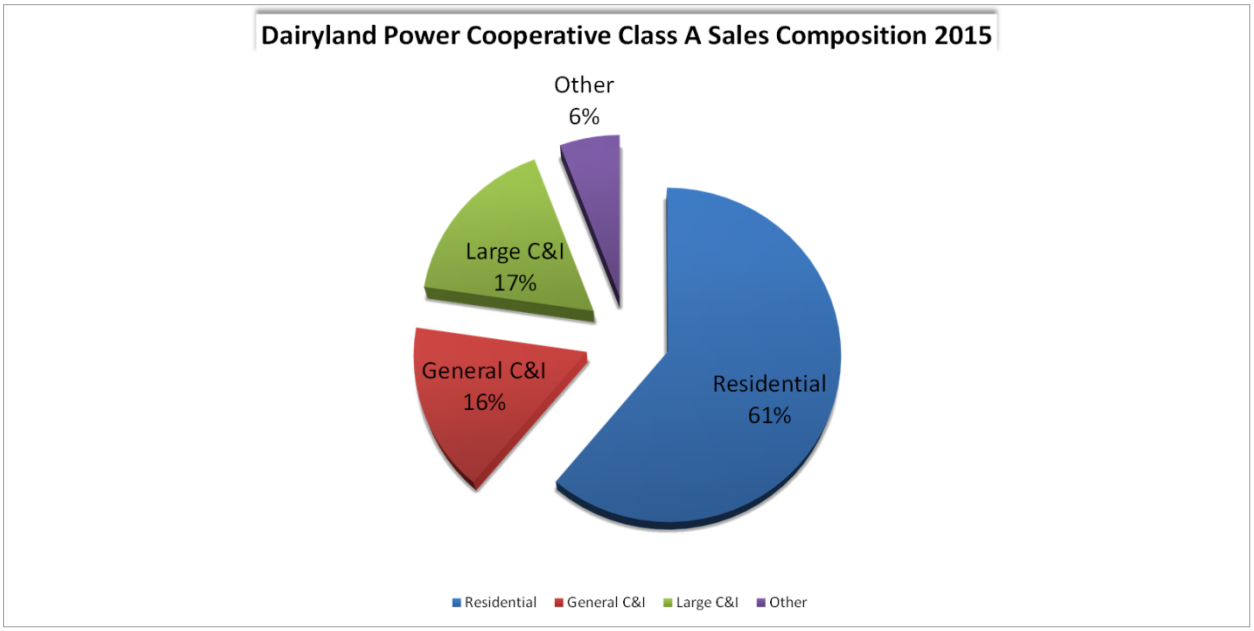


Figure 1-5 shows the breakdown of forecasted energy requirements through 2033 from the 2014 Load Forecast. Historical values are included from 1999 through 2013. Forecast numbers are based on the historical numbers through 2013. As can be seen in Figure 1-5, there is an increase in energy sales in

2023. Dairyland currently serves roughly half of the total requirements of Jo Carroll Energy, an Illinois distribution cooperative member. Dairyland will serve a much larger portion of Jo Carroll's total requirement from the Dairyland portfolio in 2023 and beyond. This increase in forecasted load and capacity requirement is included in Figure 1-6. (During 2018 an agreement was reached to bring the Jo-Carroll load into the Dairyland system early, resulting in Dairyland now serving this new portion of Jo Carroll's load, this change is not reflected in Figure 1-5).

Figure 1-5: Dairyland Power Cooperative Energy Requirement Composition

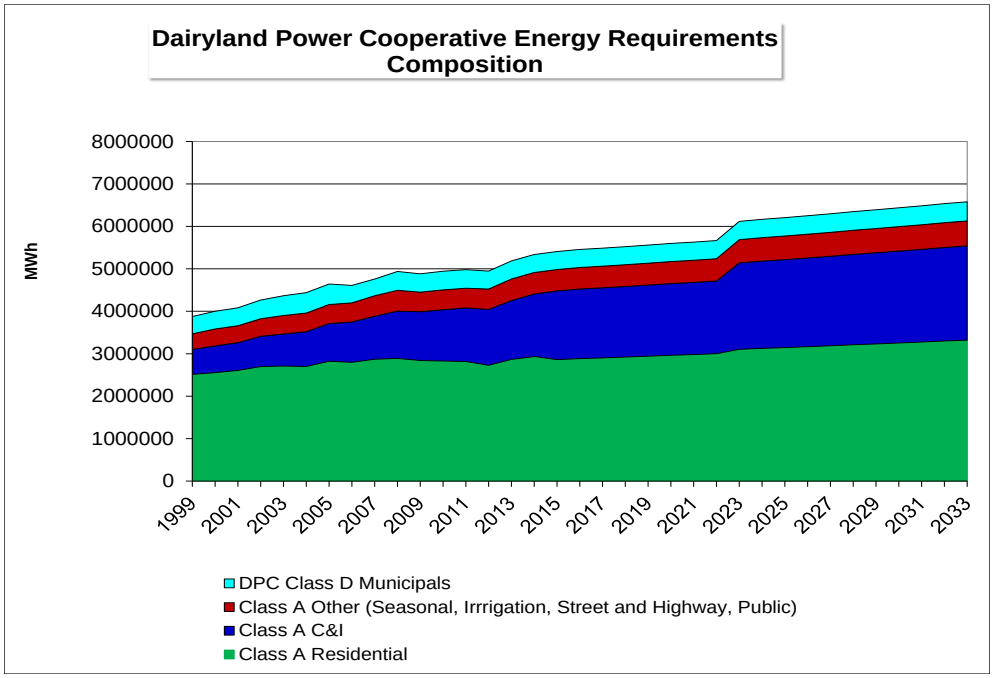
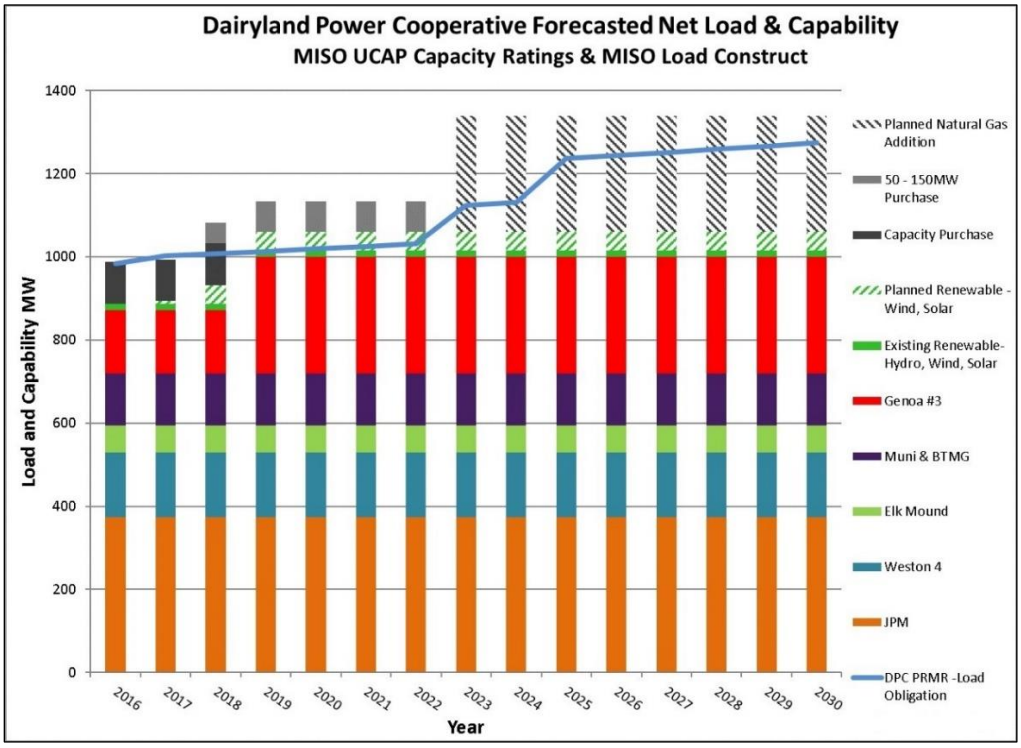


Figure 1-6: Dairyland Load and Capability



Southern Minnesota Energy Cooperative (SMEC), a group of distribution cooperatives in Minnesota (including three members of Dairyland), has acquired Interstate Power and Light's Minnesota retail load. This load is not included in the load forecast in Figure 1-4 as the addition of the load was not approved and complete at the time of the forecast. Dairyland is forecasting to serve additional SMEC load starting in 2025. Accordingly, the forecasted load is included in the load and capability Figure 1-6 starting in 2025.

Figure 1-6 shows Dairyland's forecasted unforced capacity (UCAP) accredited resource capacity and forecasted Planning Reserve Margin Requirement (PRMR) using the 2016 MISO capacity construct. Dairyland owns or has under contract 987.5 megawatts (MW) of accredited capacity in MISO as of the 2016 load and capability assessment. In addition to load and capability Dairyland evaluates its need for energy to hedge its members' loads in the MISO market. Dairyland will rely on NTEC along with its additional intermittent renewable contracts to provide additional energy demands that are coming into the system as well as help replace the intermediate energy supply retired from its resource portfolio.

Dairyland is using a balanced and pragmatic approach to add natural gas generation and renewable generation to meet the future load obligations and continue to diversify the Dairyland generation portfolio. Dairyland intends to use short-term capacity contracts to purchase or sell any short-term

capacity deficit or surplus. Dairyland is currently meeting the planning reserve margin requirements and all of the renewable energy obligations and plans to do so in the future. As noted previously, the addition of the NTEC will facilitate Dairyland adding additional renewables by complementing their intermittent nature.

1.4.2 Purpose and Need for Federal Action

Dairyland intends to request financial assistance from RUS under its Electric Loan Program for its share of the Project. The Secretary of Agriculture is authorized under the Rural Electrification Act of 1936, as amended) to provide Federal loans for rural electrification and telecommunication development (7 U.S.C. 901 et seq.). Specifically, RUS is authorized to provide funding or loan guarantees for the construction of electric distribution and transmission, as well as generation facilities, to provide and to improve electric service in rural areas of the U.S.

The proposed Federal Action is for RUS to decide whether to provide financial assistance to Dairyland for Dairyland's portion of the Project.

2.0 ALTERNATIVES

2.1 Introduction

Dairyland conducted detailed analysis and discussions with Dairyland Managers and Dairyland's Board of Directors through strategic planning sessions in the production of its preferred power supply plan over a 3-year period. Dairyland also conducted a study of self-build options along with potential NTEC participation. Dairyland conducted a RFP with potential energy providers for capacity and energy on a long term basis in MISO capacity zone 1. These proposals included a variety of alternatives to meet Dairyland's supply needs, including:

- Coal
- Combustion turbines
- Combined cycle
- Reciprocating Engines
- Power Purchase Agreements (PPA)

These alternatives varied widely in cost per annual MW hour, years of delivery, and MW provided. Cost ranged from $45,000 – $236,000/MW/year, and terms ranged from 3 – over 30 years. The various alternatives would provide from 10 to over 350 annual MW. These alternatives also included additional risks related to congestion and delivery, making it uncertain if these sources would be available when required. Dairyland determined none of these alternatives would be superior to participation in the NTEC Project, which would provide a very low energy cost, have a term life of at least 30 years, provide approximately 300 MW of dispatchable firm capacity, and minimize congestion, delivery and other risks.

In addition, Dairyland conducted discussions with developers and other cooperatives through the NRCO to evaluate a wide range of options, including a multitude of renewable projects. The Dairyland study and planning effort culminated in the development of the Dairyland preferred power supply plan that strikes a balance between the need for accredited capacity in MISO zone 1, intermediate energy flexibility and numerous renewable resources. The plan was found by Dairyland's board to be the best course of action for Dairyland in this round of resource planning. The plan provides rate stability and reliability under a number of different future scenarios. Therefore, Dairyland determined to proceed with participation in the NTEC Project.

The Project is a significant resource in the Dairyland's power supply plan, balancing the intermittent nature of renewable generation. Dairyland's Board having evaluated the resource options available to Dairyland authorized the pursuit of a share of the Project at it January 2016 board meeting.

Having determined to advance the NTEC project, MP and Dairyland sought to evaluate potential alternative sites for a new generation project. Previously, a group of utilities serving the upper Midwest, particularly the states of Wisconsin, Minnesota, and North Dakota, conducted a site selection study (Siting Study) to identify and evaluate potential sites for the Project. The Siting Study included consideration of potential sites across the upper Midwest that could potentially be used for joint development of such a facility by multiple regional utilities. Specific sites would, therefore, be evaluated based on the site location, ability to serve the needs of the participating utilities, and capability of the facility to integrate into the systems of the participating utilities. The Siting Study identified several suitable sites throughout the upper Midwest that appeared to provide reasonable sites for the Project. MP[2] and Dairyland were among the utilities with service territory over which the Siting Study was conducted and within which some sites were identified for potential future development. The objective of the Siting Study was to identify and evaluate potential sites for the future joint development and construction of the Project. MP and Dairyland reviewed this Siting Study in relation to this Project. While state siting requirements required supplemental analysis, in general, the Siting Study methodology remains valid. MP and Dairyland used the Siting Study as a substantial basis for the identification of alternative locations for the Project. The following summarizes the overall Siting Study methodology and then focuses on those portions of the Siting Study applicable to the joint development of the Project by MP and Dairyland.

2.1.1 Siting Study Objectives

The objectives of the Siting Study were consistent with the requirements of Dairyland and MP for the Project. The proposed sites were to be capable of accommodating up to 900 MW of natural gas-fueled combined cycle generation, with 780 MW combined cycle gas turbine technology considered for the base case analysis. The objective of the overall Siting Study was to perform a desktop screening to identify a minimum of three potential plant sites and provide the information necessary for the utilities to focus and support subsequent site acquisition and permitting efforts.

[2] MP is a division of ALLETE, Inc. As discussed in Section 1.3, MP was a partner in initial studies for the Project. Since the conclusion of initial studies, SSE has taken over as Owner with Dairyland.

2.1.2 Siting Study Area

A Siting Study Area was defined to include the MISO region at the time of the Siting Study as it extended through the states of North Dakota, Minnesota, and Wisconsin. The Siting Study Area boundary is identified in Figure 2-1.

2.1.3 Siting Study Methodology

The Siting Study was completed in several phases. A brief description of each phase of the site selection process is included below.

- Phase 1 – Identify Preliminary Site Areas: the first phase of the site selection process was to identify Preliminary Site Areas that were near high voltage transmission lines and major natural gas pipelines.
- Phase 2 – Identify Candidate Site Areas: Preliminary Site Areas were screened using readily available maps and aerial photographs to eliminate sites with obvious development constraints and to consolidate sites that were geographically or electrically similar to each other. The remaining sites were designated Candidate Site Areas.
- Phase 3 – Candidate Site Quantitative Analysis: Candidate Site Areas were quantitatively evaluated against several criteria organized into six major categories: transmission access, fuel delivery, water supply, environmental, air quality impacts, and site development. The results of the quantitative analysis were used to rank the sites in order from the most preferred site to the least preferred site.
- Phase 4 – Identify Preferred Site Areas: Results of the quantitative analysis were reviewed by the collective Project team and the six highest performing sites (identified at Preferred Site Areas) were selected for further consideration.
- Phase 5 – Transmission Analysis of Preferred Site Areas: Preferred Sites were subjected to a transmission load flow analysis to identify potential overloads on the transmission system caused by injecting power at each of the Preferred Sites. These results were incorporated in the scoring matrix and the Preferred Sites ranked relative to one another with scoring assessed in all categories, including transmission load flow.

The initial step in the site selection process was to identify Preliminary Site Areas within the Siting Study Area, analyze each Preliminary Site through a high-level desktop analysis, and identify Candidate Site Areas to carry forward for detailed analysis. Candidate Site Areas are general locations, which may be larger than the amount of land required for plant development, that possess the necessary infrastructure

Path: Z:\Clients\ENS\SouthShoreEn\101798_NTECGeneration\Studies\Geospatial\DataFiles\ArcDocs\EA\2_1_MidcontinentISORegion_SitingStudyArea.mxd kasamuelson 12/16/2019

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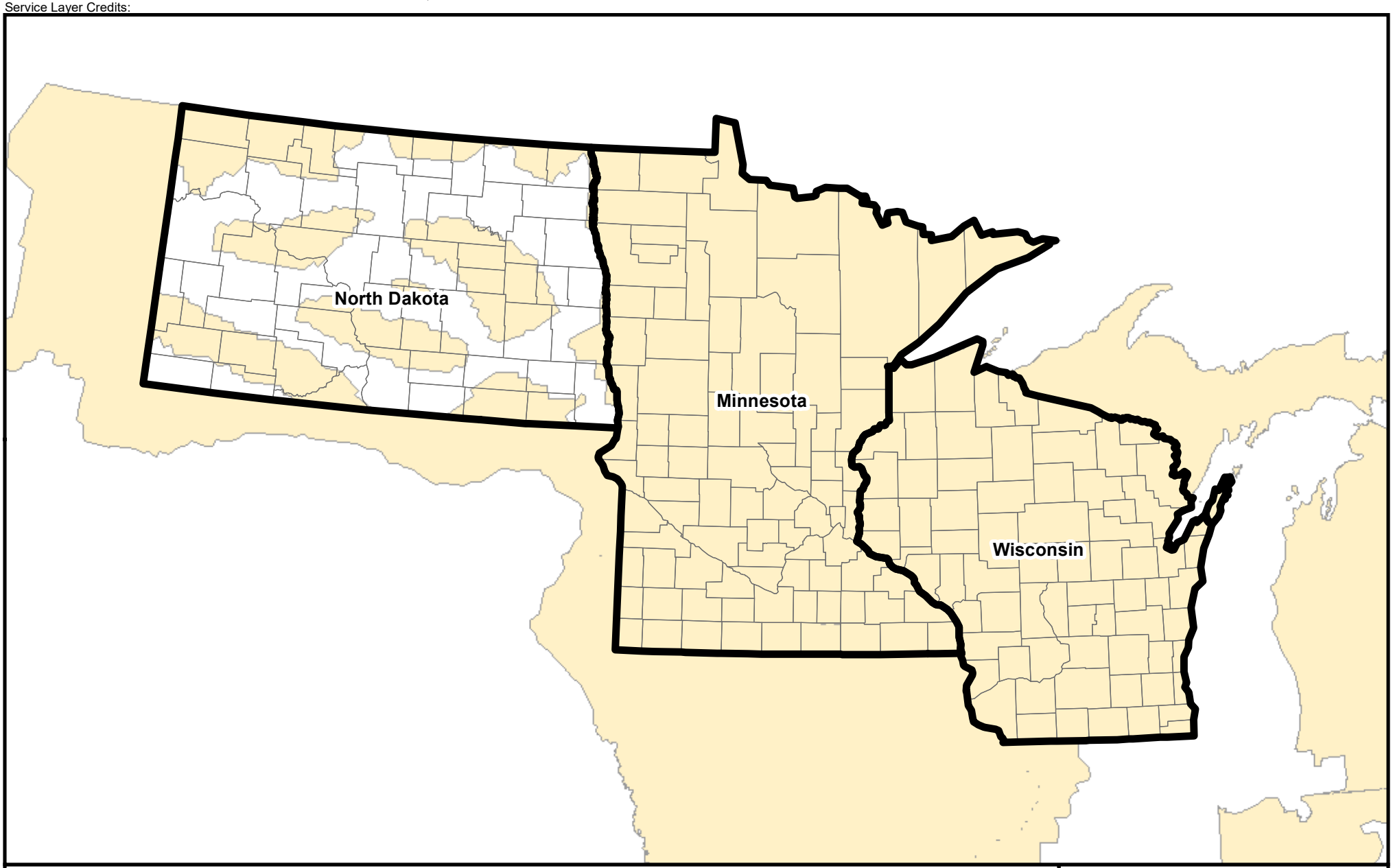

Siting Study Area
Midcontinent ISO Region
County Boundary

NORTH
100 50 0 100
Miles

Figure 2-1
Midcontinent ISO Region
Siting Study Area

Source: Dairyland Power Cooperative, MP, SSE, ESRI

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and other characteristics that may allow them to be suitable power plant sites. The investigations completed to identify Candidate Site Areas included the following major tasks:

- Identify and map locations within the Siting Study Area for infrastructure that are critical to power plant development and where plant locations may be restricted for environmental and regulatory reasons.
- Identify Preliminary Site Areas with consideration of the necessary infrastructure, environmental constraints, and other development factors.
- Screen Preliminary Site Areas using readily available maps and other resources.

The methodology and results of these investigations are described in the following subsections.

2.1.4 Preliminary Infrastructure Screening for Preliminary Site Areas

To minimize the potential impacts and costs of plant development, prospective Preliminary Site Areas should be located as near as practical to the necessary infrastructure, or physical resources, required for a new generation project. Preliminary Site Areas were identified based on the proximity of a site area to regional natural gas pipeline and transmission infrastructure. The first step in this process was to develop a composite map that overlaid natural gas pipeline infrastructure and high voltage transmission infrastructure. The basic infrastructure requirements used for this step were as follows:

- Preliminary Site Areas needed to be located directly adjacent to a transmission line or substation operating at 230-kV or higher.
- Preliminary Site Areas needed to be within 5 miles of a 16-inch diameter or larger natural gas pipeline.
- Preliminary Site Areas needed to be located within 5 miles of either a major river or a municipal wastewater treatment facility of sufficient capacity.

Using the criteria listed above, the locations of infrastructure critical to economic power plant development were determined and corresponding Preliminary Site Areas were identified. This resulted in the identification of 115 Preliminary Site Areas throughout the three-state Siting Study Area for additional screening investigations.

2.1.5 Desktop Screening for Preliminary Site Areas

The 115 identified Preliminary Site Areas that met the initial infrastructure requirements were subjected to a desktop screening analysis to eliminate or consolidate sites with obvious development constraints or redundant characteristics. For example, a preliminary site that was clearly surrounded by a residential

neighborhood would be eliminated, and two preliminary sites that were geographically and electrically similar in nature would be consolidated into one site. Hence, a preliminary site could represent multiple suitable sites in close proximity to each other. In addition, preliminary sites that were within a national, state, or local park were eliminated. Through this process, 81 of the 115 Preliminary Site Areas were eliminated or consolidated. The remaining 34 Preliminary Site Areas, across the tri-state Siting Study Area, were designated as Preliminary Site Areas.

2.1.6 Candidate Site Areas

To achieve a manageable number of Preliminary Site Areas for more detailed analysis, it was necessary to further identify Candidate Site Areas from among these Preliminary Site Areas. The infrastructure screening increased the requisite natural gas pipeline diameter from a minimum of 16 inches to a minimum of 20 inches. Preliminary Site Areas were then subjected once again to individual review and were evaluated relative to one another for strength of attributes. Following the desktop screening, 16 Candidate Site Areas were identified from the 34 Preliminary Site Areas. These Candidate Site Areas included:

- North Dakota: three sites
- Minnesota: seven sites
- Wisconsin: six sites

2.1.7 Candidate Site Areas Evaluation

A quantitative analysis process was used to rank the 16 Candidate Site Areas. The first step in using such a process is to identify the objectives or criteria to evaluate the candidates. The focus of the Candidate Site Areas evaluation, as well as the criteria discussed in this section, was to assess the advantages and disadvantages of each Candidate Site Area on a relative basis.

2.1.7.1 Candidate Site Areas Ranking Approach

The evaluation criteria used to judge the relative suitability of the Candidate Site Areas to support a gas-fired combined cycle generation facility cover a number of specific attributes. Each of these attributes represents a characteristic that is important in the evaluation of prospective sites and also serves to differentiate the Candidate Site Areas from one another. These evaluation criteria are not equivalent in their importance to the decision-making process. Therefore, each criterion was also assigned a weight indicative of its relative importance to the decision process. Criteria with the highest weights are considered the most critical for site development. The assignment of weights to the evaluation criteria was based on the collective professional judgment.

In total, 25 different criteria were used to evaluate the Candidate Site Areas. These criteria were first organized into six major categories, and these six major categories were allocated weights that totaled 100 percent. For example, the Site Environmental category was assigned a weight of 10 percent. Therefore, 10 percent of an overall evaluation score was based on environmental criteria. Within each major category, the criteria were assigned subweights indicative of each criterion's relative importance. The composite weight for each individual criterion was then calculated as an aggregate of all subweighted criteria within a major category. The evaluation categories, category weights, criteria, criteria subweights, and composite weights are summarized in Table 2-1.

Table 2-1: Candidate Site Area Evaluation Criteria

Major Category/Category Weight	Sub Criterion (weight) [Evaluation Points – 100 point scale)	Subcategory Rankings	Scoring
Electric transmission/20 percent	Transmission ranking from Load Flow Analysis (45 percent) [9.0 points]	*0 – 20 percent relative ranking*	50
Electric transmission/20 percent	Transmission ranking from Load Flow Analysis (45 percent) [9.0 points]	*21 – 40 percent relative ranking*	40
Electric transmission/20 percent	Transmission ranking from Load Flow Analysis (45 percent) [9.0 points]	*41 – 60 percent relative ranking*	30
Electric transmission/20 percent	Transmission ranking from Load Flow Analysis (45 percent) [9.0 points]	*61 – 80 percent relative ranking*	20
Electric transmission/20 percent	Transmission ranking from Load Flow Analysis (45 percent) [9.0 points]	*81 – 100 percent relative ranking*	10
Electric transmission/20 percent	Locational Marginal Price (LMP) Analysis (45 percent) [9.0 points]	*Top 20th percentile*	50
Electric transmission/20 percent	Locational Marginal Price (LMP) Analysis (45 percent) [9.0 points]	*21st to 40th percentile*	40
Electric transmission/20 percent	Locational Marginal Price (LMP) Analysis (45 percent) [9.0 points]	*41st to 60th percentile*	30
Electric transmission/20 percent	Locational Marginal Price (LMP) Analysis (45 percent) [9.0 points]	*61st to 80th percentile*	20
Electric transmission/20 percent	Locational Marginal Price (LMP) Analysis (45 percent) [9.0 points]	*Bottom 20th percentile*	10
Electric transmission/20 percent	Interconnection cost (10 percent) [2.0 points]	*Existing switchyard expansion – bay space available*	50
Electric transmission/20 percent	Interconnection cost (10 percent) [2.0 points]	*New switchyard – line tap location*	10
Fuel supply and delivery/30 percent	Distance to interconnection (20 percent) [6.0 points]	*0 to 2 miles from site*	50
Fuel supply and delivery/30 percent	Distance to interconnection (20 percent) [6.0 points]	*2 to 4 miles from site*	30
Fuel supply and delivery/30 percent	Distance to interconnection (20 percent) [6.0 points]	*Greater than 4 miles from site*	10
Fuel supply and delivery/30 percent	Competitive supply (30 percent) [9.0 points]	*2 or more fuel suppliers within 15 miles of site*	50
Fuel supply and delivery/30 percent	Competitive supply (30 percent) [9.0 points]	*Only on fuel supplier within 15 miles of site*	10
Fuel supply and delivery/30 percent	Pipeline delivery pressure (20 percent) [6.0 points]	*Equal to or greater than 650 psig*	50
Fuel supply and delivery/30 percent	Pipeline delivery pressure (20 percent) [6.0 points]	*Less than 650 psig*	10
Fuel supply and delivery/30 percent	System upgrade costs (30 percent) [9.0 points]	*Minimal upgrades required (less than $25.0 million)*	50

Major Category/Category Weight	Sub Criterion (weight) [Evaluation Points – 100 point scale)	Subcategory Rankings	Scoring
Fuel supply and delivery/30 percent	System upgrade costs (30 percent) [9.0 points]	*Moderate upgrades required ($25 to $50 million)*	30
Fuel supply and delivery/30 percent	System upgrade costs (30 percent) [9.0 points]	*Significant upgrades required (greater than $50 million)*	10
Water supply and delivery/20 percent	Surface water availability (30 percent) [6.0 points)	*High probability of water availability within 5 miles*	50
Water supply and delivery/20 percent	Surface water availability (30 percent) [6.0 points)	*Moderate probability of water availability within 5 miles*	30
Water supply and delivery/20 percent	Surface water availability (30 percent) [6.0 points)	*Low probability of water availability within 5 miles*	10
Water supply and delivery/20 percent	Groundwater availability (30 percent) [6.0 points]	*High probability of water availability within 10 miles*	50
Water supply and delivery/20 percent	Groundwater availability (30 percent) [6.0 points]	*Moderate probability of water availability within 10 miles*	30
Water supply and delivery/20 percent	Groundwater availability (30 percent) [6.0 points]	*Low probability of water availability within 10 miles*	10
Water supply and delivery/20 percent	Municipal reclaim water availability (30 percent) [6.0 points]	*Sufficiently permitted reclaimed water source within 5 miles*	50
Water supply and delivery/20 percent	Municipal reclaim water availability (30 percent) [6.0 points]	*Sufficiently permitted reclaimed water source within 10 miles*	30
Water supply and delivery/20 percent	Municipal reclaim water availability (30 percent) [6.0 points]	*Sufficiently permitted reclaimed water source within 15 miles*	10
Water supply and delivery/20 percent	Water discharge location (10 percent) [2.0 points]	*Acceptable water discharge location within 1 mile*	50
Water supply and delivery/20 percent	Water discharge location (10 percent) [2.0 points]	*No acceptable water discharge location within 1 mile*	10
Site Environmental/10 percent	Wetlands (25 percent) [2.5 points]	*High probability of avoiding wetlands*	50
Site Environmental/10 percent	Wetlands (25 percent) [2.5 points]	*Moderate probability of avoiding wetlands*	30
Site Environmental/10 percent	Wetlands (25 percent) [2.5 points]	*Low probability of avoiding wetlands*	10
Site Environmental/10 percent	Floodplains (25 percent) [2.5 points]	*Site outside of floodplain*	50
Site Environmental/10 percent	Floodplains (25 percent) [2.5 points]	*Part of site within floodplain, potential developable area*	30
Site Environmental/10 percent	Floodplains (25 percent) [2.5 points]	*Extensive floodplain, limited developable area*	10

Major Category/Category Weight	Sub Criterion (weight) [Evaluation Points – 100 point scale)	Subcategory Rankings	Scoring
Site Environmental/10 percent	Cultural resources (25 percent) [2.5 points]	*Limited potential for cultural resources to be present*	50
Site Environmental/10 percent	Cultural resources (25 percent) [2.5 points]	*Moderate potential for cultural resources to be present*	30
Site Environmental/10 percent	Cultural resources (25 percent) [2.5 points]	*Significant potential for cultural resources to be present*	10
Site Environmental/10 percent	Sensitive species (25 percent) [2.5 points]	*10 sensitive species or less within county*	50
Site Environmental/10 percent	Sensitive species (25 percent) [2.5 points]	*11 to 20 sensitive species within county*	30
Site Environmental/10 percent	Sensitive species (25 percent) [2.5 points]	*Greater than 20 sensitive species within county*	10
Air quality impacts/10 percent	Class I Areas (30 percent) [3.0 points]	*Greater than 100 kilometers from Class I Area*	50
Air quality impacts/10 percent	Class I Areas (30 percent) [3.0 points]	*50 to 100 kilometers from Class I Area*	30
Air quality impacts/10 percent	Class I Areas (30 percent) [3.0 points]	*Class I Area within 50 kilometers*	10
Air quality impacts/10 percent	Air permit feasibility (35 percent) [3.5 points]	*Low relative probability of having NAAQS exceedances*	50
Air quality impacts/10 percent	Air permit feasibility (35 percent) [3.5 points]	*Moderate relative probability of having NAAQS exceedances*	30
Air quality impacts/10 percent	Air permit feasibility (35 percent) [3.5 points]	*High relative probability of having NAAQS exceedances*	10
Air quality impacts/10 percent	Nonattainment status (35 percent) [3.5 points]	*Site is not in a nonattainment county*	50
Air quality impacts/10 percent	Nonattainment status (35 percent) [3.5 points]	*Site is in an area with high potential to go nonattainment*	30
Air quality impacts/10 percent	Nonattainment status (35 percent) [3.5 points]	*Site is in a nonattainment county*	10
Site development/10 percent	Existing use (20 percent) [2.0 points]	*Industrialized / brownfield site area*	50
Site development/10 percent	Existing use (20 percent) [2.0 points]	*Agricultural site area*	30
Site development/10 percent	Existing use (20 percent) [2.0 points]	*Forested / natural / undisturbed site area*	10
Site development/10 percent	Site access (10 percent) [1.0 point]	*Less than 0.5 mile to paved road*	50
Site development/10 percent	Site access (10 percent) [1.0 point]	*0.5 to 1.5 miles to paved road*	30
Site development/10 percent	Site access (10 percent) [1.0 point]	*Limited site access or greater than 1.5 miles to paved road*	10
Site development/10 percent	Rail access (10 percent) [1.0 point]	*Class I rail line within 1 mile of site*	50
Site development/10 percent	Rail access (10 percent) [1.0 point]	*Class I line within 1 to 5 miles of site*	30

Major Category/Category Weight	Sub Criterion (weight) [Evaluation Points – 100 point scale)	Subcategory Rankings	Scoring
Site development/10 percent	Rail access (10 percent) [1.0 point]	*Class I rail line greater than 5 miles from site*	10
Site development/10 percent	Proximity to FAA facilities (10 percent) [1.0 point]	*No FAA facilities within 5 miles of site*	50
Site development/10 percent	Proximity to FAA facilities (10 percent) [1.0 point]	*FAA facility within 1 to 5 miles of site*	30
Site development/10 percent	Proximity to FAA facilities (10 percent) [1.0 point]	*FAA facility within 1 mile of site*	10
Site development/10 percent	Noise / Visual receptors (20 percent) [2.0 points]	*No receptors within 0.5 mile of site*	50
Site development/10 percent	Noise / Visual receptors (20 percent) [2.0 points]	*1 to 5 receptors within 0.5 miles of site*	30
Site development/10 percent	Noise / Visual receptors (20 percent) [2.0 points]	*Greater than 5 receptors within 0.5 mile of site*	10
Site development/10 percent	Site expansion (15 percent) [1.5 points]	*200+ acres available with sufficient buffer zone*	50
Site development/10 percent	Site expansion (15 percent) [1.5 points]	*100 to 200 acres available*	30
Site development/10 percent	Site expansion (15 percent) [1.5 points]	*Fewer than 100 acres available*	10
Site development/10 percent	Site ownership (15 percent) [1.5 points]	*Owned by Project participant*	50
Site development/10 percent	Site ownership (15 percent) [1.5 points]	*Partially owned by Project participant*	30
Site development/10 percent	Site ownership (15 percent) [1.5 points]	*Site owned by one or more third parties*	10

2.1.7.2 Candidate Site Scoring Summary

As shown in Table 2-2 and Figure 2-2, the following sites were identified to be the top six performing sites: Wilton, SupGen, Prairie Island to Blue Lake, Antelope Valley to Huron, Arrowhead to Red Rock, and Wempletown to Rockdale. The Frazee and Blue Lake sites were further considered and not deemed well-suited for joint Project development.[3] Of the remaining candidate sites, the top six performing sites, referred to as Preferred Sites, were carried on to the next stage of the site selection process. The Preferred Sites were:

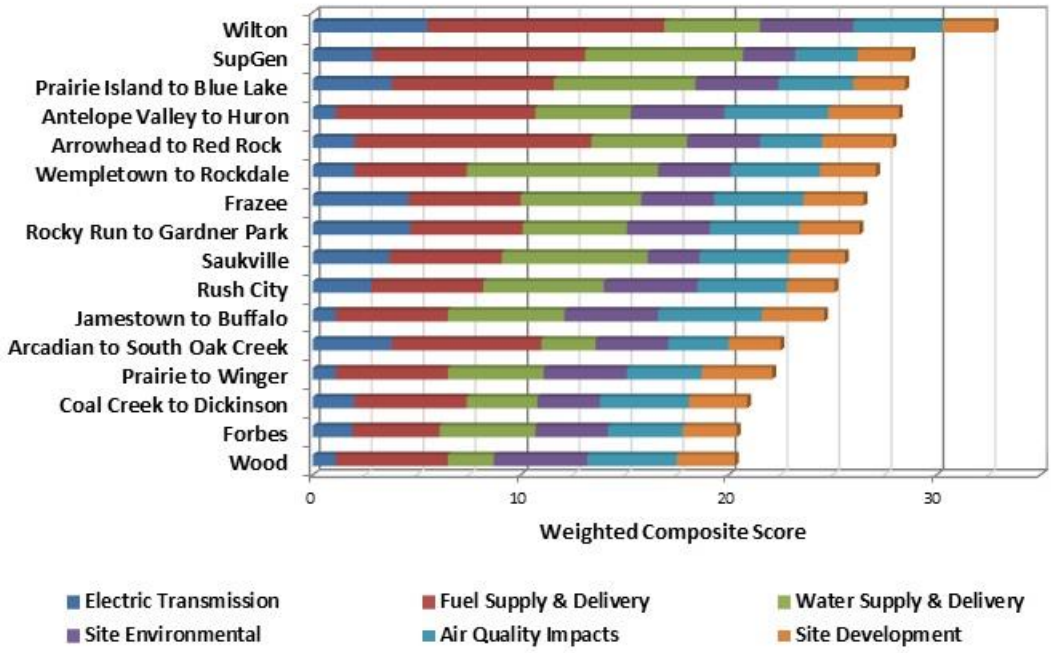
- Antelope Valley to Huron
- Arrowhead to Red Rock
- Rocky Run to Gardner Park
- SupGen
- Wempletown to Rockdale
- Wilton

[3] The Frazee and Blue Lake sites were not considered well-suited for a joint project between any utilities, not just for a project with MP and Dairyland as the participants.

Table 2-2: Candidate Site Scores

Major Category/ Criterion	Category/Criterion Weight	Antelope Valley to Huron	Arcadian to South Oak Creek	Arrowhead to Red Rock	Coal Creek to Dickinson	Forbes	Frazee	Jamestown to Buffalo	Prairie Island to Blue Lake	Prairie to Winger	Rocky Run to Gardner Park	Rush City	Saukville	SupGen	Wempletown to Rockdale	Wilton	Wood
Electric Transmission	**20%**																
Transmission Ranking from Load Flow Analysis	45%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LMP Analysis	45%	10	40	20	20	10	40	10	40	10	50	20	30	30	20	50	10
Interconnection Cost	10%	10	10	10	10	50	50	10	10	10	10	50	50	10	10	50	10
Fuel Supply & Delivery	**30%**																
Distance to Interconnection	20%	50	50	50	50	30	50	50	50	50	50	50	50	30	50	50	50
Competitive Supply	30%	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Pipeline Delivery Pressure	20%	50	10	50	10	10	10	10	50	10	10	10	10	50	10	50	10
System Upgrade Costs	30%	30	30	50	10	10	10	10	10	10	10	10	10	50	10	50	10
Water Supply & Delivery	**20%**																
Surface Water Availability	30%	50	10	50	30	50	50	10	50	50	50	50	50	50	50	30	10
Groundwater Availability	30%	10	30	10	10	10	30	50	10	10	30	30	50	30	50	30	10
Municipal Reclaim Water Availability	30%	0	0	0	0	0	0	30	50	0	0	0	0	30	50	0	0
Water Discharge Location	10%	50	10	50	50	50	50	10	10	50	10	50	50	50	10	50	50
Site Environmental	**10%**																
Wetlands	25%	50	50	30	30	30	50	30	50	50	50	30	30	50	50	50	50
Floodplain	25%	50	50	50	30	30	30	50	50	50	50	50	30	30	50	50	50
Cultural Resources	25%	30	30	10	10	30	10	50	30	30	30	50	30	10	30	30	50
Sensitive Species	25%	50	10	50	50	50	50	50	30	30	30	50	10	10	10	50	30
Air Quality Impacts	**10%**																
Class I Areas	30%	50	50	30	50	50	50	50	50	50	50	50	50	30	50	50	50
Air Permit Feasibility	35%	50	30	10	30	10	30	50	10	10	30	30	30	10	30	30	30
Nonattainment Status	35%	50	10	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Site Development	**10%**																
Existing Use	20%	30	30	30	30	10	30	30	30	30	30	30	30	10	30	30	30
Site Access	10%	30	50	50	10	50	50	10	50	30	50	50	50	50	50	50	50
Rail Access	10%	10	10	30	10	30	50	30	30	50	50	30	50	50	30	50	10
Proximity to FAA Facilities	10%	50	50	30	50	50	50	50	30	50	50	10	30	30	50	10	50
Noise / Visual Receptors	20%	50	10	10	30	10	10	30	10	30	10	10	10	10	10	10	10
Site Expansion	15%	50	30	50	50	50	30	50	30	50	30	30	30	10	30	30	50
Site Ownership	15%	10	10	50	10	10	10	10	10	10	10	10	10	50	10	10	10
Total Composite Score	**100%**	**28.20**	**22.50**	**27.90**	**20.90**	**20.40**	**26.50**	**24.60**	**28.50**	**22.10**	**26.30**	**25.10**	**25.60**	**28.80**	**27.10**	**32.80**	**20.30**

Figure 2-2: Candidate Site Rankings



The six top Preferred Sites were further evaluated for impacts on the transmission systems. At each site, the number of overloads resulting from the new generation was tallied and weighted according to the particular assets that were overloaded. Impacts on affected systems, either transmission lines or substations, were weighted according to the relative significance of the implied infrastructure upgrades required.[4] The relative percentage for each Preferred Site was then calculated based on the difference in score between the Preferred Site with the lowest total score and the Preferred Site with highest total score. Sites scores to be incorporated into the site scoring matrix were determined based on these relative percentages with a low score of 10 for those sites with the greatest impact and a high score of 50 for those sites having the least amount of impact. The nature and number of overloads encountered for each individual site can be seen in Table 2-3.

It can be seen from Table 2-3 that the Antelope Valley to Huron site received the highest total load flow analysis score out of the six sites evaluated and the Rocky Run to Gardner Park site received the lowest total score. Antelope Valley to Huron received a score of 54 due to a relatively high volume of overloaded assets resulting from the addition of 780 MW of additional capacity to the existing electric transmission infrastructure. In this case, it was determined that eight individual assets would be

[4] For instance, a 500-kV transmission line overload was weighted five times more than a 138/115-kV transmission line overload and weighted twice as much as a 500-kV transformer overload.

overloaded including several 230-kV and 345-kV transmission lines and a 345-kV substation, which figure among the more relatively expensive assets to upgrade. Conversely, it was determined that an addition of 780 MW at the Rocky Run to Gardner site did not result in any electric transmission asset overloads. Thus, it received the lowest possible score of zero. The relative percentages for each site were calculated based on these score extremes of 54 points and zero points. Matrix scores of 10, 20, 30, 40, and 50 were possible with a score of 10 corresponding to a relative percentage of 80% or above and a score of 50 corresponding to a relative percentage of 20% or below. As shown in Table 2-3, the Antelope Valley to Huron, Arrowhead to Red Rock, and Wilton sites all received the lowest score of 10. The Rocky Run to Gardner, SupGen, and Wempletown to Rockdale sites all received the highest possible score of 50. Transmission Load Flow Analysis scores were incorporated into the site scoring matrix for these six sites and the resulting site score totals were used to determine the rankings of the preferred sites relative to one another. The results can be seen in Table 2-4 and Figure 2-3.

Once the transmission load flow evaluation was completed, a number of sensitivity analyses were performed to test the sensitivity of the composite evaluation scores to various changes in criteria weighting. For these sensitivity analyses, only the weights assigned to the six major evaluation categories were adjusted. Six different sensitivity cases were executed: one case each for transmission, fuel, water, environmental, air quality, and site development. The weight for the category that was emphasized was increased 10 percent, and the other five categories were reduced by two percent each. The composite weights for each category and weighted composite scores for each site were then recalculated. Table 2-5 contains a schedule of the category weights used in the sensitivity analyses.

Table 2-3: Transmission Load Flow Analysis Scores for Preferred Sites

Site Name	Initial Overload Point (MW)	Sub Equip Overloads					Line Overloads					Total Score	Relative Percentage	Matrix Score
		500-kV	345-kV	230-kV	161-kV	138/115-kV	500-kV	345-kV	230-kV	161-kV	138/115-kV			
		5	4	3	2	1	10	8	6	4	2			
Antelope Valley to Huron	428.1		1					4	3			54	100.00%	10
Arrowhead to Red Rock	359.8			1					7			45	83.33%	10
Rocky Run to Gardner Park	897.3											0	0.00%	50
SupGen	768		1						1			10	18.52%	50
Wempletown to Rockdale	431.2		1								1	6	11.11%	50
Wilton	212.7			2		1			2		13	45	83.33%	10

*Constraints were considered up to 780 MW.

Table 2-4: Preferred Site Scores

Major Category/ Criterion	Category/Criterion Weight	Antelope Valley to Huron	Arrowhead to Red Rock	Rocky Run to Gardner Park	SupGen	Wempletown to Rockdale	Wilton
Electric Transmission	**20%**						
Transmission Ranking from Load Flow Analysis	45%	10	10	50	50	50	10
LMP Analysis	45%	10	20	50	30	20	50
Interconnection Cost	10%	10	10	10	10	10	50
Fuel Supply & Delivery	**30%**						
Distance to Interconnection	20%	50	50	50	30	50	50
Competitive Supply	30%	10	10	10	10	10	10
Pipeline Delivery Pressure	20%	50	50	10	50	10	50
System Upgrade Costs	30%	30	50	10	50	10	50
Water Supply & Delivery	**20%**						
Surface Water Availability	30%	50	50	50	50	50	30
Groundwater Availability	30%	10	10	30	30	50	30
Municipal Reclaim Water Availability	30%	0	0	0	30	50	0
Water Discharge Location	10%	50	50	10	50	10	50
Site Environmental	**10%**						
Wetlands	25%	50	30	50	50	50	50
Floodplain	25%	50	50	50	30	50	50
Cultural Resources	25%	30	10	30	10	30	30
Sensitive Species	25%	50	50	30	10	10	50
Air Quality Impacts	**10%**						
Class I Areas	30%	50	30	50	30	50	50
Air Permit Feasibility	35%	50	10	30	10	30	30
Nonattainment Status	35%	50	50	50	50	50	50
Site Development	**10%**						
Existing Use	20%	30	30	30	10	30	30
Site Access	10%	30	50	50	50	50	50
Rail Access	10%	10	30	50	50	30	50
Proximity to FAA Facilities	10%	50	30	50	30	50	10
Noise / Visual Receptors	20%	50	10	10	10	10	10
Site Expansion	15%	50	50	30	10	30	30
Site Ownership	15%	10	50	10	50	10	10
Total Composite Score	**100%**	**29.10**	**28.80**	**30.80**	**33.30**	**31.60**	**33.70**

Figure 2-3: Preferred Site Rankings

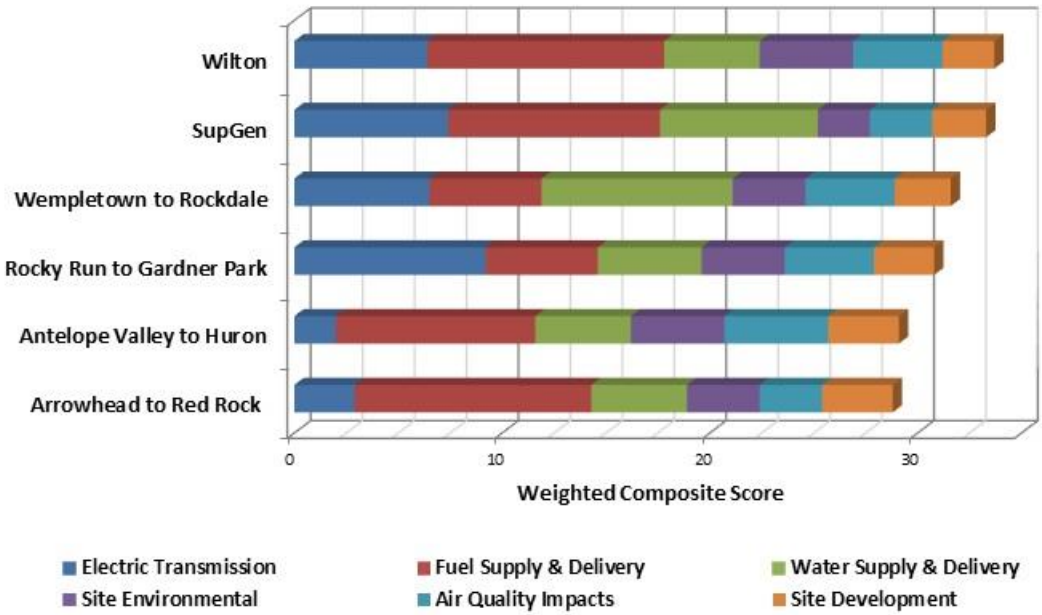


Table 2-5: Category Weights for Sensitivity Analyses for Preferred Sites

Category	Base Weighted (%)	Transmission Weighted (%)	Fuel Weighted (%)	Water Weighted (%)	Environmental Weighted (%)	Air Quality Weighted (%)	Site Dev Weighted (%)
Electric Transmission	20%	30%	18%	18%	18%	18%	18%
Fuel Supply & Delivery	30%	28%	40%	28%	28%	28%	28%
Water Supply & Delivery	20%	18%	18%	30%	18%	18%	18%
Site Environmental	10%	8%	8%	8%	20%	8%	8%
Air Quality Impacts	10%	8%	8%	8%	8%	20%	8%
Site Development	10%	8%	8%	8%	8%	8%	20%
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The results of the sensitivity analyses were summarized by comparing each site's ranking under the various cases. A site's rank was determined by sorting the sites based on their composite evaluation scores and then numbering them sequentially, with a rank of one assigned to the site with the highest base score. These ranks are summarized in Table 2-6. The shaded cells in this table indicate the sensitivity cases where individual sites either increased or decreased in rank.

Review of Table 2-6 indicates that site base rankings remained unchanged when evaluated for sensitivity to both the Environmental and Air Quality scoring categories. In each of the remaining sensitivity analyses, however, the site rankings were affected as indicated by shaded cells. Red cells indicate sites increasing in rank, and green cells indicate sites decreasing in rank from the base case scenario. The

Table 2-6: Preferred Site Area Rankings for Sensitivity Analyses

Site Name	Base Weighted Rank	Transmission Weighted Rank	Fuel Weighted Rank	Water Weighted Rank	Environmental Weighted Rank	Air Quality Weighted Rank	Site Dev Weighted Rank
Wilton	1	2	1	3	1	1	2
SupGen	2	1	2	1	2	2	1
Wempletown to Rockdale	3	4	4	2	3	3	3
Rocky Run to Gardner Park	4	3	6	4	4	4	4
Antelope Valley to Huron	5	6	5	6	5	5	6
Arrowhead to Red Rock	6	5	3	5	6	6	5

= Denotes a rank increase
= Denotes a rank decrease

changes in ranking for a site under each sensitivity case provide an indication of the relative strengths and weaknesses of each site and the drivers for each site's overall ranking.

2.2 Siting Study Conclusions

The objective of the Siting Study was to identify sites suitable for future development of a CCGT plant with a nominal capacity of 900 MW and to provide the information necessary to focus and support subsequent site acquisition and permitting efforts. Each of the six Preferred Sites identified in the Siting Study were recommended to be considered as suitable alternatives for future development activities. As site visits were not included in the scope of the Siting Study, the ability to investigate the preferred sites and rank them relative to one another was limited to the resources available for desktop review. Site visits and confirmation of water availability for specific sites were encouraged prior to subsequent actions. Further investigation of the transmission constraints at each of the Preferred Sites and evaluation transmission deliverability with respect to load and capacity zones was also recommended.

2.3 NTEC Site Selection

The overall Project objectives for Dairyland and MP, as joint developers of the NTEC Project, were comparable to those identified for the overall Siting Study discussed previously. Therefore, the objective in identifying potential sites for a joint project included all the requirements for infrastructure identified as part of the overall Siting Study. Dairyland and MP also identified several other factors specific to a joint project between these two utilities:

- All of MP's load and the vast majority of Dairyland's load is located in MISO Zone 1. As part of MISO's guidance for intrazone balancing of load and capacity, it was determined desirable for a new generation to serve MP and Dairyland load in Zone 1, to be located in MISO Zone 1.

- As MP and Dairyland service territories do not overlap, the utilities determined to provide for logistical convenience for both utilities, the new facility should be located as close to the boundary of their service territories as practical. This would minimize difficulties for one or both companies' accessing the facility due to extra travel distance or remote access.
- A location in proximity to both company's service territories provides a suitable hedge for each company's load purchase within MISO.
- Compliance with any applicable local and state regulatory requirements.

These factors, along with the overall goals of minimizing distance from transmission infrastructure, suitable gas supply facilities, and a water source needed to be considered as part of the identification of an area suitable for a joint Dairyland/MP project.

2.3.1 Identification of NTEC Study Area

Dairyland's service territory primarily includes large portions of western Wisconsin, southeastern Minnesota, and northern Iowa and Illinois (Figure 2-4). MP's service territory includes areas of north and central Minnesota. In considering these service areas, Dairyland and MP's territories border each other along the Minnesota/Wisconsin state line, extending south from Lake Superior – Duluth, Minnesota/Superior Wisconsin. The service territories roughly border each other for approximately 75 miles to the south. This seam between the two service territories was identified and the most reasonable location for a joint project between these utilities. An area extending 75 miles from the Duluth/Superior area was identified for consideration and identification of potential alternative sites for the NTEC Project (NTEC Study Area) (Figure 2-4).

2.3.2 Identification of Preferred Site Areas within NTEC Study Area

Having identified the NTEC Study Area for the Project, Dairyland and MP overlaid the Preferred Site Areas identified in the Siting Study with the NTEC Study Area to determine if any Preferred Site Areas were located within the NTEC Study Area. Two Preferred Site Areas, Arrowhead to Red Rock and SupGen, are located with the 75-mile circle where the Dairyland and MP service territories roughly border one another. The Arrowhead to Red Rock site is located southwest of Duluth within MP service territory, but only a short distance from Dairyland service territory. The SupGen site is located in Superior, Wisconsin, which is a short distance from both Dairyland and MP's service territories. In other portions of the NTEC Study Area, the two service territories are more widely separated and would be less desirable for a joint project.

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Service Layer Credits: Sources: Esri, Garmin, USGS, NPS

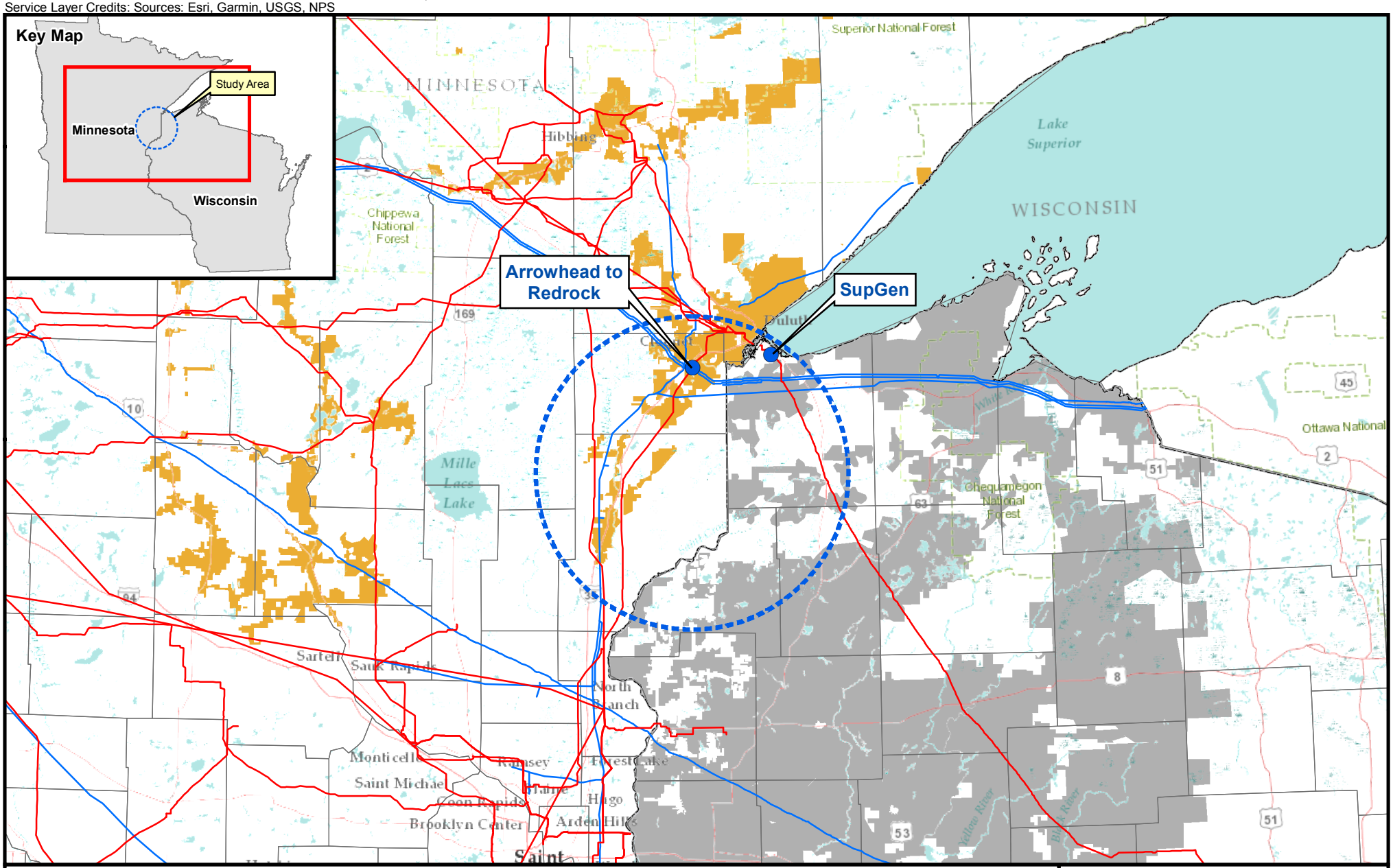


Figure 2-4
NTEC Study Area
Nemadji Trail Energy Center
Douglas County, WI

Source: Dairyland Power Cooperative, Minnesota Power, ESRI, and Burns & McDonnell Engineering Company, Inc.

Issued: 3/8/2019

2.3.2.1 Arrowhead to Red Rock

Arrowhead to Red Rock is a MP-owned site area and is the location of a line tap formed by the Northern States Power Company Arrowhead to Red Rock 345 kV electric transmission line and two 36-inch Great Lakes Gas Transmission natural gas pipelines. The site is also within 2 miles of a Northern Natural Gas Company natural gas pipeline. The site is located in Carlton County, Minnesota, approximately 5.5 miles south of the City of Cloquet and directly to the west of Chub Lake. The closest river is the St. Louis River, at approximately 3.5 miles to the northeast. Approximately half of the site area is currently used for agricultural purposes and the other half is forested. The site is accessed by Sheils Road to the south and is 2 miles away from a Burlington Northern Santa Fe (BNSF) rail line.

Following the quantitative scoring process in the overall siting study, this site ranked 5th out of the 16 Candidate Site Areas due to the following factors:

- Fuel Supply & Delivery: Scores in this category were strong. This site received the highest possible scores for distance to interconnection, pipeline delivery pressure, and system upgrade costs. It is located within close proximity to the Great Lakes Gas Transmission Ltd. pipeline corridor, allowing it to receive one of the highest scores of any of the candidate sites in this category. It is also located less than two miles from a 20-inch diameter Northern Natural Gas Company pipeline. This site was not, however, awarded a high score for competitive supply as the Northern Natural Gas line rated poorly as a primary source of fuel for other sites considered in the Study.
- Water Supply & Delivery: This site received a competitive score in this category as it is located approximately 3.5 miles from the St. Louis River, which has a 7Q10 of 185 millions of gallons per day (MGD). It did, however, receive a low score for potential groundwater availability, which served to bring its overall score down slightly.
- Other points to note about this site are that it received a lower relative score for the locational marginal prices (LMP) Analysis, which kept it from ranking higher in the top five. As a MP-owned site, it scored favorably in the site development category.

2.3.2.2 SupGen

SupGen is a MP-owned site located in Douglas County, Wisconsin, on the outskirts of the City of Superior. The Stone Lake to Arrowhead 345-kV electric transmission line, owned by American Transmission Company, traverses the site area. The closest natural gas pipeline is located approximately 5.5 miles south of the site area and includes two 36-inch diameter lines, owned by Great Lakes Gas

Transmission Limited. The site is situated directly on the bank of the Nemadji River and less than 2 miles from Lake Superior. The site area itself is partially forested and relatively free of development, except for a small concrete foundation and pond in the western-most corner. Much of the surrounding area has been appropriated for industrial use. The site is accessed directly by 31st Avenue E., and there is a branch of the BNSF rail line less than half a mile to the northwest.

Following the scoring process, this site ranked 2nd out of the 16 Candidate Site Areas due to the following factors:

- Fuel Supply & Delivery: Scores in this category were strong. This site received the highest possible scores for distance to interconnection, pipeline delivery pressure, and system upgrade costs. It is located within close proximity to the Great Lakes Gas Transmission Ltd. pipeline corridor allowing it to receive one of the highest scores of any of the Candidate Sites in this category. This site is also located approximately 8.5 miles from a 20-inch diameter Northern Natural Gas Company pipeline. This site was not, however, awarded a high score for competitive supply as this line rated poorly as a primary source of fuel for other sites considered in the Siting Study.
- Water Supply & Delivery: This site received one of the strongest overall scores of any candidate site in this category. It received the highest score for probability of surface water availability as it is located within 2 miles of Lake Superior. It also received moderate scores for both probability for groundwater availability and proximity to a sufficiently permitted wastewater treatment facility.

As a MP-owned site, it scored favorably in the site development category. This site scored competitively in all other categories and received a moderate score in the locational marginal price (LMP) analysis.

2.3.2.3 Brownfield Sites

Dairyland and MP had determined that the overall objectives of the Siting Study were applicable to those for this Project, however, the initial Siting Study had only considered greenfield sites. This was due to the wide geographic area of the Siting Study, the multiple and geographic variation of the participating utilities and the challenges associated with use of a site that may or may not be accessible to future utilities participating in a new generation Project. Therefore, in addition to reviewing the sites identified in the Siting Study within the NTEC Study Area, Dairyland and MP conducted a high level review to determine if any potential suitable brownfield sites were available and suitable as alternative sites for this Project. Brownfield sites include currently or previously developed commercial or industrial sites that are

either abandoned, idle, or underused for which the expansion or redevelopment of the site would limit or minimize impacts to other undeveloped areas. Similar to confining new linear facilities to existing linear ROW or corridors reduces the spread of linear infrastructure across the landscape, redevelopment of previous industrial or commercial sites can limit commercial and industrial development to previously disturbed areas.

Critical for this Project was the need to have suitable water supply, natural gas supply and access to electricity transmission in close proximity to minimize the impacts and costs associated with these resources. As outlined in the Siting Study, locations of intersection of natural gas pipelines and electricity transmission lines present the first siting consideration for a new generation facility. Dairyland and MP reviewed the transmission and natural gas infrastructure within the 75-mile study area and identified only small areas where these resources intersected or occurred in close proximity to each other. None of these locations were determined to contain existing or previous commercial or industrial sites but were typically all rural agricultural or undeveloped lands.

Several existing brownfield sites were identified near the SupGen area. Although not at intersections or in proximity to the critical infrastructure for a new generation facility, these sites were evaluated for potential use. These sites were either located in close proximity to residential areas, did not have sufficient land available for the Project, and/or were located in high density developed areas of Duluth. As a result of these locational challenges and potential for conflicts with adjacent land use, as well as a lack of necessary infrastructure that would create additional challenges and impacts to these areas to develop, these brownfield sites were not considered for the Project. No brownfield sites were determined available or suitable for project development within the NTEC Study Area.

2.3.3 Selection of Preferred NTEC Site

The following is a summary of conclusions reached for the Arrowhead to Red Rock site:

- Electric Transmission: This site received low scores for all three electric transmission categories. There is no existing substation on the site so a line tap would be required. The LMP was low relative to the other sites, receiving a score of 20 out of a possible 50 points. It received the second least desirable score from the transmission load flow analysis. With the addition of 780 MW, there would be eight individual assets overloaded including seven 230-kV transmission lines and one 230-kV substation.
- Fuel Supply & Delivery: Scores in this category were strong. This site received the highest possible scores for distance to interconnection, pipeline delivery pressure, and system upgrade

costs. It is located within close proximity to the Great Lakes Gas Transmission Ltd. pipeline corridor, allowing it to receive one of the highest scores of any of the candidate sites in this category. It is also located less than 2 miles from a 20-inch diameter Northern Natural Gas Company pipeline. This site was not, however, awarded a high score for competitive supply as the Northern Natural Gas line rated poorly as a primary source of fuel for other sites considered in the Study. It should be noted, however, that although there is currently no capacity available on the Northern Natural Gas pipeline, the close proximity of the line may still be considered an advantage in the long term. While it is anticipated that interconnecting to this pipeline for the purposes of this Project would incur significant upgrade costs, it is nonetheless a fuel supply alternative, the existence of which may provide negotiating leverage and the potential for tapping an alternative fuel supply basin, should the need arise.

- Water Supply & Delivery: This site received a competitive score in this category as it is located approximately 3.5 miles from the St. Louis River, which has a 7Q10 flow rate of 185 MGD. It did, however, receive a low score for potential groundwater availability, which served to bring its overall score down slightly.
- It should be noted that this site has the advantage of being MP-owned.

The following is a summary of conclusions for the SupGen site:

- Electric Transmission: This site received the second highest electric transmission score of any of the preferred sites. While it did receive a low score for interconnection cost due to the need for construction of a line tap, it received the third highest score for the LMP analysis and the highest possible score for the transmission load flow analysis. With the addition of 780 MW, two individual assets would be overloaded requiring infrastructure updates for one 230-kV transmission line and one 345-kV substation.
- Fuel Supply & Delivery: Scores in this category were strong. This site received the highest possible scores for distance to interconnection, pipeline delivery pressure, and system upgrade costs. It is located within close proximity to the Great Lakes Gas Transmission Ltd. pipeline corridor allowing it to receive one of the highest scores of any of the candidate sites in this category. This site is also located approximately 8.5 miles from a 20-inch diameter Northern Natural Gas Company pipeline. This site was not, however, awarded a high score for competitive supply as this line rated poorly as a primary source of fuel for other sites considered in the Study. It should be noted, however, that although there is currently no capacity available on the Northern Natural Gas pipeline, the close proximity of the line may still be considered an advantage in the

long term. While it is anticipated that interconnecting to this pipeline for the purposes of this Project would incur potentially significant upgrade costs, it is nonetheless a fuel supply alternative, the existence of which may provide negotiating leverage and the potential for tapping an alternative fuel supply basin, should the need arise.

- Water Supply & Delivery: This site received one of the strongest overall scores of any candidate site in this category. It received the highest score for probability of surface water availability as it is located within two miles of Lake Superior. It also received moderate scores for both probability for groundwater availability and proximity to a sufficiently permitted wastewater treatment facility.
- This site scored competitively in all other categories and has the advantage of being MP-owned.

The scoring for the Arrowhead – Red Rock and SupGen sites was very similar except in two categories – transmission system performance and water availability. In both these areas, the SupGen site was determined to rank better than the Arrowhead – Red Rock site. Development of the SupGen site was determined to result in considerably less overloads on the transmission system, likely resulting in much less need for other system projects to upgrade and support the system to avoid overloads. Impacts and costs associated with system upgrades would likely be less for the SupGen site, thereby minimizing overall project impacts and cost.

Further, the availability of water is an important consideration in development of a new power generation facility. The availability of water at the SupGen site provides support for plant water needs without more extensive, impacting, and costly development of a water supply (such as a pipeline) to support the site.

While both sites are in general proximity to the seam between the MP and Dairyland systems, the SupGen site is located more closely to the boundary between the systems. The Arrowhead – Red Rock site is located several miles into MP territory and would potentially require additional transmission infrastructure to connect into the Dairyland system.

On the basis of the SupGen site minimizing transmission system concerns, providing an adequate and available water source, and location central to the boundary of the MP and Dairyland service areas, MP and Dairyland selected the SupGen site for development of the proposed NTEC Project.

2.3.4 Alternative Generation Site Identification

Having identified the SupGen site (Figure 2-4) as a location vicinity for further investigation and development for the Project, the region around the site was evaluated for potential alternative generation

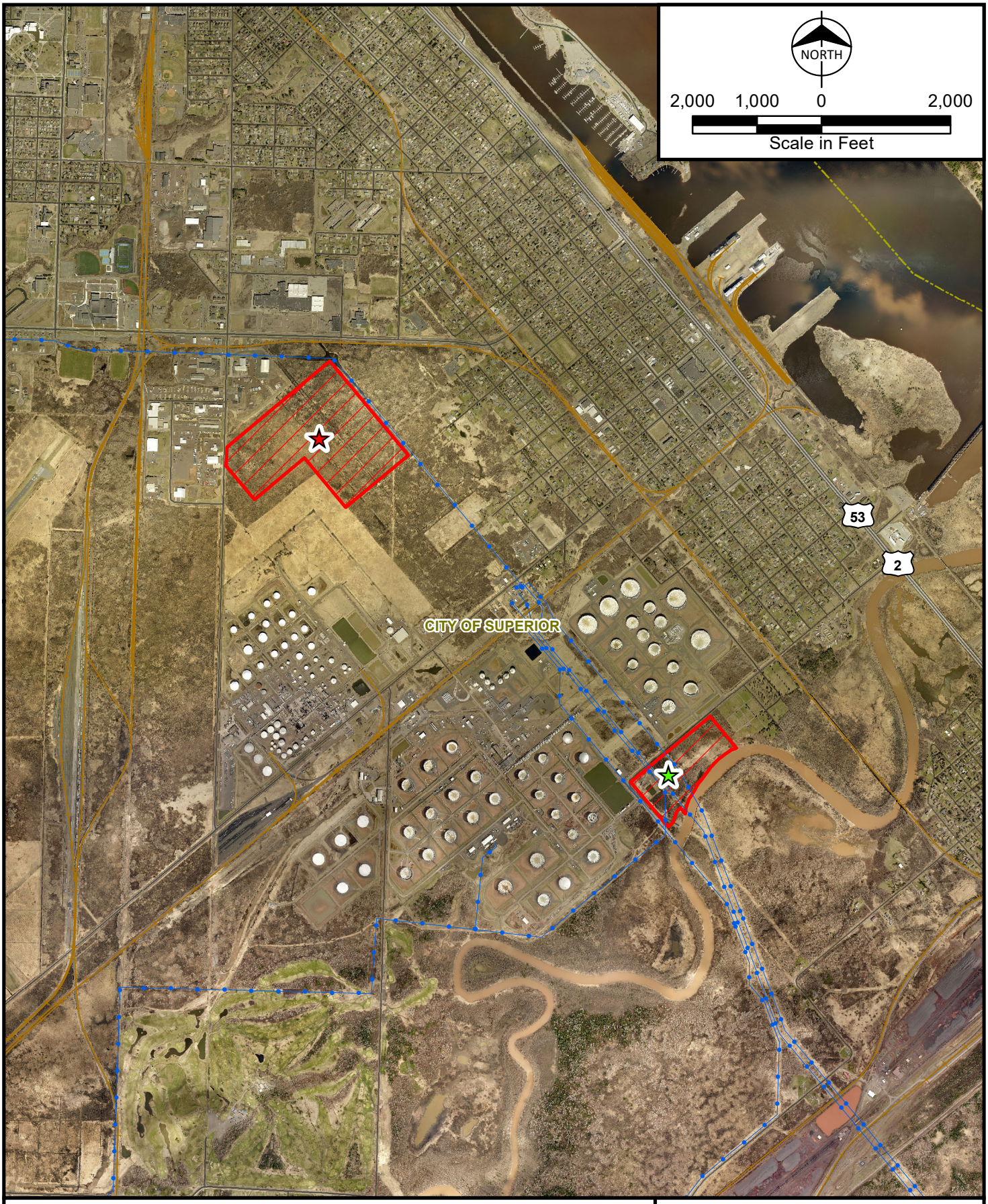
sites. The SupGen site, as considered in the site selection study, was confirmed to provide a reasonable site for Project development (Nemadji River Site; Figure 2-5). The site is owned by MP and provides reasonable access to electricity, natural gas, and water/wastewater infrastructure, without the need for extensive additional development of these resources.

Other areas in the nearby vicinity of the site were subsequently investigated and considered for alternative sites for Project development. For other areas to be considered as potential alternatives, the following factors were considered:

- Sufficient land space is available for the generating unit and supporting infrastructure
- Corridors to connect electricity transmission and natural gas pipelines are available to access the site
- Proximity to appropriate electricity grid and natural gas pipeline tap locations to minimize impacts and costs associated with the development of this infrastructure
- Avoided major approval or permitting concerns such that the site would have a reasonable probability of being approved and permitted if selected for the Project.

The area around the Nemadji River Site contains a variety of developments. Tank farm facilities lie to the north of the site, within the City of Superior, including commercial and residential development, further north. The Nemadji Golf Course is to the west, and slightly beyond the golf course to the west is the Richard I. Bong Memorial Airport, creating potential concerns for stack height restrictions and above ground electrical transmission infrastructure across much of the area. Residential development extends to the east, with Lake Superior less than one mile to the east. The area to the south of the Nemadji River Site is relatively undeveloped, although it contains numerous utility corridors and some mining facilities. The area is heavily wooded and contains extensive wetlands.

Investigations of the area identified an alternative site for the facility approximately 1.5 miles north of the Nemadji River Site (Figure 2-5) to the east of Hill Avenue. The Hill Avenue Site is located just north of the tank farm and west and south of dense residential areas of the City of Superior. An open corridor is available to extend electricity and gas infrastructure into the site. Areas surrounding the Hill Avenue Site contain commercial and light industrial facilities, lowland scrub/shrub wetland community, or are undeveloped, wooded areas. Dairyland and SSE are including the Hill Avenue Site as part of Project development and evaluation activities.



Hill Avenue Site
Nemadji River Site
Approximate Property Boundary
Railroad

Existing Transmission

161kV and Below
345kV
Municipal Boundary

Figure 2-5
Page 1 of 3
Alternative Generation Sites
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior 2019 aerial photography, Energy Velocity, and Burns & McDonnell Engineering Company, Inc.

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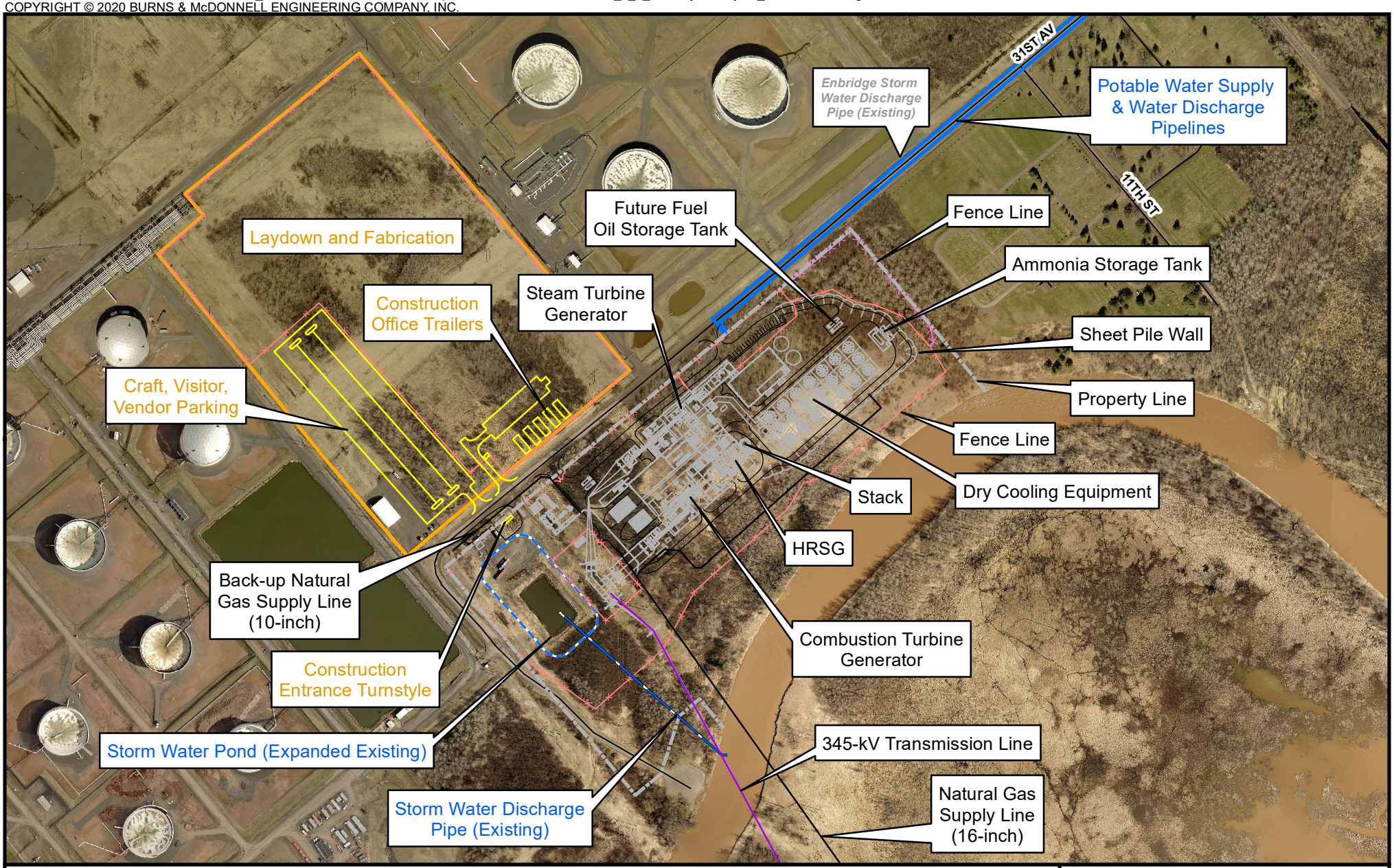

- Plant Facilities
- Temporary Construction
- Property Boundary
- Fence (Barded Wire)
- Fence (Chain Link)
- Stormwater Drainage Pipe
- Proposed Natural Gas Lateral
- Stormwater Pond
- Water Pipeline
- Laydown & Staging
- Proposed Transmission Line

NORTH

400 200 0 400

Scale in Feet

Figure 2-5
Page 2 of 3
Nemadji River Site Layout
Nemadji Trail Energy Center
Douglas County, WI

Source: City of Superior (Aerial 2019), EV, Minnesota Power, Dairyland Power Cooperative, and Burns & McDonnell Engineering Company, Inc.

Issued: 7/15/2020

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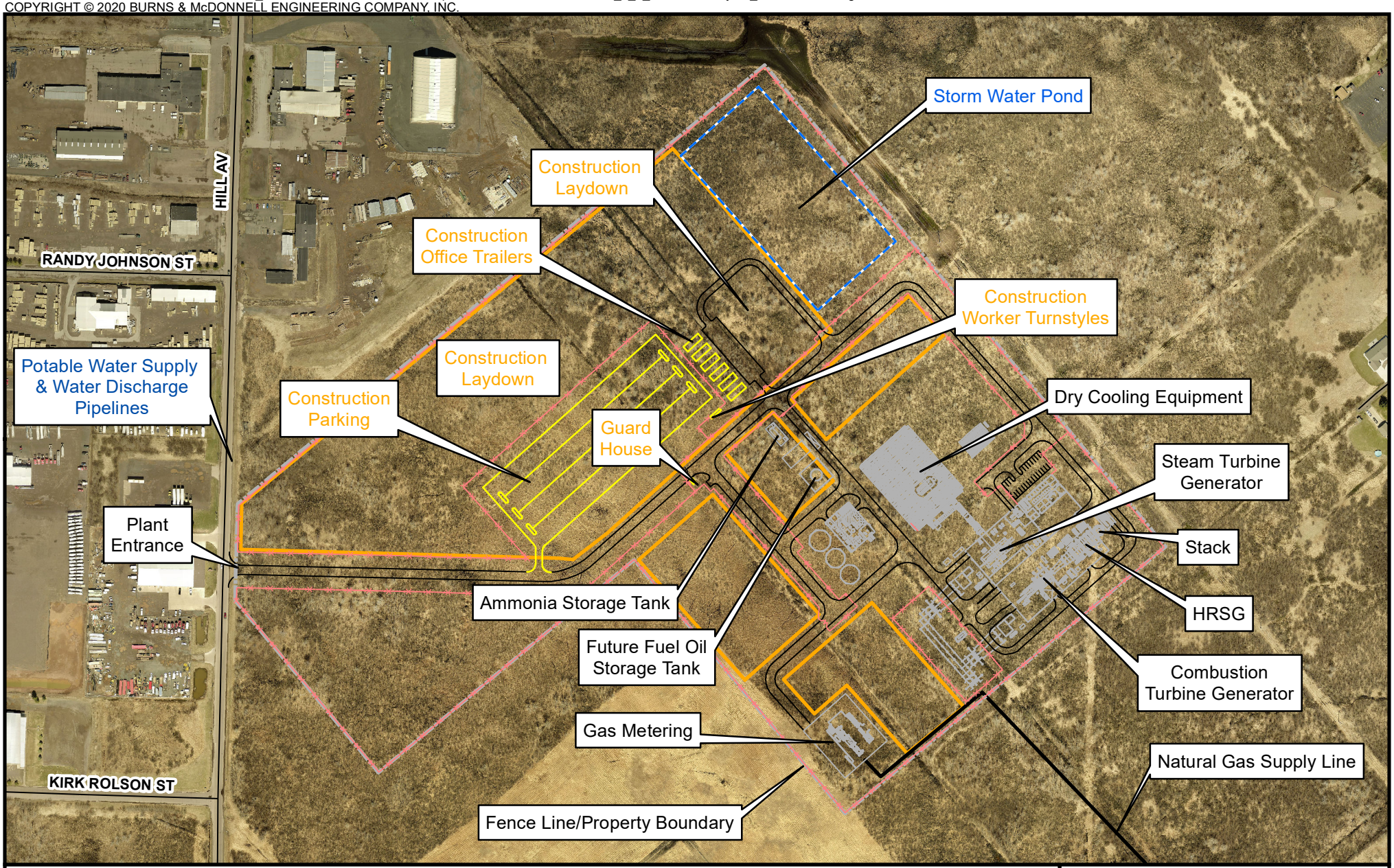

Fence Line
Plant Facilities
Property Boundary
Stormwater Pond
Temporary Construction
Natural Gas Supply Line
Water Pipeline
Laydown & Staging

NORTH

400 200 0 400

Scale in Feet

Figure 2-5
Page 3 of 3
Hill Avenue Site Layout
Nemadji Trail Energy Center
Douglas County, WI

Source: City of Superior, WI (Aerial 2019), EV, Minnesota Power, Dairyland Power Cooperative, and Burns & McDonnell Engineering Company, Inc.

Issued: 7/15/2020

2.4 Linear Infrastructure Alternatives

Development of this new natural gas generation facility requires the development of associated electricity and natural gas infrastructure. The new facility would require a new electric transmission line to connect to a new switching station located southeast of the site. The switching station would then be connected to the electricity grid in order to deliver the power generated to the bulk power system. Ideally, the connection would be at a location minimizing conflicts with existing system reliability, to avoid or minimize the need for additional upgrades to accommodate the additional power being inserted into the system. American Transmission Company (ATC) would be responsible for the connection between the switching station and the existing Arrowhead to Stone Lake 345-kV transmission line. In addition to an electrical transmission interconnect, a suitable supply of natural gas to fuel the facility is also required via a natural gas pipeline. A 16-inch diameter natural gas line for the Project will be constructed and owned by Superior Water Light & Power. As such, it is not evaluated as part of the Project. It is discussed in Chapter 4, Cumulative Impacts.

The proposed switching and tap points on existing natural gas pipelines capable of providing the required fuel supply are identified as end points for linear infrastructure extending from alternative generation sites. The location of potential generation sites and the connection/tap points form the basis for the development of a Study Area within which to identify and consider corridors for infrastructure development. The Study Area typically is identified within which several 0.5-mile wide macro-corridors can be developed. These macro-corridors are investigated in further detail to determine potential impacts for a new transmission line in the Study Area. These steps and the results for this study are discussed in detail in the following sections.

2.4.1 Macro-corridor Study Area Identification

After identification of the alternative generation sites, and prior to the development of a defined Study Area for the development of necessary linear infrastructure (macro-corridors), the primary constraints of the area were reviewed. Major considerations for developing a new transmission line between a new generation facility in Superior, Wisconsin, and a termination point southeast of the proposed facility included residential areas of the City of Superior, the Richard I. Bong Memorial Airport, several local parks, tank farm, and the Nemadji Golf Course.

Based on these identified potential constraint areas, a Study Area was established that was capable of providing sufficient geographic area to include multiple macro-corridor options that could connect Project endpoints (alternative generation plant sites and utility infrastructure connections) while providing opportunities to avoid constraints and take advantage of opportunities (Figure 2-6). The Study Area is

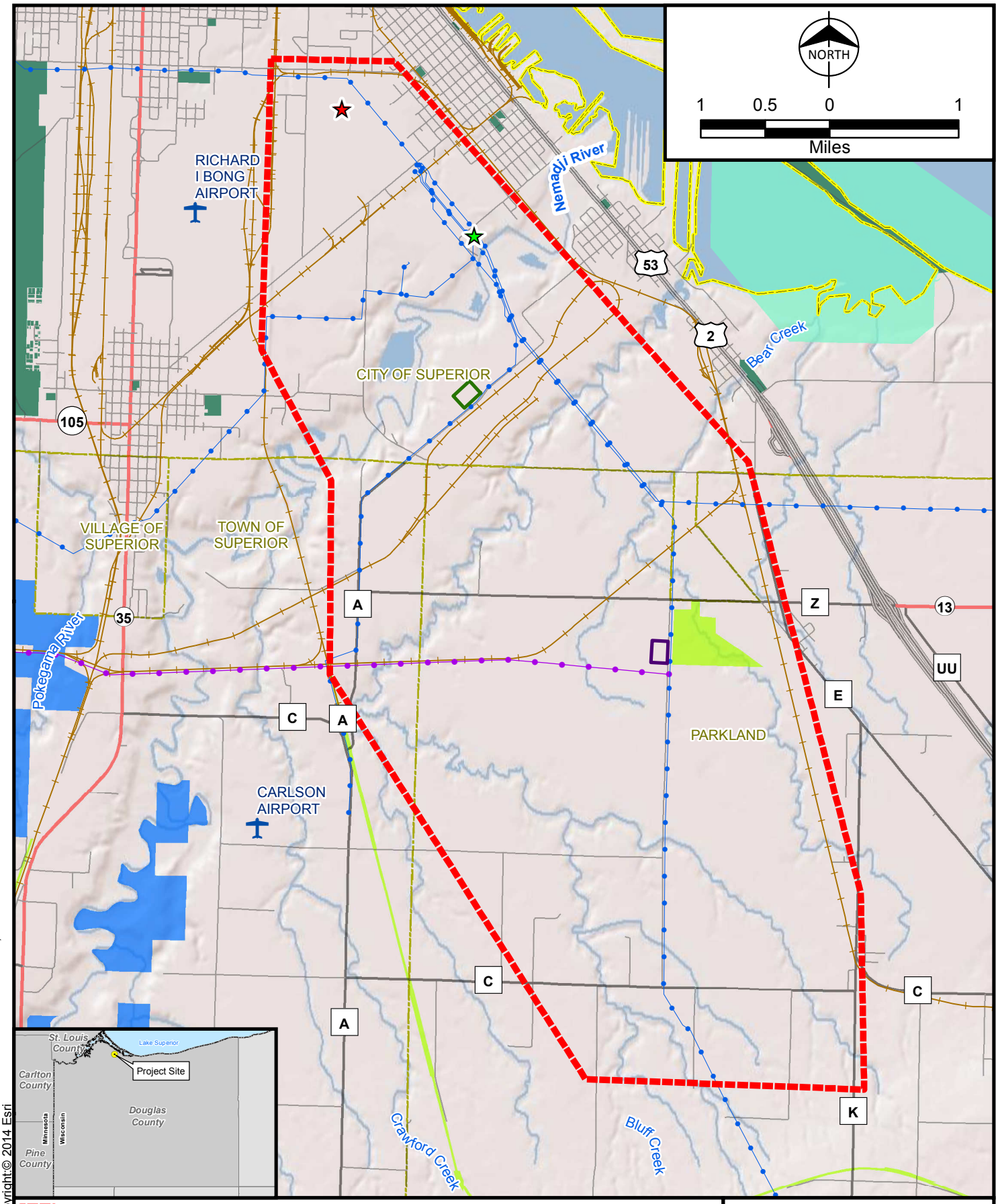

Figure 2-6
Study Area
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior, USGS PADUS, FAA, USGS NHD, and Burns & McDonnell Engineering Company, Inc.

Issued: 3/8/2019

completely within Douglas County and was designed to provide a reasonable number of corridor opportunities, while at the same time not being too large as to encumber the process. The following sections provide a description of the Study Area and identify the macro-corridors developed within the Study Area for further investigation.

2.4.2 Resource Data Collection

Readily-available resource data within the Study Area was collected from Federal governmental agencies, state and local governments, utility companies, and other publicly available sources. This data was used to prepare Geographic Information System (GIS) maps and included the following resource categories:

- Land Use and Jurisdiction;
- Existing Transportation and Utility Corridors;
- Geology and Soils;
- Water Resources; and
- Cultural Resources.

The resource data was mapped in GIS format and combined with aerial photography to validate resources within the identified macro-corridors.

2.4.3 Identification of Alternative Macro-Corridors

Following the establishment and investigation of the Study Area, the area was evaluated for the identification of macro-corridors for the linear infrastructure requirements. Several general areas potentially suitable to contain macro-corridor alternatives were identified and evaluated to determine if they were suitable for the development of transmission line route (Figure 2-7). The macro-corridors were evaluated with consideration of the following constraints and opportunities, which were present in the Study Area:

- Communities and other developed areas within the Study Area
- Nemadji Golf Course
- Existing oil and gas infrastructure
- Existing transmission line corridors
- Roads and railroads
- Conservation areas

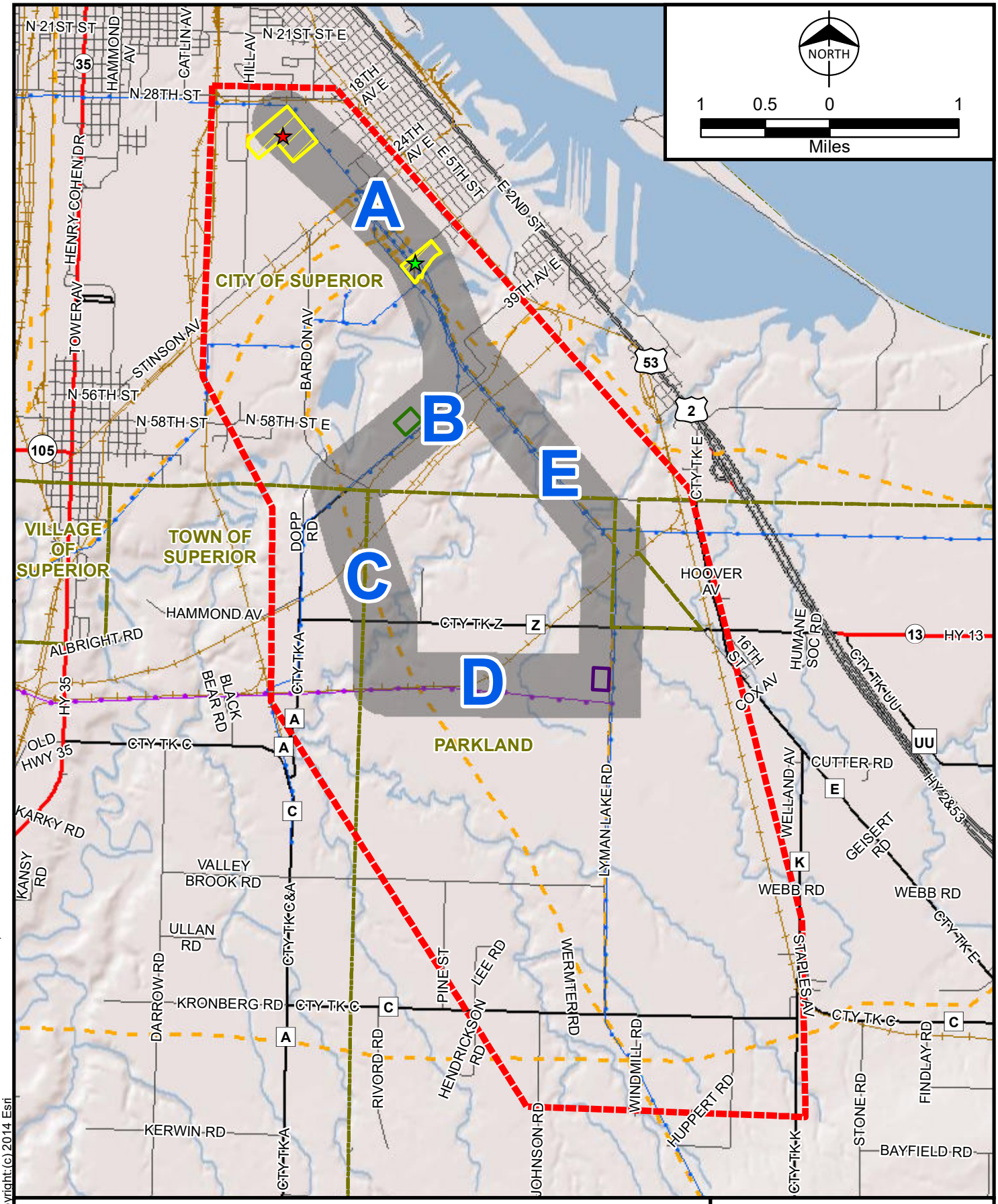

Figure 2-7
Macro-Corridors
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior, Wisconsin DNR, and Burns & McDonnell Engineering Company, Inc.

Issued: 12/16/2019

Constraints were considered in the development of the macro-corridors (see Figure 2-8 through Figure 2-13 for macro-corridor resource maps). Macro-corridors considered the locations of natural and social resources within the Study Area and potential opportunities available for the compatible location of a new transmission line such as roadways and existing transmission line corridors.

A number of existing utility corridors extend through the Study Area. Locating a transmission line along linear features may result in fewer environmental impacts because of the previous disturbance from construction and is considered good routing practice by confining linear facilities to common corridors. Existing transmission lines provide opportunities for routing the proposed transmission line adjacent to an existing right of way (ROW). However, locating along these facilities may be difficult due to development around these lines and can also limit flexibility to avoid resources along existing infrastructure. In considering these factors, along with other constraints in the Study Area, the identification of macro-corridors focused on following existing utility infrastructure, with macro-corridors wide enough (0.5 mile) to provide opportunities to avoid constraints if necessary.

A more detailed discussion and comparison of these macro-corridors is found in the following section.

2.4.4 Alternative Macro-Corridors

Figure 2-7 illustrates the alternative macro-corridors and identifies individual corridor segments by letter designation A through E. The following is a description of each macro-corridor.

The macro-corridors had several similarities. All macro-corridors crossed large areas of wetlands and woodlands within the City of Superior, the Town of Superior, or Parkland. Areas of hunting lease land and wetland mitigation areas are also included within the macro-corridors.

Corridor segment A generally extends from the Hill Avenue generation site alternative to the southeast, paralleling existing transmission for its entire length and existing pipeline infrastructure for over half its length. Due to the constraints in the area and existing linear infrastructure, only one macro-corridor was developed extending south from the Hill Avenue Site. This corridor is wide enough to provide flexibility to develop multiple alignments and avoid site specific constraints that may be identified later.

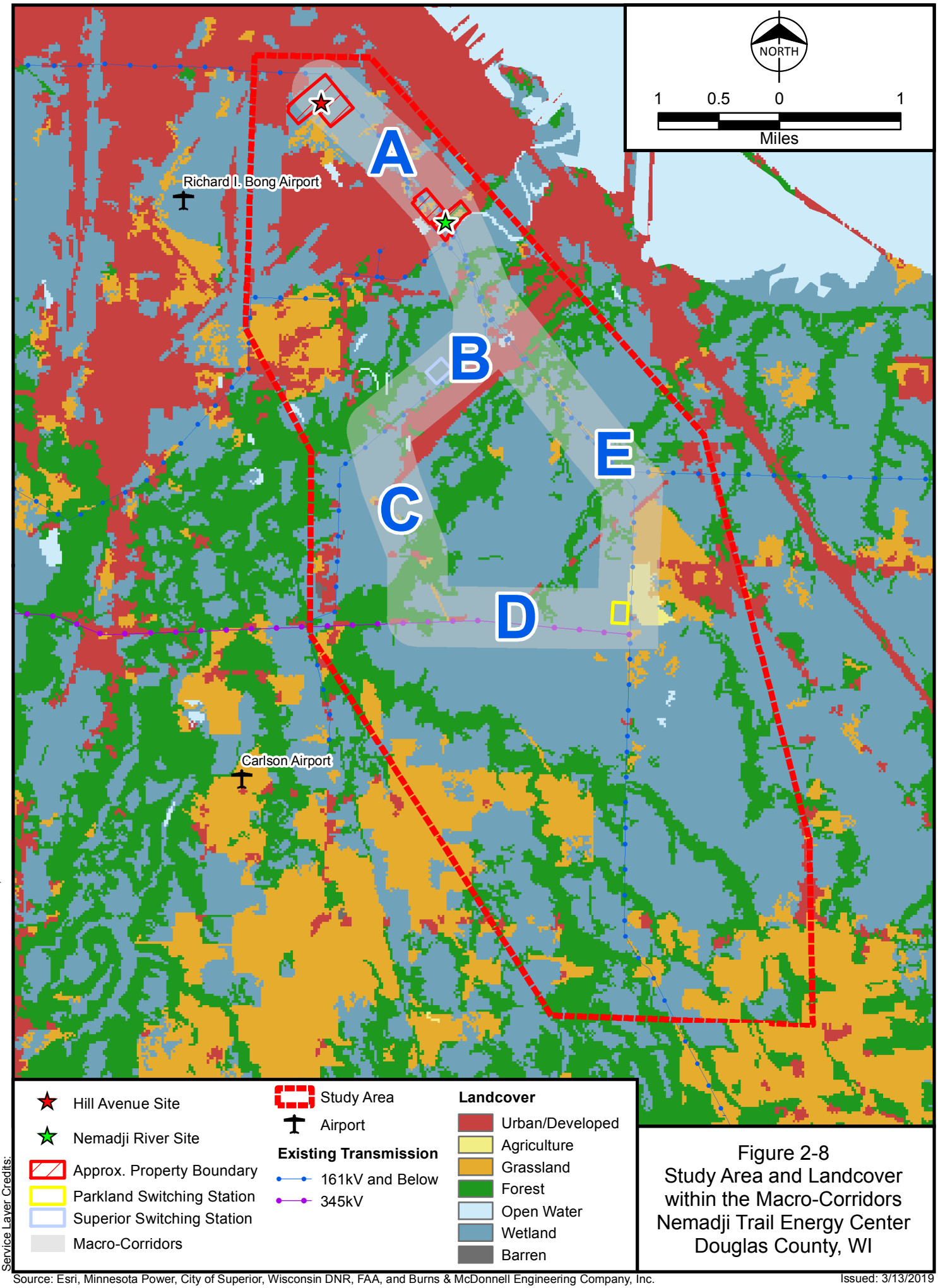

Figure 2-8
Study Area and Landcover within the Macro-Corridors
Nemadji Trail Energy Center
Douglas County, WI

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Service Layer Credits:

Source: Esri, Minnesota Power, City of Superior, Wisconsin DNR, FAA, and Burns & McDonnell Engineering Company, Inc.

Issued: 3/13/2019

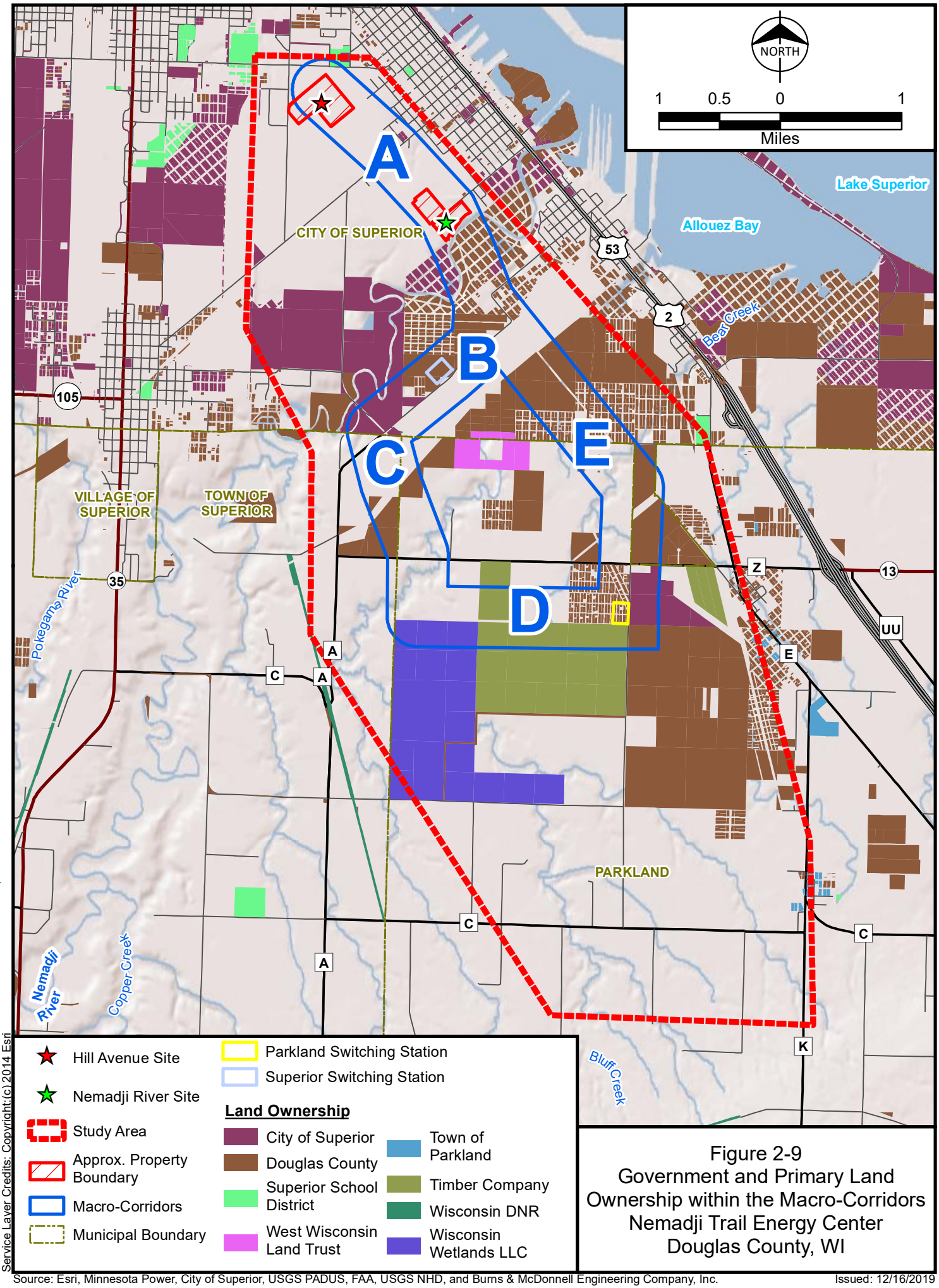

Figure 2-9
Government and Primary Land Ownership within the Macro-Corridors
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior, USGS PADUS, FAA, USGS NHD, and Burns & McDonnell Engineering Company, Inc.

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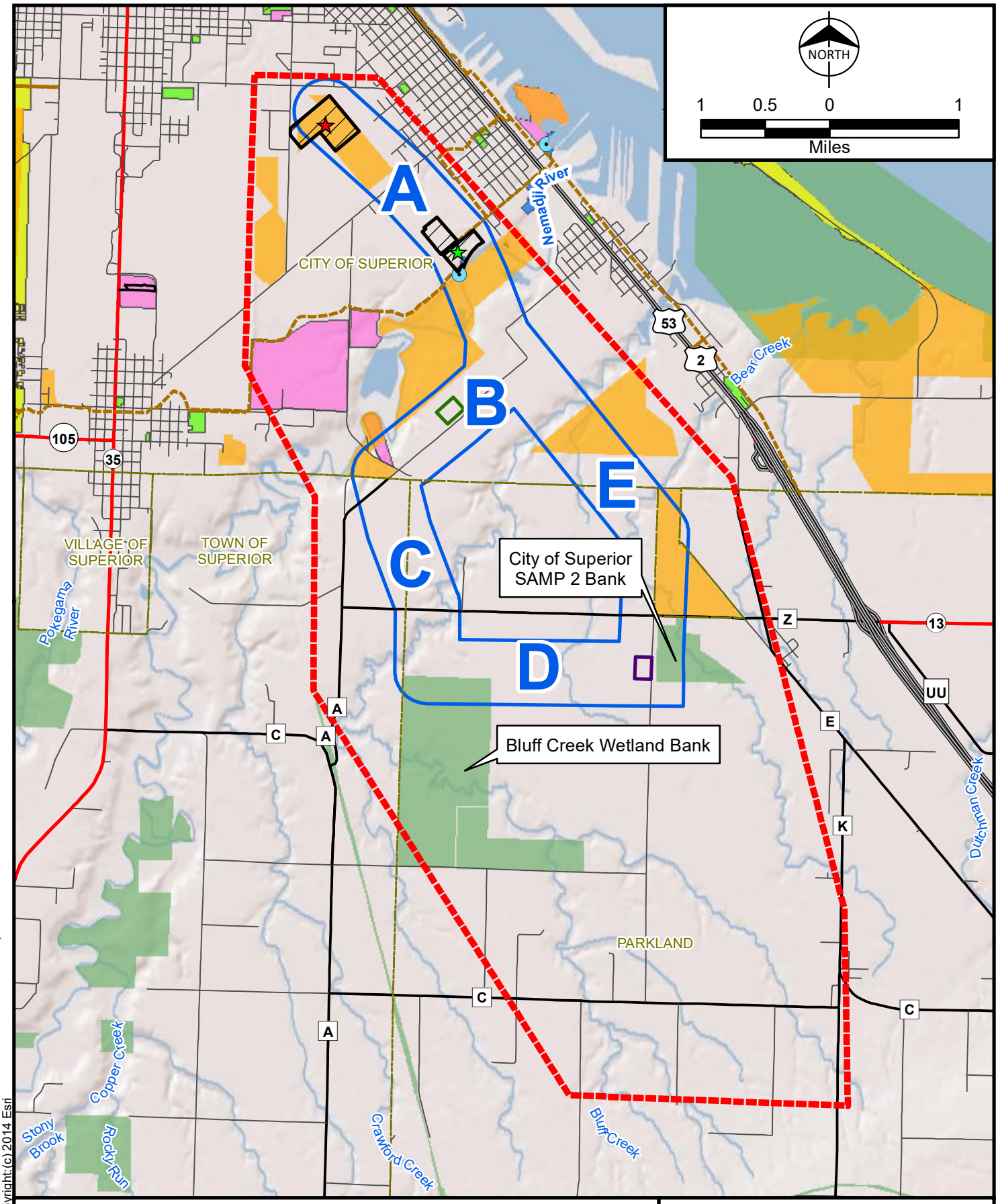
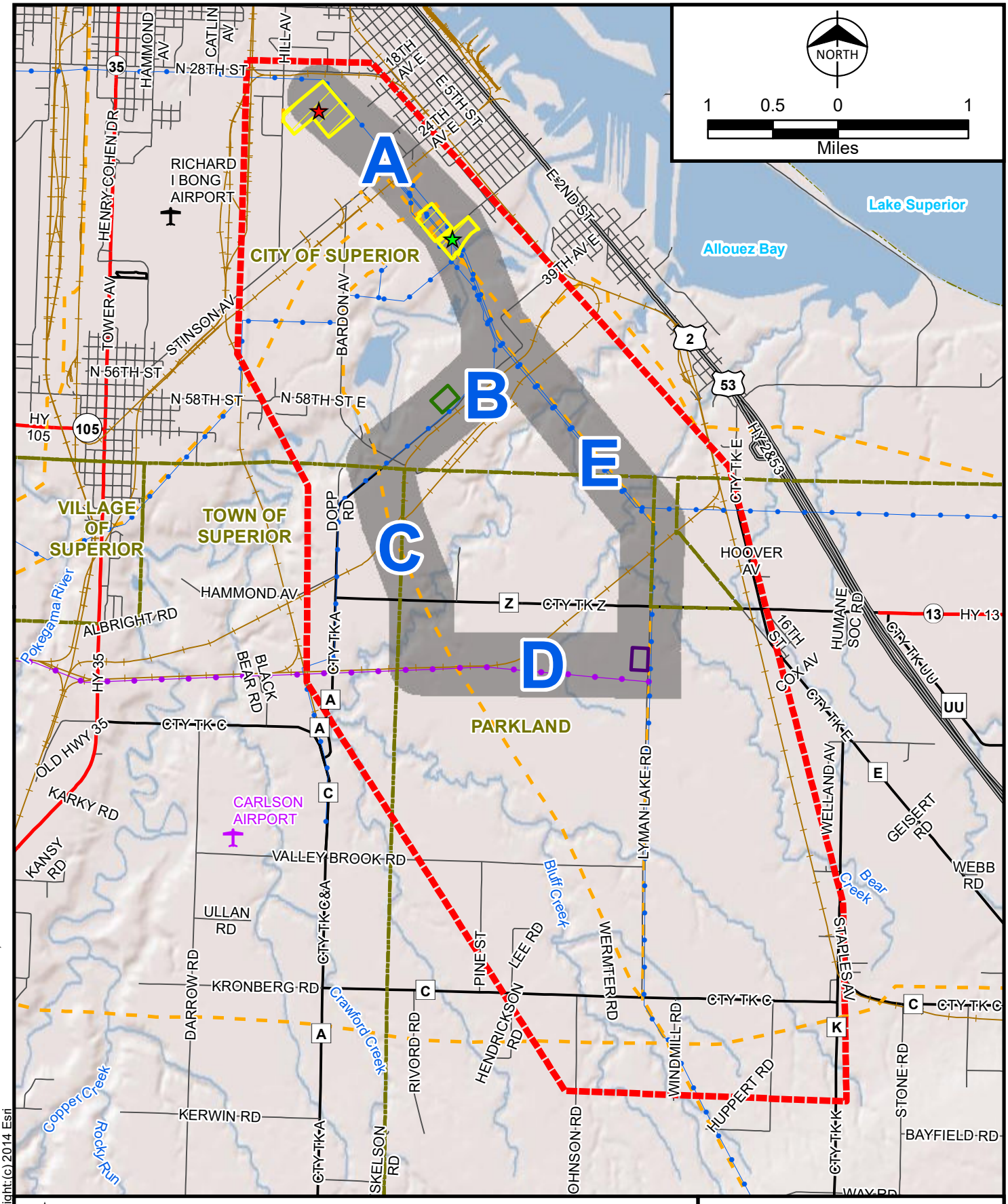


Figure 2-10
Conservation and Recreation Areas within the Macro-Corridors
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior, USGS PADUS, Wisconsin DNR, FAA, USGS NHD, and Burns & McDonnell Engineering Company, Inc. Issued: 12/16/2019



Hill Avenue Site
Nemadji River Site
Approx. Property Boundary
Parkland Switching Station
Superior Switching Station
Study Area
Municipal Boundary

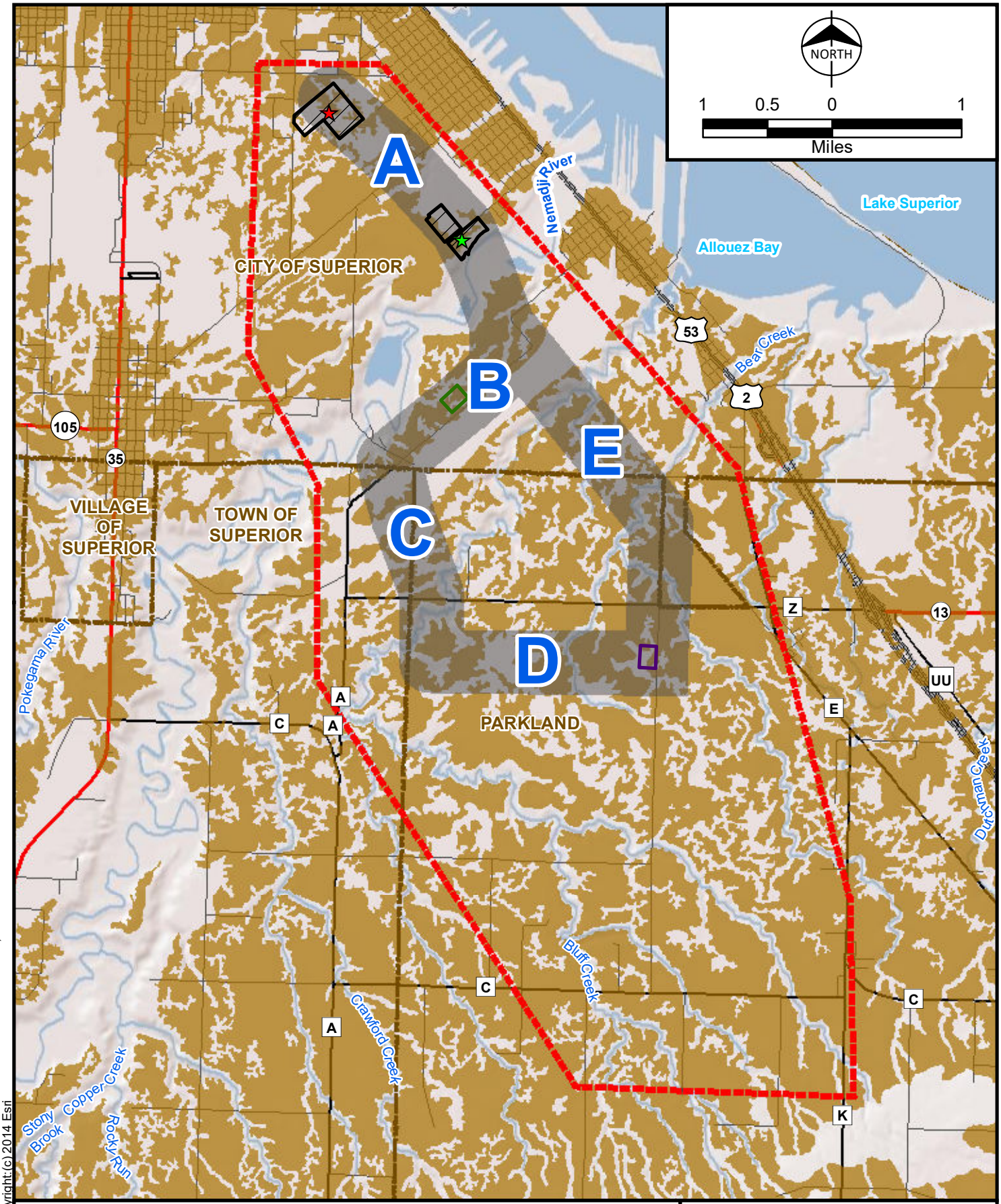
Railroad
U.S. Highway
State Highway
County Road
Local Road
Macro-Corridors

Existing Transmission Line
161kV and Below
345kV
Public Airport
Private Airport
Existing Gas Pipeline

Figure 2-11
Transportation and Utilities within the Macro-Corridors
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior, Ventyx Velocity, FAA, USGS NHD, and Burns & McDonnell Engineering Company, Inc.

Issued: 12/16/2019

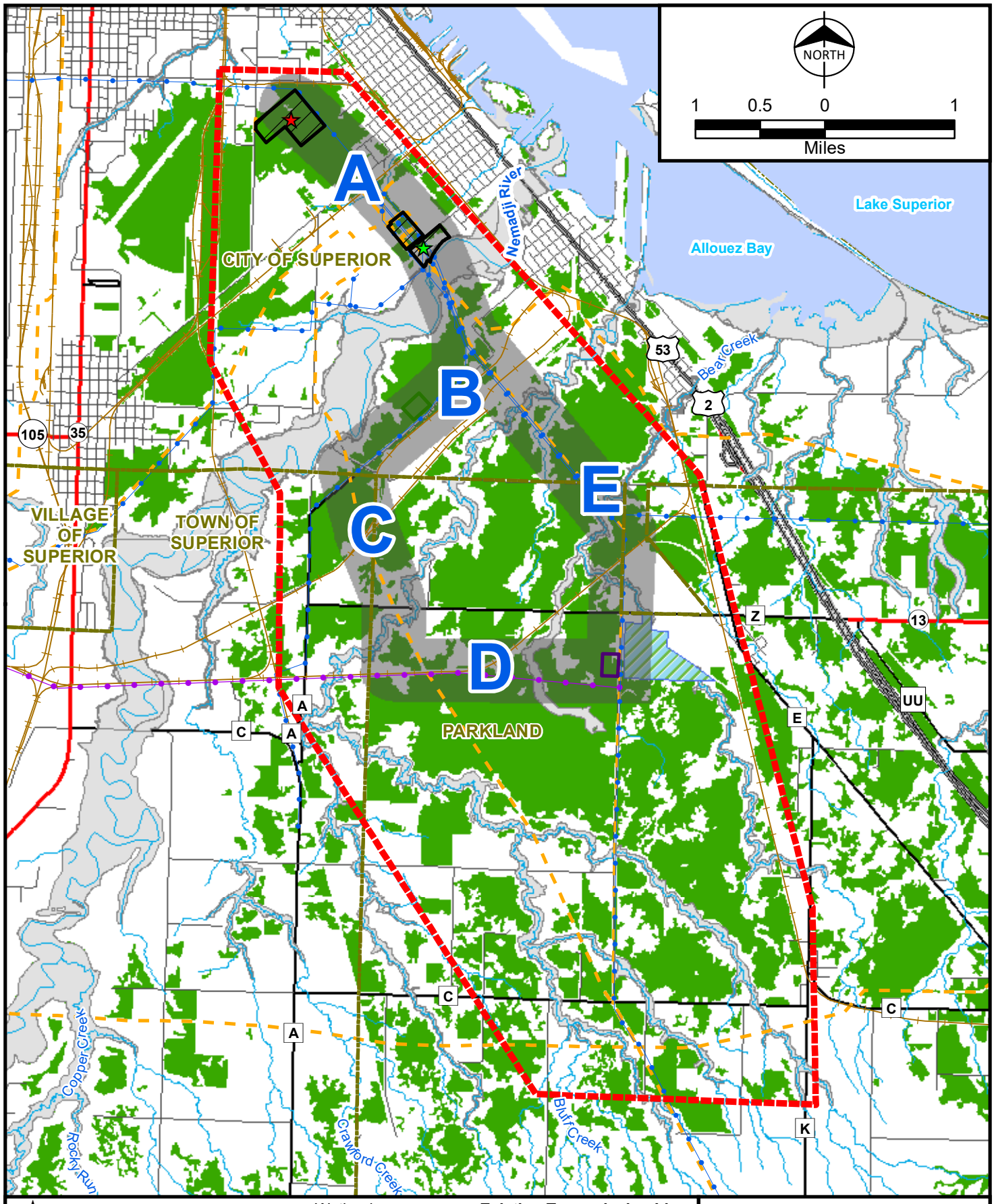


Hill Avenue Site
Nemadji River Site
Approx. Property Boundary
Study Area
Macro-Corridors
Parkland Switching Station
Superior Switching Station
Municipal Boundary
Farmland of Statewide Importance

Figure 2-12
Farmland of Statewide Importance
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior, Ventyx Velocity, FAA, USGS NHD, and Burns & McDonnell Engineering Company, Inc.

Issued: 12/16/2019



Hill Avenue Site
Nemadji River Site
Approx. Property Boundary
Parkland Switching Station
Superior Switching Station
Study Area
Macro-Corridors

Wetland Mitigation Bank
Stream\River
Floodplain
Wisconsin Wetland Inventory
Municipal Boundary

Existing Transmission Line
161kV and Below
345kV
Existing Gas Pipeline
Railroad

Figure 2-13
Water Resources
within the Macro-Corridors
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior, Wisconsin DNR, USGS PADUS, USGE NHD, FEMA, and Burns & McDonnell Engineering Company, Inc. Issued: 12/16/2019

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Service Layer Credits:

2.4.5 Substation Siting Alternatives

Construction of the proposed Project requires interconnection of the plant to the existing 345-kV electrical system, as previously discussed. The nearest 345-kV line to be tapped for the project is the Arrowhead to Stone Lake 345-kV line located south of the proposed NTEC and Hill Ave sites. As limited space was available on both proposed plant sites for a 345-kV substation and construction of a switching station at either plant site would require construction of two new 345-kV lines for several miles to loop the Arrowhead to Stone Lake line in and out of the new switching station, a new switching station off-site was determined necessary and alternative sites were investigated and evaluated.

The Superior region of Wisconsin has a relatively high abundance of forested and shrub/scrub wetlands. In considering potential switching station locations, the evaluation focused on potential locations within the macro-corridors, as well as adjacent areas within a mile of the macro-corridor alternatives. Focusing the sites for station alternatives to this area minimized the potential, additional new 345-kV line that would be required to interconnect the switching station to the existing 345-kV system and the associated impacts of establishing new line right-of-way. Sites were evaluated for the presence of wetlands as well as numerous other factors, including clearing requirements, federal and state listed sensitive species or other resources, land use, proximity to residences and residential areas, grading and stormwater retention requirements, and willingness of landowners to sell the property. Additionally, location of the switching station near the Arrowhead to Stone Lake 345-kV line was recognized to minimize the length of new 345-kV line, and associated impacts to establish, construct and maintain the new line and right-of-way. The further the switching station from the existing line, the more new line and right-of-way required, and the more potential natural resource and social impacts expected.

Numerous sites within the macro-corridors and surrounding study area were identified and evaluated for the new switching station. Ultimately, two sites, the Parkland Switching Station and Superior Switching Station (Figure 2-7) were identified as alternative switching station sites for connection of the alternative macro-corridors into the 345-kV system. These sites were determined to minimize overall (temporary, permanent, conversion) wetland impacts as well as minimizing residential proximity and avoided occurrences of state listed sensitive resources. Land use at the sites was determined compatible for the development of a switching station and the proximity of the sites to the Arrowhead to Stone Lake line was approved by MISO, minimized impacts associated with any new line construction (although the Superior Switching Station site would require additional new 345-kV line to facilitate connection to the existing 345-kV system) and additional intrusion of transmission lines into the environment, collocated adjacent to the existing utility corridor as required by the PSCW, avoided residential proximity concerns, and could be obtained through a voluntary purchase from the existing landowner. The Parkland and

Superior Switching station alternative sites have therefore been retained for evaluation as part of the macro-corridor alternatives identified.

The existing transmission line, SWL&P's Winter to Stinson 115-kV transmission line, extends through a wooded area from the Hill Avenue alternative site to the Stinson Substation on 24th Avenue. An alternative alignment along the existing line would generally confine impacts to an already impacted corridor, although paralleling this line would require additional woodland clearing. This portion of Corridor segment A includes residential areas along the following roads: 12th Street, 13th Street, 14th Street, 19th Street, 21st Street, and 22nd Street. The corridor includes a portion of the Christ Lutheran Church property.

From the Stinson Substation to the Nemadji River, alignments within Corridor segment A could parallel either a transmission line (Gary to Stinson 115-kV, Superior to Minong 161-kV, or Ino to Superior 115-kV) or a pipeline (crude oil or natural gas). This area would require additional woodland clearing as well, though there is less woodland in this portion of Corridor Segment A compared to the area north of the Stinson Substation. The portion of Corridor segment A between 24th Avenue and the Nemadji River contains additional oil and gas infrastructure (tank farm), however, which would limit the number of alternative alignments that could be reasonably developed. Alignments within portion of Corridor segment A may require a transmission line crossing and/or a gas pipeline crossing depending on the alternative alignment. Any alternative alignment within Corridor segment A would also require a crossing of the Orange Trail. The corridor also includes a portion of the St. Francis Cemetery on the north bank of the Nemadji River. Corridor segment A provides the opportunity for crossing the Nemadji River and its associated floodplain at an existing crossing, limiting impacts to an existing river crossing, rather than creating new impacts elsewhere along the Nemadji River. South and east of the Nemadji River is primarily wooded. Alternatives within Corridor segment A would require additional woodland clearing in this area. Residential structures occur along East 18th Street. Alignments paralleling existing transmission lines or gas pipeline ROW through this area would confine impacts to existing ROWs and areas adjacent to existing utility corridors.

Corridor segment B is the more westerly of two macro-corridors that extend from the south end of Corridor segment A generally southwest then south. Corridor segment B includes opportunities to parallel 42nd Avenue as well as a rail line to Woodlawn Road. The corridor includes portions of the Nemadji sled hill and structures associated with the rail line. Alternatives through this area would require woodland clearing as the area is primarily wooded. Corridor segment B also includes the Superior Switching Station. If the Superior Switching Station Site is constructed for the Project, ATC would construct two

345-kV transmission lines from the Superior Switching Station Site to a tap location on the existing Arrowhead to Stone Lake 345-kV transmission line. This alternative would be the responsibility of ATC and is therefore not part of the Project or this application.[5] Corridor segment B connects to Corridor segment C.

After crossing Woodlawn Road, Corridor segment C turns and extends generally south, paralleling an existing Enbridge crude oil pipeline. Alternatives using Corridor segment C continue to Corridor segment D. Alternatives through this portion of Corridor segment C would require woodland clearing and would cross rail lines south of CR A. At CR Z, Corridor segment C extends due south and no longer parallels the crude oil pipeline. This portion of the corridor would also require woodland clearing, includes a crossing of Bluff Creek and its associated floodplain, and also has several structures, including the George Constance Senior Memorial Rifle Range, residences, and outbuildings.

Corridor segment D extends from the end of Corridor segment C due east along the existing Arrowhead to Stone Lake 345-kV transmission line. Alternatives through this corridor would require woodland clearing, a Duluth Missabe & Iron Range rail line crossing, and a crossing of an unnamed tributary of Bear Creek and its associated floodplain. Alternatives through this corridor would terminate at the Parkland switching station site.

Corridor segment E extends from the south end of Corridor segment A generally southeast then south, to the east of Corridor segment B. The corridor parallels two existing transmission lines (Superior to Minong 161-kV and Ino to Superior 115-kV) and an existing SWL&P natural gas pipeline. Alignments in Corridor segment E would require rail line crossings near 42nd Ave and East 18th Street. This area also contains several residences and structures related to rail line operations. Continuing south, Corridor segment E traverses primarily woodland and crosses City Limits Road. Several residences are located along City Limits Road within the macro-corridor. Alignments in this portion of Corridor segment E would require crossing Bluff Creek and Bear Creek and floodplain associated with each creek, as well as woodland clearing. Paralleling existing linear infrastructure within this corridor would limit impacts to areas adjacent to existing waterway crossings and would limit woodland clearing to areas adjacent to existing ROWs. Corridor segment E extends due south, crossing a Duluth Missabe & Iron Range rail line. Alternatives within Corridor segment E would cross this rail line, as well as Bear Creek for a second time. Corridor segment E contains the Parkland Wentworth Cemetery, Ambridge Gun Club, and a flying site

[5] The two 345-kV transmission lines that would be constructed by ATC from the Superior Switching Station Site to a tap location on the existing Arrowhead to Stone Lake 345-kV transmission line are included in the cumulative impacts discussion in Chapter 4 of this EA.

for the Duluth/Superior RC Club. South of CR Z, Corridor segment E continues to parallel existing transmission and pipeline ROW, as well as Lyman Lake Road, to the Parkland Switching Station area. This portion of the corridor contains a Wisconsin Department of Natural Resources (WDNR) wetland mitigation program property, woodland, and several residences along Lyman Lake Road and several adjacent roads.

Each of the macro-corridors provided multiple opportunities to develop alignments for linear electricity transmission. As these facilities would be relatively short, the areas through which the macro-corridors extend are geographically proximate and were determined to have similar characteristics and resources. Each also contain existing infrastructure similar to that to be developed as part of the generation Project. All the macro-corridors were determined reasonable for potential route alignments and retained for further consideration during the environmental review process.

Within all the macro-corridor segments, existing linear facilities were present and could be followed for nearly the entire length of the proposed new transmission line between the generation sites and proposed switching stations. For the eastern macro-corridor, existing electricity transmission lines extended the entire distance from the Hill Avenue Site, through the Nemadji River Site continued to the Parkland switching station site. The western macro-corridor contained a combination of existing electricity transmission lines (Segments A, B, and D) along with an existing natural gas transmission corridor (Segment C). In keeping with the good routing practice of using or following existing linear infrastructure with new linear facilities, the most reasonable potential for electricity transmission line development would be following parallel to these existing facilities. Routes were identified adjacent to these existing linear facilities within the macro-corridors to quantify the potential impacts of development of the proposed line within each macro-corridor could reasonably be expected. Should deviations from these alignments be required, it is expected they would be for site specific issues or challenges, resulting in only minor changes to the potential impacts quantified.

The FAA applies imaginary surfaces to public use airports to identify and protect the airspace from potential obstructions. Because both routes cross FAA obstruction identification surfaces, the airspace near the Richard I. Bong Airport (SUW) was evaluated to determine any height restrictions for the two alternative transmission line routes within the macro-corridors. Based on the ground elevation and the distance from the transmission line routes to the SUW runways, some structures in short sections of both routes within approximately two miles of the airport could be restricted to approximately 150 feet above ground level (agl). Obstruction identification surfaces are less restrictive further from the airport where structure heights could be up to approximately 200 feet agl without exceeding an obstruction surface.

However, the FAA would likely require marking and lighting for any structure that is greater than 200 feet agl, regardless of where it is located in proximity to SUW or any other public use airport. The Project is not anticipated to have any structures greater than 200 feet agl. Likewise, structures that are found to exceed a Part 77 obstruction surface but found to not have a substantial adverse effect upon the navigable airspace after further FAA study may be issued a determination of no hazard by the FAA with the condition that they are marked and lighted to improve visibility.

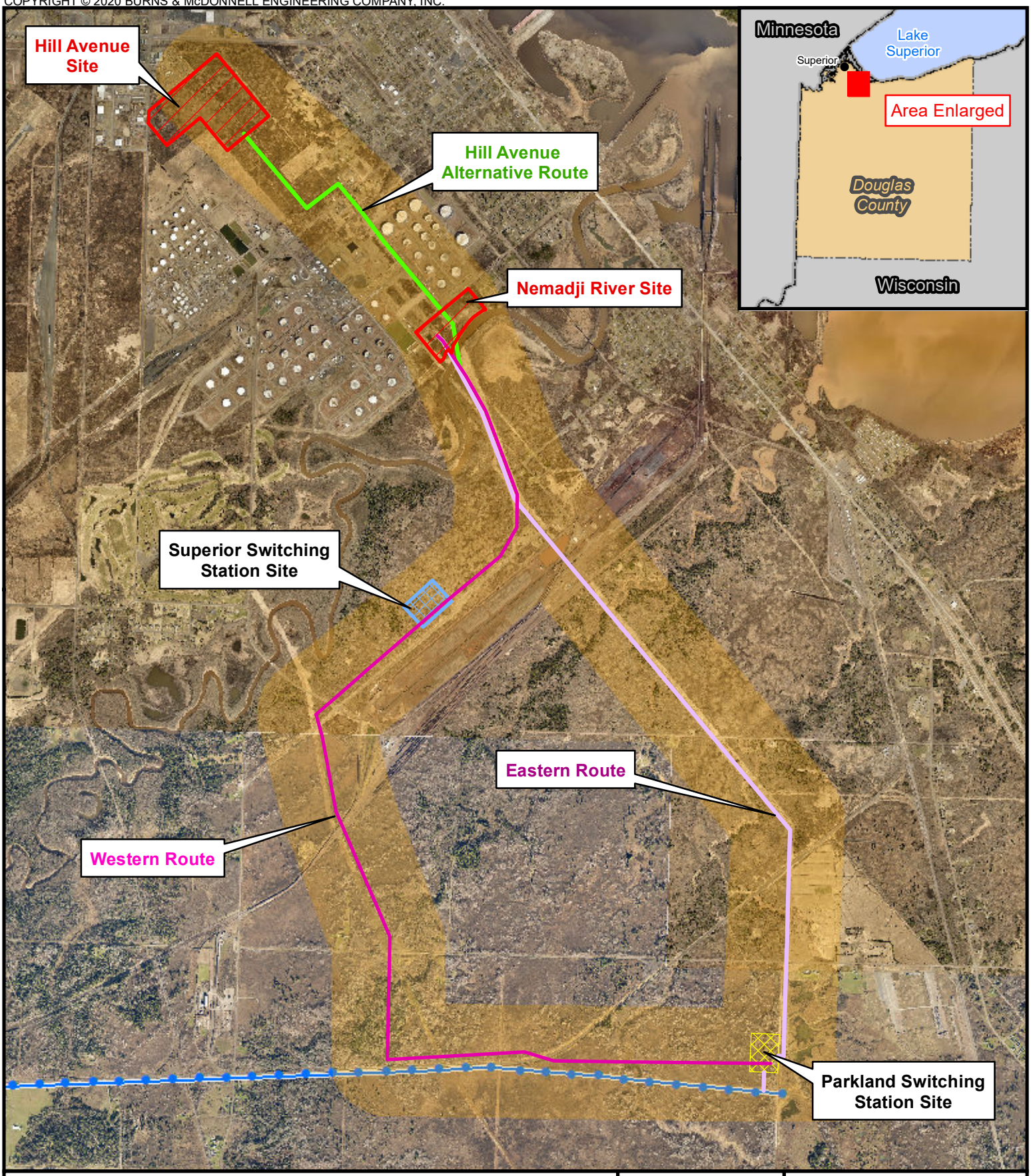
2.5 Identification of the Project Alternatives for Evaluation

Construction of the NTEC Project requires identification, consideration, and evaluation of sites for location of the generation facilities, as well as alignments for development of the necessary linear electricity transmission facilities. While generation sites were well defined parcels of land, transmission line macro-corridors were areas of land approximately 0.5-mile wide, considerably greater than the 130 feet of right-of-way width actually required for the new 345-kV line. This difference in width was intended to provide flexibility for location of the actual transmission line following approval should unforeseen or previously unidentified obstacles be identified requiring minor deviations of the route. Location of the actual right-of-way, provided it remained within the macro-corridor approved, would be acceptable.

For the Project, two generation sites, Nemadji River and Hill Avenue, were identified, as were two macro-corridors (eastern and western) for transmission line development. Each site was combined with each macro-corridor as a unique Project alternative for comparison and evaluation. These alternatives were (Figure 2-14):

- Hill Avenue 1: Hill Avenue Site combined with eastern macro-corridor (Segments A and E)
- Hill Avenue 2: Hill Avenue Site combined with western macro-corridor (Segments A, B, C, and D)
- Nemadji River 1: Nemadji River Site combined with eastern macro-corridor (Segments A and E)
- Nemadji River 2: Nemadji River Site combined with western macro-corridor (Segments A, B, C, and D)

The NTEC project originally selected wet cooling for the project using ground water as the water source because of its efficiency benefits, and economic advantages, and low environmental impacts. Due to concerns expressed by the Wisconsin Department of Natural Resource associated with withdrawing the quantities of groundwater required, NTEC evaluated other water supply options, including utilization of Municipal water, and furthered their earlier investigations of dry cooling.



Macro-Corridors
Existing Electric Transmission
Existing Pipeline
Generation Plant Site
Parkland Switching Station
Superior Switching Station

Electric Transmission Options
Hill Avenue Alternative Route
Western Route
Eastern Route

NORTH
0 1,500 3,000
Feet

Figure 2-14
Project Alternative Sites, Switching Stations, and Transmission Line Routes Location and Overview

Source: South Shore Energy; MP; City of Superior 2019 aerial photography; Energy Velocity; Burns & McDonnell Engineering Company, Inc.

Issued: 3/12/2020

Dry cooling was selected as a result of these studies. Options utilization Municipal water supply from Superior Water Light and Power (SWL&P) were dismissed as they would require significant infrastructure upgrades, including a new larger pipeline from SWL&P's Lake Superior water treatment plant to either Project site, and would require additional water allocations from Lake Superior, both of which would present significant permitting challenges as well as environmental and social disruptions.

In dry cooling, a large finned heat exchanger with fans moving ambient air across the outside of the tubes and fins (like a radiator in a car) is used to reject the energy in the steam leaving the steam turbine. Removing energy in the steam causes the steam to condense inside the tubes. The steam needs to be condensed to allow pumping back up to the pressure needed by the heat recovery steam generator boiler (HRSG). Dry cooling would have the benefits of eliminating any fogging or rime ice associated with wet cooling, as well as reduce water requirements and discharge to and from the Project considerably.

Chapter 3 presents the potential impacts of each of the Project alternatives for comparison. For this EA, no preferred alternative is identified. RUS will consider this EA, any comments received, and the project record to determine a preferred alternative for the Project.

Other agency approvals and permits must also be obtained for this project. The Public Service Commission of Wisconsin (PSCW) has previously approved alternatives for various components of the Project. On January 31, 2020, the PSCW issued its final decision on the generation facility (Docket Number 9698-CE-100). The Certificate of Public Convenience and Necessity (CPCN) application was approved and the PSCW authorized the Nemadji River Site as the location for NTEC. On January 30, 2020, the PSCW issued its final decision on the electric transmission line for the Project (Docket Number 9698-CE-101). The transmission line CPCN was approved and the PSCW authorized the eastern route. On March 3, 2020, the PSCW issued its approval of a 16-in natural gas lateral to SWL&P (Docket Number 5820-CG-105) to supply natural gas to the NTEC generation facility as well as the 10-inch natural gas reroute required at the Nemadji River Site (Docket Number 5820-CG-106). As discussed later in this EA, additional approvals and permits will be required prior to Project construction and operation.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3 provides descriptions of the existing environmental conditions of the areas that may be impacted by constructing and/or operating the Project. This chapter provides an understanding of the affected environment and potential environmental consequences of each of the four Project alternatives for the following resources: air quality; biological resources including vegetation, wildlife, and special status species; cultural resources; geology and soils; infrastructure, transportation, public health and safety; land use; noise; socioeconomics and environmental justice; visual resources; and water resources. Federal, state, and local regulations that apply to managing these resources are also discussed in context of the existing environment.

As part of the PSCW application, the Owners were required to identify alignments within the macro-corridors for Project development and permitting. These alignments were surveyed and used to develop potential Project alternatives that could result from transmission line construction. The potential impacts of these linear alignments were combined with the Site alternatives to compare the overall Project impacts of each alternative. These Proposed Action Alternatives were:

- Hill Avenue 1: Hill Avenue Site combined with eastern macro-corridor (Segments A and E)
- Hill Avenue 2: Hill Avenue Site combined with western macro-corridor (Segments A, B, C, and D)
- Nemadji River 1: Nemadji River Site combined with eastern macro-corridor (Segments A and E)
- Nemadji River 2: Nemadji River Site combined with western macro-corridor (Segments A, B, C, and D)

Additionally, switching station sites associated with each macro-corridor included parcels approximately 14 acres in size. Actual switching station footprint area will likely be approximately 4.4 acres. However, as final design and placement of each switching station on each parcel has not yet been determined, the potential environmental consequences associated with each switching station site have been estimated based on the entire 14 acre parcel to conservatively assess the potential human and natural resources effected at each site. Pending final design, the actual impacts associated with each switching station sites are anticipated to be somewhat less than those presented.

The geographical setting for each resource is defined in this chapter for each of these proposed generation site, transmission corridor, and switchyard alternatives. The geographical setting may differ for each resource, and for each component of the Project. RUS will approve the site for the power plant and a corridor within which to locate the new transmission facilities. In a related action, the PSCW approved a

specific site and transmission route within the proposed corridors under their review and permitting processes. Therefore, RUS is considering the geographical settings for the transmission line portion of this project as 0.5-mile-wide corridors instead of a specific route centerline (Figure 2-7).

This chapter assesses the potential impacts of the No Action Alternative and the Proposed Action Alternatives. The No Action Alternative provides a basis for comparison in which none of the Project components would be constructed.

3.1 Air Quality

The air quality of the area surrounding the Project along with the impacts on air quality as a result of the Project are discussed in the following sections.

3.1.1 Affected Environment

The federal government established the National Ambient Air Quality Standards (NAAQS) under the Clean Air Act to protect public health (including the sensitive populations such as asthmatics and the elderly), safety, and welfare from known or anticipated effects of eight air pollutants: sulfur dioxide (SO_2), particulate matter 10 microns or less in diameter (PM_{10}), particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone, lead (Pb), and greenhouse gases (GHGs). Douglas County is in attainment, meaning that the area is in compliance with federal clean air standards for all of these criteria pollutants.

Class I areas are protected more stringently than under the NAAQS. Class I areas include national parks, wilderness areas, and other areas of special national and cultural significance. There are four Class I areas and one non-Federal Class I area that are within 300 kilometers of the Nemadji River Site and Hill Avenue Site. The respective distances are shown in Table 3-1.

Table 3-1: Distance from Project Sites to Class I Areas

Class I Area	Nemadji River Site (kilometers)	Hill Avenue Site (kilometers)
Rainbow Lake Wilderness, Wisconsin	60	63
Boundary Waters Canoe Area Wilderness, Minnesota	126	125
Voyageurs National Park, Minnesota	182	180
Isle Royale National Park, Michigan	237	238
Forest County Potawatomi Community Reservation, Wisconsin	261	263

Non-industrial primary pollutants in the area may include particulates (i.e., dust) generated from farming, traffic on unpaved roads, wind erosion, and smoke from burning trash or ground cover. These sources produce pollution that is temporary and intermittent.

3.1.2 Environmental Consequences

The following sections provide potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to air quality.

3.1.2.1 Proposed Action Alternatives

Air dispersion modeling was performed using the latest version of AERMOD (Version 18081). The AERMOD model is an EPA-approved, steady-state Gaussian air dispersion model that is designed to estimate downwind ground-level concentrations from single or multiple sources using detailed meteorological data. AERMOD is a model currently approved for industrial sources and Prevention of Significant Deterioration (PSD) permits. The WDNR requested that the Owners demonstrate regulatory compliance through its use.

Construction and operation of the proposed 625-megawatt combined-cycle combustion turbine and associated support equipment at either Project Site would be subject to applicable state and Federal air quality regulations. These regulations would apply to the Project equipment, which would include a combustion turbine, a finned heat exchanger for cooling, an auxiliary boiler, two natural gas-fired gas heaters (natural gas heater), an emergency diesel fire pump, an emergency diesel generator, and fuel oil storage tanks. Regulations applicable to the proposed Project are Wisconsin Administrative Code (WAC) provisions, Title V Operating Permits, PSD review, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants and Maximum Achievable Control Technology (NESHAP).

3.1.2.1.1 Construction

During construction of the plant, transmission line, and switching station, small amounts of air pollutants, including GHGs, would be temporarily generated. Temporary increases in fugitive dust from ground disturbing activities and combustive emissions from construction equipment would be generated at the generation site, along the transmission line ROW, and at the switching station site. These construction emissions would be temporary in nature, would fall off rapidly with distance from construction areas, and are not anticipated to result in long-term impacts. Once the construction activities are completed, construction-related emissions would cease.

Project Alternatives using the Western Transmission Route and/or the Hill Avenue Site (Hill Avenue 1, Hill Avenue 2, and Nemadji River 2) would have slightly longer transmission line which would result in a slight increase in construction related air pollutants as construction would likely take additional time to complete.

3.1.2.1.2 Operation

The proposed 625-megawatt combined-cycle combustion turbine and associated support equipment requires a PSD major source construction air permit. The PSD permit application contains the following analyses/assessments regarding emissions of regulated pollutants associated with the construction and operation of the Project:

- Evaluation of ambient air quality in the area for each regulated pollutant for which the Project will result in a significant net emissions increase
- Demonstration that emissions increases resulting from the Project will not cause or contribute to an increase in ambient concentrations of pollutants exceeding the remaining available PSD increment and the NAAQS
- Assessment of any adverse impacts on soils, vegetation, visibility, and growth in the area
- A Best Available Control Technology (BACT) analysis for each regulated pollutant for which the Project will result in a significant net emissions increase

The Project would include a combustion turbine, a dry cooling heat rejection system (finned heat exchanger), an auxiliary boiler, two natural gas-fired gas heaters (natural gas heater), an emergency diesel fire pump, an emergency diesel generator, and fuel oil storage tanks. The WDNR provided notification of the air permit approval on September 1, 2020 (Appendix A).The Owners will comply with the issued WDNR construction air permit that includes emission limitations, monitoring requirements, and other terms and conditions. A variety of strategies to control emissions from Project equipment would be implemented. These are discussed below for each source that has emissions of air contaminants.

The combustion turbine and duct burner would be controlled as follows:

- NO_x – Low-NO_x burners (natural gas), SCR, water injection (fuel oil)
- CO – Good combustion practices,[6] oxidation catalyst

[6] "Good combustion practices" and "good combustion control measures" entail operating the units according to manufacturer's recommendations and generally accepted industry practices thereby achieving thermal efficiencies as designed. This will vary amongst the various emission units, thus manufacturer's recommended operation for good combustion will be followed separately for each unit, once final decisions are made on vendor make/model.

- Particulate matter (PM)/particulate matter less than 10 microns (PM_{10})/ particulate matter less than 2.5 microns ($PM_{2.5}$) – Combustion controls, low ash fuels
- VOC – Good combustion practices, oxidation catalyst
- Sulfuric acid (H_2SO_4) mist – Good combustion practices and low sulfur fuel
- Greenhouse gases (equivalent carbon dioxide [CO_2e]) – Use of natural gas and ultra-low sulfur diesel as a fuel, monitoring and control of excess air, efficient turbine design, catalytic oxidation
- Opacity – Low NO_x burners, SCR, combustion controls, low ash fuels

The natural gas heaters would be controlled as follows:

- NO_x –Ultra-low NO_x burners, good combustion practices, clean fuel, flue gas recirculation
- CO – Good combustion practices, clean fuel
- Particulate matter (PM)/particulate matter less than 10 microns (PM_{10})/ particulate matter less than 2.5 microns ($PM_{2.5}$) – Good combustion practices, clean fuel
- VOC – Good combustion practices, clean fuel
- Sulfuric acid (H_2SO_4) mist – Good combustion practices, clean fuel
- Greenhouse gases (equivalent carbon dioxide [CO_2e]) – Good combustion practices, clean fuel
- Opacity – Good combustion practices, clean fuel

There are no air emission from dry cooling (finned heat exchanger).

The emergency diesel-fired fire pump would be controlled as follows:

- NO_x – Good combustion practices, clean fuel
- CO – Good combustion practices, clean fuel
- Particulate matter (PM)/particulate matter less than 10 microns (PM_{10})/ particulate matter less than 2.5 microns ($PM_{2.5}$) – Good combustion practices, clean fuel
- VOC – Good combustion practices, clean fuel
- Sulfuric acid (H_2SO_4) mist – Good combustion practices, clean fuel
- Greenhouse gases (equivalent carbon dioxide [CO_2e]) – Good combustion practices, clean fuel
- Opacity – Good combustion practices, clean fuel

The emergency diesel-fired generator would be controlled as follows:

- NO_x – Good combustion practices, clean fuel
- CO – Good combustion practices, clean fuel

- Particulate matter (PM)/particulate matter less than 10 microns (PM_{10})/ particulate matter less than 2.5 microns ($PM_{2.5}$) – Good combustion practices, clean fuel
- VOC – Good combustion practices, clean fuel
- Sulfuric acid (H_2SO_4) mist – Good combustion practices, clean fuel
- Greenhouse gases (equivalent carbon dioxide [CO_2e]) – Good combustion practices, clean fuel
- Opacity – Good combustion practices, clean fuel

The following sulfur hexafluoride (SF_6) containing equipment is proposed at each site:

- Three 345-kV circuit breakers are proposed for the substations located at each site. The substation circuit breakers will be monitored via a pressure switch and alarms.
- Two 19-kV (estimate) low-side generator circuit breakers will be located in the plant at each site before the step-up transformers that feed the onsite switchyard. The generator circuit breakers will be monitored via a pressure switch and alarms.

Each of the circuit breakers will contain SF_6. SF_6 is a potent greenhouse gas with a global warming potential of 22,800 times that of CO_2. The circuit breakers are state-of-the-art and will be sealed and, therefore, SF_6 leakage will be minimized. The circuit breakers will each be equipped with a two-stage pressure switch with a low pressure alarm to indicate a potential leak. Modern circuit breakers and switches are designed as totally enclosed-pressure containing systems with far lower potential for SF_6 emissions than older circuit breakers. The current International Electrotechnical Commission (IEC) standards are that new equipment be built to low leakage limits (less than 0.5 percent per year). The effectiveness of these leak-tight closed systems is further enhanced by equipping them with an alarm that provides a warning when SF_6 has leaked from the breaker. The Project will also include six disconnect switches at each substation site; however, the switches are open air type switches and do not contain SF_6.

The NAAQS are set by the EPA to protect human health and public welfare. The PSD increment constitutes the maximum allowable ambient air quality concentration increase that may occur for a given pollutant above a baseline concentration. To determine if the Project would contribute to a NAAQS or PSD Class II increment exceedance, the Project was modeled along with the appropriate existing sources in the area (Table 3-2 and Table 3-3). This was performed for the Nemadji River Site and the Hill Avenue Site in two phases – an initial screen and then a refined model for pollutants with averaging periods that exceeded the modeling significance level.

A Class I Increment screening analysis for the Nemadji River Site and the Hill Avenue Site to determine if further analysis is required was performed for the four Class I areas and one non-Federal Class I area

(Table 3-4). Based on the screening analysis for both sites, it was determined that the impacts from the Project would not significantly impact the PSD Class I Increment at the surrounding Class I areas and do not require further analysis (SSE, Dairyland, and Burns & McDonnell Engineering, 2019a).

Based on the conservative modeling results for both sites, it has been predicted that the Project would have minimal effects on the NAAQS and PSD Class I and Class II Increment (Table 3-2, Table 3-3, and Table 3-4; SSE, Dairyland, and Burns & McDonnell Engineering, 2019a).

Table 3-2: NAAQS Modeling Results

Site	Pollutant	Averaging Period	UTM Coordinates[a] Easting (Meters)	UTM Coordinates[a] Northing (Meters)	Year	Predicted Concentration micrograms per cubic meter (µg/m³)	Background Concentration micrograms per cubic meter (µg/m³)	Total Concentration micrograms per cubic meter (µg/m³)	NAAQS micrograms per cubic meter (µg/m³)
Nemadji River Site	NO_2	Annual	570,600.0	5,170,800.0	2013	--[b]	--[b]	56.8	100
Nemadji River Site	NO_2	1-hour	565,500.0	5,181,500.0	5 years	2,858.7	--[b]	164.9[c]	188
Nemadji River Site	CO	8-hour	572,275.0	5,171,075.0	2011	4,990.0	1,191.20	4,049.94	10,000
Nemadji River Site	CO	1-hour	572,875.0	5,171,525.0	2015	6.5	1,362.70	6,352.74	40,000
Nemadji River Site	PM_{10}	24-hour	569,750.0	5,175,250.0	2014	0.9	47	53.5	150
Nemadji River Site	$PM_{2.5}$	Annual	569,750.0	5,175,250.0	5 years	4.7	9.4	10.3	12
Nemadji River Site	$PM_{2.5}$	24-hour	570,000.0	5,175,250.0	5 years	--[b]	23.6	28.3	35
Hill Avenue Site	NO_2	Annual	570,600.0	5,170,800.0	2013	--[b]	--[b]	56.87105	100

Site	**Pollutant**	**Averaging Period**	**UTM Coordinates**[a] Easting (Meters)	**UTM Coordinates**[a] Northing (Meters)	**Year**	**Predicted Concentration** micrograms per cubic meter ($\mu g/m^3$)	**Background Concentration** micrograms per cubic meter ($\mu g/m^3$)	**Total Concentration** micrograms per cubic meter ($\mu g/m^3$)	**NAAQS** micrograms per cubic meter ($\mu g/m^3$)
Hill Avenue Site	NO_2	1-hour	565,500.0	5,181,500.0	5 years	3,402.9	--[b]	164.90665[c]	188
Hill Avenue Site	CO	8-hour	570,719.50	5,172,533.90	2011	5,530.0	1,191.20	4,594.09	10,000
Hill Avenue Site	CO	1-hour	571,800.00	5,172,200.00	2011	6.5	1,362.70	6,892.72	40,000
Hill Avenue Site	PM_{10}	24-hour	569,750.0	5,175,250.0	2014	0.9	47	53.5	150
Hill Avenue Site	$PM_{2.5}$	Annual	569,750.0	5,175,250.0	5 years	4.7	9.4	10.3	12
Hill Avenue Site	$PM_{2.5}$	24-hour	570,000.0	5,175,250.0	5 years	4.7	23.6	28.3	35

(a) UTM = Universal Transverse Mercator: NAD83
(b) HROFDY & MONTH background data used; therefore, the modeled impact is presented as project impacts and background combined.
(c) ARM2 methodology was applied to the model.

Table 3-3: PSD Class II Increment Modeling Results

Site	Pollutant	Averaging Period	UTM Coordinates[a] Easting (Meters)	UTM Coordinates[a] Northing (Meters)	Year	Predicted Concentration micrograms per cubic meter (µg/m^3)	PSD Class II Increment micrograms per cubic meter (µg/m^3)
Nemadji River Site	NO_2	Annual	570,600.0	5,170,800.0	2013	8.2	25
Nemadji River Site	PM_{10}	24-hour	572,425.0	5,171,075.0	2011	8.5	30
Nemadji River Site	$PM_{2.5}$	Annual	572,641.5	5,170,971.8	2013	0.6	4
Nemadji River Site	$PM_{2.5}$	24-hour	572,425.0	5,171,075.0	2011	8.5	9
Hill Avenue Site	NO_2	Annual	570,600.0	5,170,800.0	2013	8.2	25
Hill Avenue Site	PM_{10}	24-hour	570,719.5	5,172,533.9	2011	8.6	30
Hill Avenue Site	$PM_{2.5}$	Annual	570,644.7	5,172,471.2	2011	0.6	4
Hill Avenue Site	$PM_{2.5}$	24-hour	570,719.5	5,172,533.9	2011	8.6	9

(a) UTM = Universal Transverse Mercator: NAD83

Table 3-4: Class I Modeled Screening Impacts and Class I Significant Impact Level

Site	Pollutant	Averaging Time	Maximum Modeled Concentration (µg/m^3)	Class I Significant Impact Level[1]
Preferred Site	NO_2[a]	Annual	0.03	0.1
	PM_{10}	24-hour	0.26	0.3
		Annual	0.02	0.2
	$PM_{2.5}$	24-hour	0.22	0.27[2]
		Annual	0.02	0.05[2]
Alternate Site	NO_2[a]	Annual	0.03	0.1

	PM_{10}	24-hour	0.3	0.3
		Annual	0.02	0.2
	$PM_{2.5}$	24-hour	0.23	0.27[2]
		Annual	0.02	0.05[2]

Sources:
(1) EPA. Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR) Proposed Rulemaking, July 23, 1996. (61 FR 38249).
(2) EPA Memorandum, 2018a, "Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permitting Program."
(a) Modeled as NO_x.

During operation, employees would travel to the Project site, creating vehicle emissions at the beginning and end of work shifts. Up to 25 full-time permanent employees would be hired for the Project. Inspections and maintenance on the transmission line and switching station would also require employees to travel to the area, creating vehicle emissions. These vehicle emissions would be intermittent in nature, would fall off rapidly with distance from Study Area. As such, it is not anticipated that vehicle emissions during operation of the Project would contribute considerably to air quality impacts in the area.

A variety of emissions resulting from Project operation are considered GHGs. These may include water vapor, carbon dioxide (CO_2), methane, nitrous oxide, ozone, hydrocarbons, and chlorofluorocarbons. GHG emissions from the Project combustion equipment are due to CO_2, methane (CH_4), and nitrogen oxide (N_2O) emissions. These calculated GHG emissions were ratioed with their appropriate global warming potential (GWP) and summed to obtain the overall project carbon dioxide equivalent (CO_2e) emissions. Consistent with Wisconsin and EPA guidance, air dispersion modeling of CO_2e was not conducted since there is no modeling threshold for this pollutant. Also as previously noted, equipment containing SF_6, a GHG, will be part of this Project. Due to the limited leakage anticipated from SF_6 containing equipment, only limited, if any, air quality and climate impacts are expected from SF_6 from the Project.

3.1.2.1.3 Summary of Air Impacts

The existing air quality in the Douglas County area is designated as attainment or unclassifiable in regard to the NAAQS for all criteria pollutants. Construction of the Project has the potential for short-term adverse effects on air quality in the immediate area around the site. Minor and temporary generation of criteria pollutants and GHGs would occur during construction. Based on modeling of Project operation, it is anticipated that the Project would not affect the attainment status for Douglas County. The WDNR provided notification of the air permit approval on September 1, 2020 (Appendix A).The Owners will comply with the issued WDNR construction air permit that will include emission limitations, monitoring requirements, and other terms and conditions. Based on the analyses above, it is anticipated that the

Project would not cause or contribute to significant adverse ambient air quality impacts. The Class II modeling also considered cumulative effects of other existing and proposed sources, indicating the Project would not cumulatively contribute to significant adverse air quality impacts.

3.1.2.2 No Action Alternative

The No Build Alternative would have no short-or long-term impacts to air because no construction or operation would occur.

3.1.3 Mitigation

During construction, steps will be taken to prevent excessive emissions of particulate matter resulting from construction activities and vehicular traffic. These steps may include compacting, seeding, covering, paving, wetting, sweeping, or otherwise controlling particulate matter emissions.

Post-construction, the areas disturbed during construction will receive final cover to eliminate dust. All exposed soil areas will be seeded to grow grass, lesser-traveled road surfaces will be graveled and compacted, and the new main roads on-site will be surfaced with asphalt. The roads will be monitored and either wetted or swept to clean any fugitive dust that may occur due to on-site wheeled traffic.

The SCR and oxidation catalyst will be integrated into the HRSG design by the supplier of the HRSG. The HRSG supplier will also provide ports in the stack to monitor HRSG stack emissions. The CEMS will monitor the HRSG NO_x stack emissions through these ports.

The Project will require a PSD major source construction air permit pursuant to the requirements specified in the WAC Chapter Natural Resources (NR) 405. The PSD permit application contains the following analyses/assessments regarding emissions of regulated pollutants associated with the construction and operation of the Project:

- Evaluation of ambient air quality in the area for each regulated pollutant for which the Project will result in a significant net emissions increase
- Demonstration that emissions increases resulting from the Project will not cause or contribute to an increase in ambient concentrations of pollutants exceeding the remaining available PSD increment and the NAAQS
- Assessment of any adverse impacts on soils, vegetation, visibility, and growth in the area
- A BACT analysis for each regulated pollutant for which the Project will result in a significant net emissions increase

The Owners submitted the PSD permit application for the Project to WDNR and will adhere to conditions and requirements of the application during operation of the Project. The WDNR provided notification of the air permit approval on September 1, 2020 (Appendix A).

3.2 Biological Resources

The biological resources of the area surrounding the Project along with the impacts on biological resources as a result of the Project are discussed in the following sections.

3.2.1 Affected Environment

The following sections discuss vegetation, wildlife, and special status species within the Study Area.

3.2.1.1 Vegetation

White spruce (*Picea glauca*), balsam fir (*Abies balsamea*), and eastern white pine (*Pinus strobus*), species that were the dominant canopy trees prior to the Cutover of the late 1800's (WDNR, 2010), are absent from the Study Area. Based on the results of the field surveys that occurred for the Project, the native boreal coniferous forests that would have historically occurred within the Study Area have been replaced by more monotypic stands of quaking aspen (*Populus tremuloides*). The understory of the quaking aspen dominated forests in the Study Area include shrub species such as common buckthorn (*Rhamnus cathartica*) shrubs, gray or speckled alder (*Alnus incana*) shrubs, western brackenfern (*Pteridium aquilinum*), bigleaf aster (*Eurybia macrophylla*), and stinging nettle (*Urtica dioica*). Within the Study Area, the quaking aspen trees are typically up to 20 to 30 feet tall and 12 inches diameter at breast height.

The grasslands that are within the Study Area occurred within previously disturbed areas or existing, maintained utility corridors. These areas were typically dominated by reed canarygrass (*Phalaris arundinacea*). Other species present within the upland grasslands of the Study Area include Canada goldenrod (*Solidago canadensis*) and Canada thistle (*Cirsium arvense*). Wetland grasslands typically include woolgrass (*Scirpus cyperinus*) and broadleaf cattail (*Typha latifolia*). Canada thistle is an invasive species along with ribbon grass (*Phalaris arundinacea*), common buckthorn (*Rhamnus cathartica*), and garden heliotrope or Valerian (*Valeriana officinalis*), all of which are also observed during surveys.

3.2.1.2 Wildlife

Different species thrive under different conditions, from old growth to recently disturbed. The Study Area has been previously disturbed by the installation of underground and overhead utilities, industrial and commercial areas, past logging, and the nearby City of Superior. The forests within the vicinity of the study area are dominated by quaking aspen. Many species likely to be found in the Study Area prefer

quaking aspen forests because of the cover and food that dense stands of quaking aspen provide. White-tailed deer (*Odocoileus virginianus*), eastern cotton tails (*Sylvilaagus floridanus*), and North American beaver (*Castor canadensis*) also consume the bark, catkins, leaves, and sprouts of quaking aspen (WDNR, 2019a). Ruffed grouse (*Bonasa umbellus*) prefer aspen forests for cover for their broods and food, consuming catkins during winter months. Other species that are tolerant of human activity and thrive in developed areas and adjacent forests include black-capped chickadees (*Poecile atricapillus*), red-brested and white-breasted nuthatches (*Sitta canadensis* and *S. carolinensis*), downy and hairy woodpeckers (*Dryobates pubescens* and *D. villosus*), red fox (*Vulpes vulpes*), and the common racoon (*Procyon lotor*).

3.2.1.3 Special Status Species

According to the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website, there are seven threatened or endangered species protected under the Endangered Species Act that are known or likely to occur in Douglas County (Table 3-5; Appendix B); Of those seven federally-listed species, four are listed as threatened and three are listed as endangered. Four of the federally-listed species are also listed by the WDNR as either endangered or threatened; three are considered endangered and one is considered threatened by the State of Wisconsin. RUS initiated consultation with USFWS under Section 7 of the Endangered Species Act and prepared a Biological Assessment. The Biological Assessment was submitted for USFWS review and concurrence on June 24, 2020. The USFWS concurred with the Biological Assessment on September 2, 2020, indicating potential impacts to the northern long-eared bat would be covered under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern long-eared Bat and Activities Excepted from Take Prohibitions. USFWS determined the project would have no impacts to other identified species (Appendix B).

In addition to the seven federally listed threatened or endangered species, nesting migratory birds, which are protected under the Migratory Bird Treaty Act (MBTA) (Federal Register, 2013), and bald and golden eagles, which are protected under the Bald and Golden Eagle Protection Act (BGEPA), could occur in the Study Area. Endangered Resources (ER) Reviews of the Study Area were completed by a Wisconsin certified environmental reviewer. The ER Reviews were submitted to the WDNR Bureau of Endangered Resources and responses, including the Certified ER Reviews (ER Log number 20-415), was received on June 2, 2020.

Table 3-5: Threatened and Endangered Species in Douglas County

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat Requirements[3]
Canada lynx	*Lynx canadensis*	LT	SC/FL	The distribution of lynx in North America is closely associated with the distribution of North American boreal forest. The range of lynx populations extends into the boreal/hardwood forest ecotone in the eastern United States. Within this forest type, lynx are most likely to occur in areas that receive deep snow and have high-density populations of snowshoe hares, the principal prey of lynx. The Canada lynx is not tracked by NHI.
Gray wolf	*Canis lupus*	LE	SC/FL	The wide range of habitats in which gray wolves can thrive reflects their adaptability as a species, and includes temperate forests, mountains, tundra, taiga, and grasslands. Most areas of large contiguous forest in northern and central Wisconsin appear suitable for wolves, although they do more readily select the most remote areas on the landscape for establishing territories and raising pups. Wolf packs select areas with a high percentage of forest and other wildlands (generally > 90% wildlands), low densities of roads, low human densities, and few farms. Wolves seem to avoid urban areas, lakes with extensive development, and other developed landscapes.
Northern long-eared bat	*Myotis septentrionalis*	LT	THR	Northern long-eared bat (NLEB) habitat use changes over the course of the year and varies based on sex and reproductive status. During the summer, NLEB forage and roost in forests and woodland stream corridors where snags and tree species with exfoliating bark are present. NLEB roost under exfoliating bark and in the cavities of live trees and snags with a diameter at breast height (dbh) of three inches or greater. NLEB forage for insects in forests, along stream corridors, over ponds, and at the edges of forests and farm fields. This species has also been found roosting in structures like barns and sheds. During the winter, NLEB hibernate in caves and abandoned mines.
Kirtland's warbler	*Setophaga kirtlandii*	LE	END	The Kirtland's warbler is a songbird that nests in young jack pine stands in Michigan, Wisconsin, and Ontario, Canada. It requires large stands of young, dense jack pine forest at least 80 acres in size, but prefers stands of 300 to 400 acres, or larger. They migrate from their nesting grounds to the southeastern coast of the United States on their way to wintering grounds in the Bahamas. The recommended avoidance period is from May 1 - August 30.
Piping plover	*Charadrius melodus*	LE	END	The piping plover prefers large isolated cobble beaches on the shores of Lakes Michigan and Superior. The recommended avoidance period is from late May to mid-July. Additionally, the USFWS has designated critical habitat for the piping plover along portions of the shoreline of Lake Superior in Douglas County.

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat Requirements[3]
Rufa red knot	*Calidris canutus rufa*	LT	SC/FL	Rufa Red Knot is an Arctic breeder that occurs uncommonly in Wisconsin during migration along coastal sandy beaches of Lake Superior and Lake Michigan from mid-May to early June in spring and from mid-July to early November in fall. Since this subspecies does not breed in Wisconsin, avoidance dates do not apply. The red knot is not tracked by NHI.
Fassett's locoweed	*Oxytropis campestris var. chartacea*	LT	END	Fassett's Locoweed is found in sandy, fluctuating lakeshores. Its appearance is sporadic depending on water level. Blooming occurs early May through late June; fruiting occurs late June through late July. The optimal identification period for this species is late May through late July.

Source: USFWS Information for Planning and Consultation (IPac) Website (https://fpdss.fws.gov/ipac/) Species List for Douglas County and WDNR Wisconsin Natural Heritage Working List (https://dnr.wi.gov/topic/NHI/documents/NHIWorkingList.pdf)

[1] Federal Status: LT = Threatened; LE = Endangered; Federally threatened and endangered species are protected under the Federal Endangered Species Act (ESA).

[2] State Status: END = Endangered; THR = Threatened; SC = Special Concern; SC/FL = federally protected as endangered or threatened, but not so designated by DNR. Species state-listed as Endangered (END) or Threatened (THR) are legally protected (Ch. 29.604 Wis.Stats.). The taking of an END or THR animal (whether vertebrate or invertebrate) is prohibited on any lands or waters (public or private) without WDNR authorization. The taking of an END or THR plant is prohibited only on public lands, except in the course of forestry, agriculture practices, or in the construction, operation, or maintenance of a utility facility.

[3] Habitat Requirements includes habitat information taken from the USFWS, Wisconsin DNR Bureau of Endangered Resources Biodiversity webpages, Wisconsin All-Bird Conservation Plan, Minnesota DNR Rare Species Website, and NatureServe species accounts for each species, natural community, and other feature.

3.2.2 Environmental Consequences

The following sections provide potential environmental consequences of the Project Action Alternatives and No Action Alternative related to biological resources.

3.2.2.1 Proposed Action

Construction and operation of the Project would result in the permanent loss of vegetation communities, wildlife habitat, and plant and animal populations within the construction footprint. Additionally, some of the wildlife communities that occur at and in the vicinity of the Project would be temporarily displaced to surrounding areas where habitat is available.

Existing vegetation would be altered at and along each Action Alternative. Construction of the proposed project at the Nemadji River Site would permanently impact approximately 7.1 acres of forest (approximately 4.6 acres of the quaking aspen forest in the northeastern portion of the site and approximately 2.5 acres of the mixed quaking aspen and black willow forest in the southeastern portion of the site) as well as impact approximately 7.2 acres of the forage grassland and wetland meadow communities (Figure 2-8). The proposed project footprint at the Nemadji River Site avoids clearing trees and vegetation along the banks, immediately adjacent to the Nemadji River. A vegetation buffer with a minimum width of 100 feet would be maintained between the proposed project footprint and the Nemadji River. For the Nemadji River Site, the loss of plant and animal habitat would occur adjacent to existing areas that have already been developed. The Nemadji River Site is adjacent to an existing tank farm and utility corridors. This area has experienced some level of habitat fragmentation associated with development in and around the City of Superior.

Based on the results of a site survey that was conducted in October 2017, the Hill Avenue Site consists entirely a lowland scrub/shrub wetland community. No forest or grassland community occurs at the Hill Avenue Site. The Eastern Transmission Route for the transmission line would likely be constructed within an existing utility corridor that contains a natural gas pipeline and overhead electrical transmission lines; however, approximately 23.1 acres of woody vegetation would be cleared from forested lands and shrubland habitats to widen the corridor and accommodate the additional line. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.

The Western Transmission Route would require more clearing in forested areas for new ROW in addition to minor impacts to forested land along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 79.1 acres of the Western Transmission Route in forested lands and

shrubland habitats. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.

The Hill Avenue Site Route would require clearing in forested areas for new ROW and along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 14.3 acres of the Hill Avenue Site Route in forested lands and shrubland habitats.

Construction of either the Superior Switching Station or the Parkland Switching Station would impact approximately 14 acres of woody vegetation in forested lands and shrubland habitats. No grassland habitat is present within the footprint of either switching station site.

Temporary impacts from the Project could occur as a result of the increased presence of human and vehicle disturbance during construction. Temporary displacement of species might occur due to increased human activity in the area, vehicle traffic, and material transfer. Impacts to wildlife as a result of vehicle collisions would also be an increased risk during construction and operation. The majority of species affected would be mobile and able to move away from any impacts, but others could be vulnerable. Permanent impacts during the construction and maintenance of the Project would occur for some wildlife currently utilizing the ROW due to habitat loss. Wildlife permanently impacted could include deer, racoon, fox, nesting birds, invertebrates, small mammals, reptiles, and amphibians. It is anticipated that most of the impacts to grasslands along the transmission route would only be temporary construction impacts to existing grassland habitat along existing utility corridors. Some permanent impacts to grassland habitats would occur where transmission line poles and foundations would be set. The transmission line ROW would be revegetated as described in Section 3.2.3.4. Wildlife previously using the ROW may return to the area after temporary impacts subside.

3.2.2.2 Special Status Species

The following sections discuss the potential impact of the Project on each of the protected species listed above in Table 3-5 as well as eagles, other migratory birds, and invasive species.

3.2.2.2.1 Canada Lynx

The Project is not anticipated to affect the Canada lynx because suitable habitat for the Canada lynx, which includes large tracks of boreal/hardwood forest with high-density populations of snowshoe hares, is not present within the Study Area. The Study Area includes forest separated by public roads and developed areas in the City of Superior and surrounding townships. The Canada lynx is not tracked by WDNR NHI.

3.2.2.2.2 Gray Wolf

The Project is not anticipated to affect the gray wolf because large contiguous tracks of forest are not present within the Survey Area. Forested areas within the Survey Area are separated by rural residences, public roads, and developed areas in the City of Superior and surrounding townships. The gray wolf is known to occur in Douglas County, away from populated areas in and around the City of Superior. According to WDNR NHI data, no den sites have been recorded in the vicinity of the Survey Area.

3.2.2.2.3 Northern Long-eared Bat

Forested areas adjacent to the Project could provide potential habitat for the northern long eared bat. Snags that include potential summer roost trees for the northern long-eared bat were observed during the site visit along Bear Creek, adjacent to Study Area. No potential summer roost habitat was observed at either proposed facility site. No caves were identified within the Study Area.

3.2.2.2.4 Kirtland's Warbler

The Project is not anticipated to affect the Kirtland's warbler because no jack pine stands are present in the Study Area.

3.2.2.2.5 Piping Plover

The Project is not anticipated to affect the piping plover because no suitable beach or shore habitat is present in the Study Area. Additionally, the Project would not result in the adverse modification to the designated critical habitat for the piping plover that occurs along the shores of Lake Superior because the Project does not occur within or adjacent to the designated critical habitat for the piping plover.

3.2.2.2.6 Rufa Red Knot

The Project is not anticipated to affect the rufa red knot because no beach or shore habitat is present in the Study Area.

3.2.2.2.7 Fassett's Locoweed

The Project is not anticipated to affect Fassett's locoweed because no open sandy lakeshores or beach habitat is present in the Study Area.

3.2.2.2.8 Eagles

The BGEPA is enforced by the USFWS. Both the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) may occur in Douglas County. In the State of Wisconsin, bald eagles are generally found nesting or roosting in forested areas near large bodies of water. Potential bald eagle nesting habitat is present along Nemadji River; however, no bald eagle nests were observed during field surveys that

occurred within the Study Area. Golden eagles are considered a nonbreeding, infrequent inhabitant in Wisconsin and are found wintering in more rugged, bluff areas along major rivers and the edges of woodland-scrub habitat in valley floors, riparian areas, and over areas dominated by shrub. No golden eagle nests were observed during field surveys that occurred within the Study Area.

3.2.2.2.9 Migratory Birds

The MBTA is enforced by the USFWS. Migratory birds generally occupy areas of breeding and foraging habitats. Douglas County has woodland, wetland, and agricultural areas that provide suitable nesting and foraging habitats for a variety of migratory birds and waterfowl during the breeding, migration, and overwintering seasons.

3.2.2.2.10 Invasive Species

An invasive species survey identified invasive plant species along the transmission route alternatives and near the Switching Station Alternatives. The review was completed in September 2016 and October 2017 during wetland delineation field surveys. The dominate invasive plant species observed was reed canarygrass (*Phalaris arundinacea*) which is listed as a nonregulated wetland invasive species by the WDNR. Canada thistle, common buckthorn, and garden heliotrope or Valerian were also observed during surveys.

WDNR has also indicated that emerald ash borer was detected in Douglas County in 2013. One invasive plant species, reed canarygrass, was identified along all portions of the transmission line route and switching station site during the wetland delineation field. The three other invasive plant species were more sparsely distributed and were not observed at each Project component.

3.2.2.3 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to biologic resources at or in the vicinity of the Study Area because no construction and associated disturbance and clearing would occur.

3.2.3 Mitigation

The following sections describe the avoidance, minimization measures, and WDNR-identified actions for the Project to help conserve federally protected species, Wisconsin's rare species, and high-quality natural communities.

3.2.3.1 Northern Long-eared Bat

Reproductive females and their young are highly vulnerable to mass mortality during their maternity period (June 1 – July 31) because they aggregate in maternity colonies. Young northern long-eared bats

start flying by 18 to 21 days after birth and therefore cannot leave the roost for several weeks after birth (USFWS 2015; Federal Register 2016). To follow the USFWS 4(d) rule for the Northern Long-Eared Bat, one of the following options should be implemented to avoid take of the NLEB:

1. Assume the bats are present within suitable habitat and avoid removal of known occupied maternity roost trees or any trees within 150 feet of a known occupied maternity roost tree from June 1 – July 31. For suitable habitat that occurs outside of 150 feet of a known occupied maternity roost tree or outside of 0.25 miles of a NLEB hibernaculum, implement the avoidance measures outlined in the Cave Bat Broad Incidental Take Permit and Authorization. According to the WDNR, if the Project can implement these avoidance measures, there will not be any further Project restrictions related to the NLEB. If the Project cannot completely avoid take of the NLEB, WDNR recommends that the BNHC Incidental Take Coordinator be contacted to determine possible Project-specific avoidance measures. If take cannot be avoided, consultation with the USFWS will be necessary.

2. Not assume the NLEB is present within suitable habitat along the alternative routes and have a qualified biologist conduct surveys to determine if the NLEB is present (a copy of the survey biologist's credentials and a copy of the survey protocols must be sent to the WDNR Endangered Resources Review Program for approval prior to the initiation of surveys). According to the WDNR, if the NLEB is not found within the Study Area as a result of the surveys, there will be no Project restrictions related to these species. If surveys are conducted and the NLEB or maternity colonies are detected, option 1 must be followed. Survey results should be submitted to the Endangered Resources Utility Liaison.

3.2.3.2 Eagles

While the bald eagle was removed from the Federal Endangered Species list in August 2007, it is still federally protected by the BGEPA and the MBTA. Golden eagles are considered a nonbreeding, infrequent inhabitant in Wisconsin. Eagles can be sensitive to human disturbance, especially during the breeding and nesting seasons. Per the USFWS National Bald Eagle Management Guidelines (2007), human activity within 660 feet of an active nest should be avoided from January 15 – July 30. No bald eagle nests were observed during field surveys that occurred within the Study Area; however, if a bald eagle nest should be identified within the Survey Area, the USFWS National Bald Eagle Management Guidelines (2007) would be followed.

3.2.3.3 Invasive Species

In compliance with WAC Chapter NR 40 Invasive Species Identification, Classification and Control Rule, the Owners will mitigate the potential to spread invasive plant species during Project activities. Invasive plant species locations will be shown on the construction plans and flagged on-site to avoid during construction, where feasible. In areas where impacts to the invasive plant species are unavoidable, equipment will be cleaned prior to moving from an infested area to a non-infested area.

Equipment cleaning will primarily be conducted by brush, broom, or other hand tools along the Project. The Owners may periodically require equipment to be cleaned by compressed air. Equipment used during ground disturbing activities will be cleaned prior to leaving the Project ROW to reduce the risk of spreading invasive plant species beyond the Project ROW.

Construction equipment brought on-site will be required to be free of muck and invasive species. In accordance with Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) Chapter 20, WAC, seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities will be avoided.

3.2.3.4 Revegetation

Construction activities will include clearing, grubbing, grading, excavation, infrastructure construction, and re-vegetation. In areas were restoration is required, seeding and mulching will be completed in accordance with WDNR Technical Standard 1059 – Seeding for Construction Site Erosion Control. The seed mix used will be appropriate to the surrounding area and similar to pre-construction conditions. The seedbed will be adequately prepared to promote successful germination. Seed mixes will not contain invasive species. Permanent seed mixtures will be selected to produce dense vegetation based on soil and site conditions, along with intended final use. Temporary seeding will be applied to areas of exposed soil where the establishment of vegetation is desired, but the areas have not been brought to final grade or on which land-disturbing activities will not be performed for a period greater than 30 days, but vegetative cover is required for less than 1 year. Areas needing protection during periods when permanent seeding is not applied, will be seeded with annual species.

Upon completion of restoration, each work location will be monitored to document stabilization and re-vegetation. Monitoring will continue until vegetative cover reaches 70 percent of previous cover.

3.2.3.5 Migratory Birds

The MBTA prohibits the take of migratory birds and their eggs, young, or active nests. The loss of plant and animal habitat within the footprint of the proposed Project, would primarily occur adjacent to existing

areas that have already been developed or are associated with existing utility and public road ROWs. The Nemadji River Site is adjacent to an existing tank farm and utility corridors and this area has experienced some level of habitat fragmentation associated with development in and around the City of Superior. The Eastern Transmission Route for the transmission line would be constructed within an existing utility corridor that contains a natural gas pipeline and overhead electrical transmission lines or the Western Transmission Route would be constructed parallel to existing linear infrastructure; however, woody vegetation would be cleared from forested lands and shrubland habitats along the edges of the existing utility corridor to widen the corridor and accommodate the additional line. During the extent of the Project, trees that would be removed would be done so outside of the migratory bird nesting period for Wisconsin (May 15 to August 1) to avoid impacts to nesting migratory birds (U.S. Department of Agriculture, 2018).

3.3 Cultural Resources

The cultural resources of the Archaeological Study Area and the potential impacts to cultural resources as a result of the Project are discussed in the following sections. The Archaeological Study Area is a 0.5-mile buffered area from the alternative transmission line routes (Eastern and Western), switching stations (Parkland and Superior), and generation sites (Nemadji River Site and Hill Avenue Site). The Eastern Transmission Route ROW, Parkland Switching Station, and Nemadji River Site footprint have been subject to a phase I field survey and the results submitted to the WHS for Section 106 review. The combined surveyed area is the Area of Potential Effects (APE) (see Gottsfield et al. 2019). RUS is the lead agency for the Project. RUS defined the APE, and the SHPO concurred with the APE boundaries in March 14, 2019 (Appendix C). Construction limits is used in this document to refer to the collective areas that would be subject to direct impacts within the Project elements.

3.3.1 Affected Environment

In accordance with Section 106 of the National Historic Preservation Act (36 CFR Section 800), Federal agencies are required to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings. A phase I cultural resource survey[7] was conducted between 2016-2018 (Gottsfield et al. 2019).

[7] The Phase I cultural resource survey is available on the PSCW website at: http://apps.psc.wi.gov/vs2015/ERF_search/content/searchResult.aspx?UTIL=9698&CASE=CE&SEQ=101&START=none&END=none&TYPE=none&SERVICE=none&KEY=none&NON=N. PSC Reference No. 360433.

3.3.1.1 Cultural Resources Literature Review

The literature review included evaluation of the State Historical Society of Wisconsin Digital Geographic Data Sets, historic period plat maps, 1938 aerial photographs, historic period topographic maps, and a map of Traditional Cultural Properties (TCPs) provided by the Fond du Lac Band of Lake Superior Chippewa within the Archaeological Study Area.

3.3.1.2 Historic Map and Aerial Photograph Review

In addition to review of WHS data, the background review included overlays of the 1850s General Land Office (GLO) plat maps (48N/13W, 48N/14W, 49N/13W, and 49N/14W), the 1906 Douglas County plat map, 1938 aerial photographs, and the 1915 and 1954 USGS *Superior* topographic maps.

3.3.1.2.1 GLO Plat Map

The 1850s GLO plat maps show a trail and a "wind fall" area within the construction limits. One end of the trail ends south of Bluff Creek near its intersection with the construction limits and heads to the southwest for several miles (outside of the construction limits). No evidence of the trail or associated sites was found during the present survey. The "wind fall" area is approximately 8 miles long and 0.25-mile wide and crosses the construction limits. The "wind fall" likely refers to a swath of downed trees perhaps caused by straight-line winds or tornado(s). The GLO plats do not show any roads, railroads, or homesteads within the construction limits.

3.3.1.2.2 1906 Plat Map, USGS Topographic Maps, and 1938 Aerial Photographs

By 1906, two railroads and several roads crossed the construction limits. The 1906 plat shows the modern area of the Great Northern Railyard / Allouez Ore Arrival Yard adjacent to Bluff Creek as just a railroad, while the 1915 topographic map shows the expansion into a rail yard with multiple siding tracks. The accuracy of this plat map is suspect because it shows the Duluth, South Shore, and Atlantic Railway (DSS&A Railway) farther west than shown on subsequent maps (e.g., 1915 and 1954 topographic maps). The Eastern Transmission Route ROW crosses this former DSS&A Railway grade in two areas. The 1906 plat shows property ownership but does not show any residences within the construction limits.

The 1915 topographic map illustrates an expansion of rail systems, transportation corridors, settlements, and industry mainly focused near the Town of Parkland and the City of Superior. The 1938 historic aerials and 1954 topographic maps shows a consolidation of railways and expansion of roadways and the southern expansion of Superior to the Nemadji River and into the construction limits. Two residences within or adjacent to the construction limits are shown on these historic documents and relate to sites

found during the survey (i.e., 47DG188 and 47DG192). These maps and aerial images provide important references to contextualize the newly recorded sites associated with the present survey.

3.3.1.2.3 Traditional Cultural Properties

During tribal consultation, the Fond du Lac Band of Lake Superior Chippewa provided RUS with a map of Traditional Cultural Properties (TCPs) within the vicinity of the Archaeological Study Area. Three of the resources are within the Archaeological Study Area. The first is labeled as a "Winter Camp." It is located along the Nemadji River valley south bluffs. No other information was provided about this resource, and its extent is not well understood. The construction limits have been modified to avoid the area noted as "Winter Camp." The second TCP is the St. Francis Xavier Cemetery. Approximately 180 Chippewa burials were moved from their Wisconsin Point Cemetery to this cemetery around 1918-19. The St. Francis Xavier Cemetery property would not be impacted by this Project. The third TCP is labeled as a Nemadji River Campsite. It is located near the intersection of U.S. Highway 53 and the Nemadji River. It falls within the Archaeological Study Area, but it is not in or near the construction limits. Another TCP, the Allouez Mission, is just outside of the Archaeological Study Area.

3.3.1.2.4 Wisconsin Historical Society Digital Geographic Data Sets

The Wisconsin Historical Society (WHS) Digital Geographic Data Sets include an Architectural and History Inventory (AHI), an Archaeological Sites Inventory (ASI), and an Archaeological Report Inventory (ARI) (Table 3-6). Based on that research, 16 previously recorded archaeological sites have been recorded within the Archaeological Study Area, and three are within the APE (47DG188, 47DG189 and 47DG191 – see Table 3-7). A total of 12 cultural resource surveys were previously performed in the Archaeological Study Area. Of those 12 surveys, 9 cross the APE (Table 3-8). A total of 30 historic-age resources have been recorded in the Archaeological Study Area; none fall within the APE (Table 3-9). There are five cemeteries in the Archaeological Study Area: Nemadji (BDG-22), Old City (BDG-23), St. Francis (BDG-24), Woodlawn (BDG-25), and a Douglas County Cemetery (BDG-54 / 47DG177); none are in the construction limits.

Table 3-6: WHS Digital Geographic Data Sets Summary

ARIs[a] in Archaeological Study Area / Construction Limits	ASIs[b] in Archaeological Study Area / Construction Limits	AHIs[c] in Archaeological Study Area / Construction Limits	Cemeteries in Archaeological Study Area / Construction Limits
12 / 9	16 / 2	30 / 0	5 / 0

Source: WHS 2017
(a) ARI = Archaeological Report Inventory
(b) ASI = Archaeological Sites Inventory

(c) AHI = Architecture and History Inventory

Table 3-7: ASI Polygons in Archaeological Study Area

Trinomial / ASI ID	Type	Affiliation	Proximity
14125	Nemadji Cemetery	Historic Euro-American	Study Area
14126	Old City Cemetery	Historic Euro-American	Study Area
14127	St. Francis Cemetery	Historic Euro-American; Historic Indian	Study Area
47DG27	Camp site / village	Historic Indian	Study Area
47DG33	Old stockade	Historic Euro-American	Study Area
47DG156	Isolated chert flake	Unaffiliated Prehistoric	Study Area
47DG176	Parkland Health Facility	Historic Euro-American	Study Area
47DG177	Cemetery	Historic Euro-American	Study Area
47DG181	Old Firehouse and Police Museum	Historic Euro-American	Study Area
47DG186	Logging camp	Historic Euro-American	Study Area
47DG187	Historic scatter	Historic Euro-American	Study Area
47DG188	Foundation, ceramic drainage tile, scatter	Historic Euro-American	Construction Limits
47DG189	Scatter and railroad grade	Historic Euro-American	Construction Limits
47DG190	Historic dump	Historic Euro-American	Study Area
47DG191	Foundation, dump, scatter	Historic Euro-American	Construction Limits
47DG192	Foundation, architectural, cistern, scatter	Historic Euro-American	Study Area

Source: WHS 2017; 2018

Table 3-8: ARI Polygons in Archaeological Study Area

ARI #	Report Title	Author	Date
631	Archaeological Survey of Proposed Railroad Relocation Sites in Douglas County, Wisconsin.	Hudak	1982
632	Archaeological Survey of Proposed Railroad Relocation Sites in Douglas County, Wisconsin. Supplementary Report 1982.	Hudak	1982
633	An Archaeological Reconnaissance of the Proposed Transmission Line #132 from Gary (Duluth) St. Louis County, Minnesota to Stinson (Superior) Douglas County, Wisconsin.	Hudak and Emery	1979
639	Archaeological Reconnaissance of the Burlington Northern Railroad Taconite Facilities.	Tiffany	1975

ARI #	Report Title	Author	Date
5819	WDOT Archaeological Survey Field Report: Replacement of the Bardon Avenue Bridge over the Nemadji River, City of Superior, Douglas County, Wisconsin.	Barth	1995
6342	WDOT Archaeological Survey Field Report: Parkland Wetland Mitigation, Douglas County, Wisconsin.	Hawley	1997
7571	WDOT Archaeological Survey Field Report: Replace CTH Z Bridge Over Bluff Creek	Barth	2001
8846	A Phase I Archaeological Survey of Two 15 Acre Parcels for the Superior Generation Project in Superior, Wisconsin	Christiansen	2001
22328	(no attribute data / information)	--	--
34808	Phase I Archaeological Survey of Lyman Lake Road-Bear Creek Wetland Mitigation Project, Douglas County, Wisconsin	Egan-Bruhy and Guidi	2007
52809	Phase I Archaeological Survey for the Parkland Industrial Park, Douglas County, Wisconsin	Mulholland and Mulholland	2010
52919	A Cultural Resource Assessment of the Proposed Telecommunications Tower DUL Parkland E County Road Z, South Range, Douglas County, Wisconsin	Blondo	2015

Source: WHS 2017

Table 3-9: AHI Resources In the Archaeological Study Area

Trinomial / AHI ID	Address	Resource(s)	Name
45569	Bardon Avenue Over Nemadji River	Bridge	Bardon Avenue / Woodlawn Bridge
155282	E. 21st Street	Superior Terminal	Superior Terminal
155302	2909 E. 8th Street	House and Outbuildings	—
155303	2814 E. 8th Street	House and Outbuildings	Joseph and Arlene (Susie) Balcer House
155321	2806 E. 8th Street	House and Outbuildings	—
155341	2730 E. 8th Street	House and Outbuildings	—
155342	2726 E. 8th Street	House and Garage	—
155343	2718 E. 8th Street	House and Outbuildings	—
155344	2714 E. 8th Street	House and Garage	—

Trinomial / AHI ID	Address	Resource(s)	Name
155345	2710 E. 8th Street	House and Outbuildings	—
155361	2708 E. 8th Street	House and Garage	—
155381	2622 E. 8th Street	House and Garage	—
155382	2612 E. 8th Street	House and Garage	—
155461	2531 E. 9th Street	House and Outbuildings	—
155462	2530 E. 8th Street	House and Outbuildings	—
155465	2611 E. 8th Street	House and Outbuildings	—
155481	2619 E. 8th Street	House and Garage	—
155482	2623E. 8th Street	House and Garage	—
155483	2631 E. 8th Street	House and Outbuildings	—
155484	2703 E. 8th Street	House and Garage	—
155501	2713 E. 8th Street	House and Outbuildings	Carl E. Nelson House
155502	2725 E. 8th Street	House and Garage	Duane H. Codotte House
17182, 26879, and 26881	North side of County Highway Z. Three miles East of County Highway A	Buildings	Douglas County / Parkland Hospital (non extant)
17366	1920 E. 10th Street	House	—
17367	2327 E 12th Street	House	—
17443	1102 E. 22nd Avenue	House	Edward Bradley Banks House
17462	E. 42nd Avenue at Bluff Creek	Railroad Ore Yards	Burlington Great Northern ore yards
17787	Stinson Avenue at CNR with Bardon Avenue	Industrial Building	Superior Refinery, Murphy Oil Corporation

Source: WHS 2017; 2018

3.3.1.2.5 Relevant Surveys (AHIs) and Sites (ASIs)

Two archaeological sites adjacent to the construction limits and related cultural resources surveys are discussed here because of their proximity to the APE and association with newly recorded sites in the APE. Specifically, previously recorded sites 47DG176 and 47DG177 and survey ARI# 52809 are associated with the Parkland Health Facility (Mulholland and Mulholland, 2010). Newly recorded sites

47DG189 and 47DG190 are indirectly or directly associated with the Parkland Health Facility, and a portion of 47DG189 is within the construction limits.

3.3.1.2.6 Parkland Health Facility and Cemetery: 47DG176 and 47DG177

The Parkland Health Facility (46DG176) was established in 1909 and closed in 1991. Over its 82-year lifespan, it served as an asylum, tuberculosis sanatorium, poor house, home for the elderly, "poor farm," hospice, and health care facility. During its early history, the facility featured a maintained farm and garden. The Parkland Health Facility parcel also contains a cemetery (47DG177).

Due to the amount of ground disturbance at site 46DG176, the investigators recommended no further investigations (see Mulholland and Mulholland, 2010). They also recorded the cemetery located west of the Parkland Health Facility (47DG177) and recommended avoiding impacts to the resource. This cemetery is adjacent to the construction limits, but it would not be impacted by the Project.

3.3.1.2.7 Newly Recorded Sites (ASIs) in the APE: 47DG188 and 47DG189

Newly recorded sites 47DG188, 47DG189, and 47DG191 are within the construction limits. Due to the high level of disturbance and insufficient integrity, these sites are not recommended as eligible for NRHP listing. SHPO concurred that sites 47DG188 and 47DG189 are not NRHP eligible (see Gottsfield et al. 2019; Appendix C). Site 47DG191 is within the Western Transmission Route (not Eastern Transmission Route) and was therefore not included in the archaeological report.

Site 47DG188 appears to be associated with a dairy farm operation and residence at this location. There were at least two outbuildings and a residence associated with the Kvarnstrom Brothers Dairy, circa 1910 to 1929. The Dairy appears to have been shut down in the late 1920s. According to census records, the Jones family lived at the residence in the late 1930s through the early 1950s. All the buildings were removed by 1954. Given the presence of a footing and the drainage features (field tiles) there is a potential for intact subsurface cultural features associated with the farm. However, no artifact bearing subsurface features were located during the present survey.

Site 47DG189 is railroad grade with an associated trash deposit and an out of primary context railroad related signal footing. The abandoned rail grade is associated with the Iron River to Superior, Wisconsin, segment of the DSS&A Railway. This segment was constructed between 1892-1894 and abandoned in 1934.

Site 47DG191 is a remnant of a homestead located along North 42nd Street, approximately 0.3 mile northeast of the intersection of Woodlawn Road. A gravel driveway bears northwest from N 42nd St and

ends at a concrete foundation, surface trash scatter, and cistern. This homestead was known locally as the Hesselgrave house. Edgar A Hesselgrave owned the parcel at this location from 1945 to 1971. It is possible that the home was built in the 1940s or 1950s and abandoned in 1971, the year he sold the home.

3.3.1.2.8 Other Previously Recorded Surveys (AHIs) in the ROW

Several previously recorded cultural resources surveys overlap with the construction limits. Those surveys failed to locate cultural resources within the construction limits. The records search did not locate a report for the survey polygon (AHI# 22328) to the north of the Nemadji River Plant Site. This survey (AHI# 22328) included a portion of the laydown yard north of the Nemadji River Site.

3.3.2 Environmental Consequences

The following sections summarize potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to cultural resources.

3.3.2.1 Proposed Action Alternatives

There are 18 properties in Douglas County listed on the National Register of Historic Places (NRHP): Berkshire Block, Brule-St. Croix Portage, Davison Windmill, Douglas County Courthouse, Empire Block, Lake Nebagamon Auditorium, Maryland Block, Meteor (Whaleback carrier), Minnesota Block-Board Trade Building, New Jersey Building, New York Block, Northern Block, Pattison / Martin House, Roosevelt Terrace, Superior Entry South Breakwater Light, Trade and Commerce Building, Washington Block, and Wemyss Building. None of these properties are within the Archaeological Study Area.

A phase I cultural resource survey was conducted between 2016-2018 (Gottsfield et al. 2019) for the Nemadji River Site, Eastern Transmission Route, and Parkland Switching Station. The following sections provide details of the results of this phase I cultural resource survey as well as previous survey results for the Hill Avenue Site, Western Transmission Route, and the Superior Switching Station.

3.3.2.1.1 Nemadji River Site

A total of 4 cultural resource surveys (ARIs) have been previously performed near the Nemadji River Site construction limits (Table 3-10). Of those 4 surveys, 3 (ARI numbers 633, 8846, and 22328) crossed portions of the proposed construction limits and all 3 were negative for cultural resources.

Table 3-10: ARI Polygons Near the Nemadji River Site

ARI #	Report Title	Author	Date
633	An Archaeological Reconnaissance of the Proposed Transmission Line #132 from Gary (Duluth) St. Louis County, Minnesota to Stinson (Superior) Douglas County, Wisconsin.	Hudak and Emery	1979
5819	WDOT Archaeological Survey Field Report: Replacement of the Bardon Avenue Bridge over the Nemadji River, City of Superior, Douglas County, Wisconsin.	Barth	1995
8846	A Phase I Archaeological Survey of Two 15 Acre Parcels for the Superior Generation Project in Superior, Wisconsin	Christiansen	2001
22328	(no attribute data / information)	--	--

Source: WHS 2017

There are six ASIs near the Nemadji River Site: five cemeteries and one archaeological site (36DG188) (Table 3-11). The Fond du Lac Band of Lake Superior Chippewa consider the St. Francis Xavier Cemetery a TCP because it contains approximately 180 Chippewa burials. The St. Francis Xavier Cemetery would not be impacted by this Project.

Site 36DG188 was recorded during the survey associated with the Project. The site consists of a poured concrete footing remnant, a concrete drainage feature, and the vertical inlet portion of ceramic-lined field tile pipe as well as rusted nail fragments, clear glass bottle fragments, and brick fragments. Shovel tests revealed truncated A-horizons and mottled soils, both indicators of previous disturbance.

Based on archival research, Site 47DG188 appears to be associated with a dairy farm operation and residence at this location. There were at least two outbuildings and a residence associated with the Kvarnstrom Brothers Dairy, circa 1910 to 1929. The Dairy appears to have been shut down in the late 1920s. According to census records, the Jones family lived at the residence in the late 1930s through the early 1950s. All the buildings were removed by 1954. Given the presence of a footing and the drainage features (field tiles), there is a potential for intact subsurface cultural features associated with the farm. However, no artifact bearing subsurface features were located during the present survey. Due to the high level of disturbance at the site, no additional archaeological investigations are recommended. SHPO concurred the site in not eligible for NRHP inclusion (Appendix C).

Table 3-11: ASI Polygons Near the Nemadji River Site

Trinomial / ASI ID	Type	Affiliation	Location
14125	Nemadji Cemetery	Historic Euro-American	Within 0.5 mile
14126	Old City Cemetery	Historic Euro-American	Within 0.5 mile

Trinomial / ASI ID	Type	Affiliation	Location
14127	St. Francis Cemetery	Historic Euro-American; Historic Indian	Within 0.5 mile
47DG188	Foundations, scatter	Historic Euro-American	Construction limits

Source: WHS 2017; 2018

3.3.2.1.2 Hill Avenue Site

A total of 3 cultural resource surveys were previously performed in the Hill Avenue Site construction limits (Table 3-12) Of those 3 surveys, none crossed the current proposed construction limits. There are no ASIs within 0.5 mile of the construction limits. Recent additional surveys did not record any cultural resources within this site.

Table 3-12: Archaeological Report Inventory (ARI) Polygons Near the Hill Avenue Site

ARI #	Report Title	Author	Date
633	An Archaeological Reconnaissance of the Proposed Transmission Line #132 from Gary (Duluth) St. Louis County, Minnesota to Stinson (Superior) Douglas County, Wisconsin.	Hudak and Emery	1979
4217	Letter Report of Survey: New Chaffey Nursing Home in Superior.	Oerichbauer, Edgar S.	1992
8846	A Phase I Archaeological Survey of Two 15 Acre Parcels for the Superior Generation Project in Superior, Wisconsin	Christiansen	2001

Source: WHS 2017

3.3.2.1.3 Eastern Transmission Line

A total of 13 cultural resource surveys (ARIs) have been previously performed near the Eastern Transmission Route (Table 3-13). Of those 13 surveys, 7 (ARI numbers 631, 632, 6342, 8846, 22328, 34808, and 52809) crossed portions of the APE, and all were negative for cultural resources.

Table 3-13: ARI Polygons Near the Eastern Transmission Route

ARI #	Report Title	Author	Date
631	Archaeological Survey of Proposed Railroad Relocation Sites in Douglas County, Wisconsin.	Hudak	1982
632	Archaeological Survey of Proposed Railroad Relocation Sites in Douglas County, Wisconsin. Supplementary Report 1982.	Hudak	1982
633	An Archaeological Reconnaissance of the Proposed Transmission Line #132 from Gary (Duluth) St. Louis County, Minnesota to Stinson (Superior) Douglas County, Wisconsin.	Hudak and Emery	1979

ARI #	Report Title	Author	Date
639	Archaeological Reconnaissance of the Burlington Northern Railroad Taconite Facilities.	Tiffany	1975
5819	WDOT Archaeological Survey Field Report: Replacement of the Bardon Avenue Bridge over the Nemadji River, City of Superior, Douglas County, Wisconsin.	Barth	1995
6342	WDOT Archaeological Survey Field Report: Parkland Wetland Mitigation, Douglas County, Wisconsin.	Hawley	1997
8846	A Phase I Archaeological Survey of Two 15 Acre Parcels for the Superior Generation Project in Superior, Wisconsin	Christiansen	2001
22328	(no attribute data / information)	—	—
34808	Phase I Archaeological Survey of Lyman Lake Road-Bear Creek Wetland Mitigation Project, Douglas County, Wisconsin	Egan-Bruhy and Guidi	2007
52809	Phase I Archaeological Survey for the Parkland Industrial Park, Douglas County, Wisconsin	Mulholland and Mulholland	2010
52919	A Cultural Resource Assessment of the Proposed Telecommunications Tower DUL Parkland E County Road Z, South Range, Douglas County, Wisconsin	Blondo	2015
53532	(no attribute data / information)	--	--
53628	A Cultural Resource Assessment of the Proposed Telecommunications Tower DUL Parkland E County Road Z, South Range, Douglas County, Wisconsin	Blondo	2015

Source: WHS 2017

There are ten ASIs near the Eastern Transmission Route: four cemeteries and six archaeological sites (Table 3-14). The Fond du Lac Band of Lake Superior Chippewa consider the St. Francis Xavier Cemetery a TCP because it contains approximately 180 Chippewa burials. Of the ten ASIs in the area, only Site 47DG189 is within the ROW of the Eastern Transmission Route. This site is a railroad grade with an associated trash deposit and railroad related signal footing found outside of its primary context. The abandoned rail grade is associated with the Iron River to Superior, Wisconsin, segment of the DSS&A Railway. This segment was constructed between 1892-1894 and abandoned in 1934. Due to insufficient integrity, the site was not recommended as eligible for NRHP listing. SHPO concurred that the site was not eligible for NRHP inclusion (Appendix C).

Table 3-14: ASI Polygons Near the Eastern Transmission Route

Trinomial / ASI ID	Type	Affiliation	Location
14125	Nemadji Cemetery	Historic Euro-American	Within 0.5 mile
14126	Old City Cemetery	Historic Euro-American	Within 0.5 mile

Trinomial / ASI ID	Type	Affiliation	Location
14127	St. Francis Cemetery	Historic Euro-American; Historic Indian	Within 0.5 mile
47DG156	Isolated find	Unknown Prehistoric	Within 0.5 mile
47DG176	Foundation/Depression: Commercial	Historic Euro-American	Within 0.5 mile
47DG177	County Cemetery	Historic Euro-American	Within 0.5 mile
47DG188	Foundation, ceramic drainage tile feature, and light historic scatter	Historic Euro-American	Within 0.5 mile
47DG189	Historic scatter and railroad grade	Historic Euro-American	APE
47DG190	Dump	Historic Euro-American	Within 0.5 mile
47DG192	Foundation, Architectural, cistern, historic scatter	Historic Euro-American	Within 0.5 mile

Source: WHS 2017; 2018

3.3.2.1.4 Western Transmission Line

There are no NRHP properties within 0.5 mile of the Western Transmission Route. A total of 11 cultural resource surveys (ARIs) have been previously performed near the Western Transmission Route (Table 3-15). Of those 11 surveys, 4 (ARI numbers 631, 632, 5819, and 8846) crossed portions of the current proposed route, and all were negative for cultural resources. The majority of the Western Transmission Route has not been surveyed for this Project or previously.

Table 3-15: Archaeological Report Inventory (ARI) Polygons Near the Western Transmission Route

ARI #	Report Title	Author	Date
631	Archaeological Survey of Proposed Railroad Relocation Sites in Douglas County, Wisconsin.	Hudak	1982
632	Archaeological Survey of Proposed Railroad Relocation Sites in Douglas County, Wisconsin. Supplementary Report 1982.	Hudak	1982
639	Archaeological Reconnaissance of the Burlington Northern Railroad Taconite Facilities.	Tiffany	1975
5819	WDOT Archaeological Survey Field Report: Replacement of the Bardon Avenue Bridge over the Nemadji River, City of Superior, Douglas County, Wisconsin.	Barth	1995
6342	WDOT Archaeological Survey Field Report: Parkland Wetland Mitigation, Douglas County, Wisconsin.	Hawley	1997

ARI #	Report Title	Author	Date
7573	WDOT Archaeological Survey Field Report: Replace CTH Z Bridge over Bluff Creek	Barth	2001
8846	A Phase I Archaeological Survey of Two 15 Acre Parcels for the Superior Generation Project in Superior, Wisconsin	Christiansen	2001
22328	(no attribute data / information)	—	—
34808	Phase I Archaeological Survey of Lyman Lake Road-Bear Creek Wetland Mitigation Project, Douglas County, Wisconsin	Egan-Bruhy and Guidi	2007
52809	Phase I Archaeological Survey for the Parkland Industrial Park, Douglas County, Wisconsin	Mulholland and Mulholland	2010
52919	A Cultural Resource Assessment of the Proposed Telecommunications Tower DUL Parkland E County Road Z, South Range, Douglas County, Wisconsin	Blondo	2015

Source: WHS 2017

There are eleven ASIs near the Western Transmission Route: four cemeteries and seven archaeological sites (Table 3-16). The Western Transmission Route would impact the driveway at Site 47DG191. This site is a homestead dating to the 1940s. The driveway consists of pea gravels and cinders and extends from the foundation area south to North 42nd Street. The cemetery and the other sites would not be impacted by the Western Transmission Route. This site remains unevaluated for NRHP eligibility.

Table 3-16: Archaeological Sites Inventory (ASI) Polygons Near the Western Transmission Route

Trinomial / ASI ID	Type	Affiliation	Location
47DG156	Isolated find	Unknown Prehistoric	Within 0.5 mile
47DG186	Logging Camp	Historic Euro-American	Within 0.5 mile
14125	Nemadji Cemetery	Historic Euro-American	Within 0.5 mile
14126	Old City Cemetery	Historic Euro-American	Within 0.5 mile
14127	St. Francis Cemetery	Historic Euro-American; Historic Indian	Within 0.5 mile
14128	Woodlawn Cemetery	Historic Euro-American	Within 0.5 mile
47DG188	Foundation, ceramic drainage tile feature, and light historic scatter	Historic Euro-American	Within 0.5 mile
47DG189	Historic scatter and railroad grade	Historic Euro-American	Within 0.5 mile
47DG190	Dump	Historic Euro-American	Within 0.5 mile

Trinomial / ASI ID	Type	Affiliation	Location
47DG191	Foundation, dump, scatter	Historic Euro-American	Construction Limits
47DG192	Foundation, Architectural, cistern, historic scatter	Historic Euro-American	Within 0.5 mile

Source: WHS 2017; 2018

3.3.2.1.5 Hill Avenue Site Route

A total of 4 cultural resource surveys (ARIs) have been previously performed near the Hill Avenue Site Route (Table 3-17). Of those 4 surveys, 2 (ARI numbers 8846 and 22328) crossed portions of the current proposed construction limits and were negative for cultural resources.

Table 3-17: Archaeological Report Inventory (ARI) Polygons Near the Hill Avenue Site Route

ARI #	Report Title	Author	Date
633	An Archaeological Reconnaissance of the Proposed Transmission Line #132 from Gary (Duluth) St. Louis County, Minnesota to Stinson (Superior) Douglas County, Wisconsin.	Hudak and Emery	1979
5819	WDOT Archaeological Survey Field Report: Replacement of the Bardon Avenue Bridge over the Nemadji River, City of Superior, Douglas County, Wisconsin.	Barth	1995
8846	A Phase I Archaeological Survey of Two 15 Acre Parcels for the Superior Generation Project in Superior, Wisconsin	Christiansen	2001
22328	(no attribute data / information)	—	—

Source: WHS 2017

There are four ASIs near the Hill Avenue Site Route: three cemeteries and one archaeological site (Table 3-18). The Fond du Lac Band of Lake Superior Chippewa consider the St. Francis Xavier Cemetery a TCP because it contains approximately 180 Chippewa burials. These burials were moved from the Chippewa's Wisconsin Point Cemetery to this cemetery around 1918-19. The cemeteries and site would not be impacted by the Hill Avenue Site Route.

Table 3-18: Archaeological Sites Inventory (ASI) Polygons Near the Hill Avenue Site Route

ASI ID / Trinomial	Type	Affiliation	Location
14125	Nemadji Cemetery	Historic Euro-American	Within 0.5 mile
14126	Old City Cemetery	Historic Euro-American	Within 0.5 mile
14127	St. Francis Cemetery	Historic Euro-American; Historic Indian	Within 0.5 mile

ASI ID / Trinomial	Type	Affiliation	Location
47DG188	Foundation, ceramic drainage tile feature, and light historic scatter	Historic Euro-American	Within 0.5 mile

Source: WHS 2017; 2018

3.3.2.1.6 Superior Switching Station

A total of 2 cultural ARIs have been previously performed near the Superior Switching Station (Table 3-19). Neither of the surveys crossed the current proposed switching station.

Table 3-19: ARI Polygons Near the Superior Switching Station

ARI #	Report Title	Author	Date
639	Archaeological Reconnaissance of the Burlington Northern Railroad Taconite Facilities.	Tiffany	1975
5819	WDOT Archaeological Survey Field Report: Replacement of the Bardon Avenue Bridge over the Nemadji River, City of Superior, Douglas County, Wisconsin.	Barth	1995

Source: WHS 2017; 2018

There are two ASIs near the Superior Switching Station: two archaeological sites (Table 3-20). Neither of the sites are within the construction area of the Superior Switching Station.

Table 3-20: ASIs Near the Superior Switching Station

Trinomial / ASI ID	Type	Affiliation	Location
47DG186	Logging camp	Historic Euro-American	Within 0.5 mile
47DG191	Foundation, dump, scatter	Historic Euro-American	Within 0.5 mile

Source: WHS 2017; 2018

3.3.2.1.7 Parkland Switching Station

A total of 6 cultural ARIs have been previously performed near the Parkland Switching Station (Table 3-21). None of the surveys crossed the current proposed switching station.

Table 3-21: ARI Polygons Near the Parkland Switching Station

ARI #	Report Title	Author	Date
631	Archaeological Survey of Proposed Railroad Relocation Sites in Douglas County, Wisconsin.	Hudak	1982
632	Archaeological Survey of Proposed Railroad Relocation Sites in Douglas County, Wisconsin. Supplementary Report 1982.	Hudak	1982

ARI #	Report Title	Author	Date
6342	WDOT Archaeological Survey Field Report: Parkland Wetland Mitigation, Douglas County, Wisconsin.	Hawley	1997
34808	Phase I Archaeological Survey of Lyman Lake Road-Bear Creek Wetland Mitigation Project, Douglas County, Wisconsin	Egan-Bruhy and Guidi	2007
52809	Phase I Archaeological Survey for the Parkland Industrial Park, Douglas County, Wisconsin	Mulholland and Mulholland	2010
52919	A Cultural Resource Assessment of the Proposed Telecommunications Tower DUL Parkland E County Road Z, South Range, Douglas County, Wisconsin	Blondo	2015
53532	(no attribute data / information)	--	--
53628	A Cultural Resource Assessment of the Proposed Telecommunications Tower DUL Parkland E County Road Z, South Range, Douglas County, Wisconsin	Blondo	2015

Source: WHS 2017; 2018

There are five ASIs near the Parkland Switching Station: one cemetery and four archaeological sites (Table 3-22). None of the five ASIs in the area are within the construction area of the Switching Station.

Table 3-22: ASIs Near the Switching Station

Trinomial / ASI ID	Type	Affiliation	Location
47DG156	Isolated find	Unknown Prehistoric	Within 0.5 mile
47DG176	Foundation/Depression: Commercial	Historic Euro-American	Within 0.5 mile
47DG177	County Cemetery	Historic Euro-American	Within 0.5 mile
47DG189	Historic scatter and railroad grade	Historic Euro-American	Within 0.5 mile
47DG190	Dump	Historic Euro-American	Within 0.5 mile

Source: WHS 2017; 2018

3.3.2.1.8 Summary

On February 4, 2019, the RUS submitted a finding of no historic properties affected to the WHS in accordance with 36 CFR § 800.4(d)(1) and provided the cultural resources survey report as documentation for review and consideration (see Gottsfield et al. 2019). The WHS concurred with this determination in March 2019 (Appendix C). Based on the distance from NRHP properties and the concurrence from SHPO that no historic properties will be affected, it is anticipated that the Project would not have any adverse impacts on cultural resources. No responses have been received from the Tribes in response to the RUS findings report and WHS concurrence.

3.3.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to cultural resources at or in the vicinity of the Archaeological Study Area because no construction would occur.

3.3.3 Mitigation

If the Archaeological Study Area configuration is changed, additional archaeological investigations; documentation of historic-age, non-archaeological resources; and NRHP evaluations may be necessary.

If buried cultural resources are encountered during Project construction, land-disturbing activities in the immediate area must be halted, and the investigators and WHS/SHPO archaeologists must be notified. Any exposed cultural resources will be evaluated for their significance and appropriate actions to address these finds coordinated with WHS/SHPO.

3.4 Geology and Soils

The following sections provide information on the geology and soils in the Study Area.

3.4.1 Affected Environment

The following sections discuss the geology and soils of the Study Area. The analysis for geology focused the Lake Superior Lowland physiographic province. The analysis for soils focused on the Study Area.

3.4.1.1 Geology

The Study Area is in the Lake Superior Lowland physiographic province, an area of about 1,250 square miles in northwestern Wisconsin covering portions of Douglas, Bayfield, and Ashland Counties. Its altitude ranges from less than 1,000 feet above to about 300 feet below sea level, and it rises 150 to 350 feet above and goes 600 to 900 feet below the level of Lake Superior, which stands at 602 feet above sea level.

The Lake Superior basin is now a lowland because of the downward movement of a block of the earth's crust in a rift, or graben fault. Subsequent sedimentation, erosion, and sculpting by continental ice sheets have reshaped the area and notably modified the rift valley.

Bedrock consists of Precambrian-age rock. Igneous and metamorphic types make up the bedrock that is present to the north of Superior and the Lake Superior Lowlands. Bedrock underlying Superior consists of sandstone and shale of the Precambrian Fond du Lac Formation of the Bayfield Group. The erosion surface of the Precambrian bedrock is overlain unconformably by unconsolidated Quaternary glacial, glaciofluvial, and alluvial deposits that consist of clay, silt, sand, and gravel.

3.4.1.2 Soils

According to the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (http://websoilsurvey.nrcs.usda.gov), the Study Area contains 13 different soil types (Figure 3-1; Table 3-23). None of these soils are considered prime farmland. Two of the soils are considered to be farmland of statewide importance. Three of soils within the Study Area are hydric soils.

Table 3-23: Soil Information Study Area

Soil Name	Soil Symbol	Prime Farmland	Farmland of Statewide Importance	Hydric Soil
Amnicon-Cuttre complex, 0 to 4 percent slopes	262B	–	Yes	–
Arnheim mucky silt loam, 0 to 1 percent slopes, frequently flooded	5A	–	–	Yes
Bergland-Cuttre complex, 0 to 3 percent slopes	347A	–	–	Yes
Lupton, Cathro, and Tawas soils, 0 to 1 percent slopes	405A	–	–	Yes
Miskoaki clay loam, 6 to 12 percent slopes	274C	–	–	–
Miskoaki clay loam, 12 to 25 percent slopes	274D	–	–	–
Moquah fine sandy loam, 0 to 3 percent slopes, frequently flooded	6A	–	–	–
Pelkie, occasionally flooded-Dechamps, frequently flooded complex, 0 to 4 percent slopes	388B	–	–	–
Superior-Sedgwick complex, 0 to 6 percent slopes	756B	–	Yes	–
Udifluvents, loamy to clayey, 0 to 6 percent slopes, occasionally flooded	292B	–	–	–
Udorthents and Udipsamments, cut or fill	2030	–	–	–
Udorthents, ravines and escarpments, 25 to 60 percent slopes	92F	–	–	–
Water	W	–	–	–

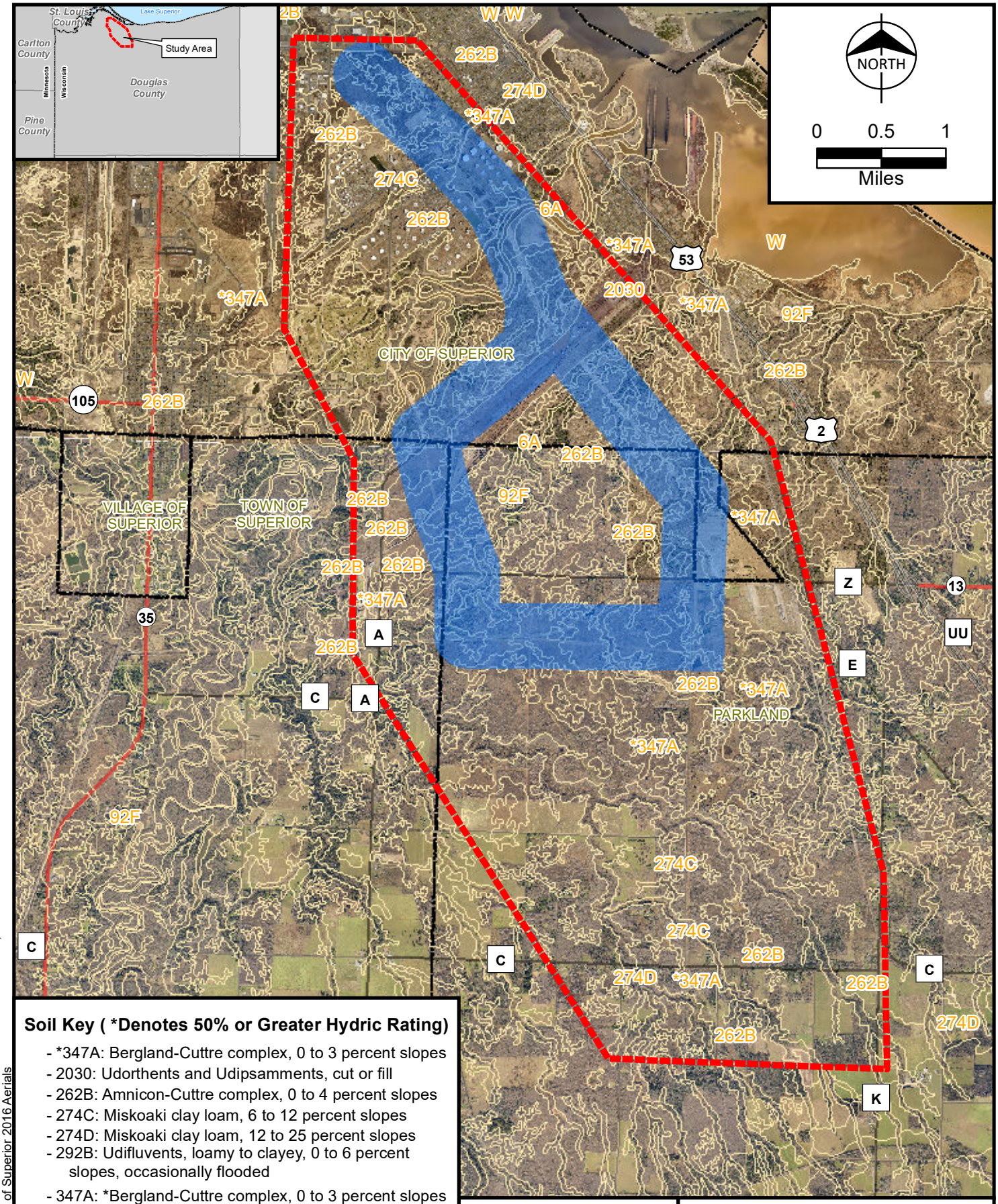
Source: USDA NRCS Soils Database

3.4.2 Environmental Consequences

The following sections discuss potential environmental consequences of the Action Alternatives and No Action Alternative related to geology and soils.

3.4.2.1 Proposed Action Alternatives

Both sites would be graded and grading design would change the topography to facilitate storm water drainage patterns. Storm water runoff on the Nemadji River Site would be collected and directed to an onsite storm water detention pond located near the southwestern boundary of the site. The existing pond



Soil Key (*Denotes 50% or Greater Hydric Rating)

- *347A: Bergland-Cuttre complex, 0 to 3 percent slopes
- 2030: Udorthents and Udipsamments, cut or fill
- 262B: Amnicon-Cuttre complex, 0 to 4 percent slopes
- 274C: Miskoaki clay loam, 6 to 12 percent slopes
- 274D: Miskoaki clay loam, 12 to 25 percent slopes
- 292B: Udifluvents, loamy to clayey, 0 to 6 percent slopes, occasionally flooded
- 347A: *Bergland-Cuttre complex, 0 to 3 percent slopes
- 5A: Arnheim mucky silt loam, 0 to 1 percent slopes, frequently flooded
- 6A: Moquah fine sandy loam, 0 to 3 percent slopes, frequently flooded
- 92F: Udorthents, ravines and escarpments, 25 to 60 percent slopes
- W: Water

Study Area
Soil Boundary
Municipal Boundary
Macro-Corridors

Figure 3-1
Study Area Soils
SSE and DPC
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior 2019 Aerials, USDA NRCS, and Burns & McDonnell Engineering Company, Inc.

Issued: 3/12/2020

discharges to the south via underground pipe to the Nemadji River. Storm water runoff from 31st Ave would continue to drain into a roadside culvert outlet into waterway (WW) 501f. Storm water runoff on the Hill Avenue Site would be collected and routed to a new storm water detention pond located in the northeast corner of the site. The new pond would be pumped, and storm water would be discharged at existing surface grade to the east/northeast to a stream that discharges to Superior Bay.

At the Nemadji River Site, the main power block area would be raised approximately 7 feet at the north end. Several areas along the sheet pile wall on the east side of the plant area would have 15 to 20 feet of fill behind the wall. The grading of the power block area would require approximately 72,000 cubic yards of imported fill. There would be some excavation for underground utilities and deep structures such as pump pits and the suitable material from these excavations would be used for trench backfill and site grading. An existing stormwater pond is located within the Nemadji River Site in the southwest corner near 31st Street. This stormwater pond would be enlarged as part of the Project. The excavation to enlarge the existing stormwater pond is included in the site grading quantities. Installation of the sheet pile wall would require approximately 15,000 cubic yards of excavation and approximately 48,000 cubic yards of select material backfill.[8]

At the Hill Avenue Site, the preliminary geotechnical investigation report recommends the upper 5 feet of the plant area be removed and replaced with suitable fill material. That would require approximately 499,000 cubic yards of excavation with disposal offsite and approximately 499,000 cubic yards of imported fill material. The power block area would be raised approximately 4 feet after the 5 feet of over-excavation is replaced. This would require approximately 400,000 cubic yards of imported fill material. There would be some excavation for underground utilities and deep structures such as pump pits and the suitable material from these excavations would be used for trench backfill and site grading. The stormwater pond would require approximately 81,000 cubic yards of excavation with disposal offsite.

Transmission line structure footprints range from 7 feet to 12 feet in diameter. Holes for the 345-kV structure foundations would range from approximately 55 feet to 95 feet deep depending on soil conditions and design. Foundation construction would occur after vegetation clearing is complete and begins with drilling for structure foundations. Excavated soils would be used for foundation backfill if appropriate. Surplus soils would be spread within the right of way and stabilized. After the structure bases are installed, the remaining structure is assembled at each pole location by a crane. Excavated soils would

[8] The 48,000 cubic yards of select material to backfill the sheet pile wall is included in the 72,000 cubic yards of imported fill to grade the site.

be used for foundation backfill if appropriate. Surplus soils would be spread within the right of way and stabilized. After all line construction is complete, the ROW is restored.

A variety of construction machinery would be required for the Project. Excavators, bulldozers, skid-steers, front end loaders, dump trucks, pick-up trucks, and backhoes would be required during ROW clearing and grading at structure sites. Foundation construction would require a drill rig and a concrete mix truck in addition to machinery used during ROW clearing and grading. Structure assembly would require a crane and bucket lift.

Based on the amount of excavation required, the type of substrate at the Project sites, and erosion control techniques that would be implemented (see Section 3.4.4), construction and operation of the Project is not expected to affect geological formations. Soils at the Nemadji River Site consist of Amnicon-Cuttre complex (0 to 4 percent slopes; farmland of state wide importance); Arnheim mucky silt loam (0 to 1 percent slopes, frequently flooded; hydric soil); Berland-Cuttre complex (0 to 3 percent slopes; hydric soil); udorthents, ravines and escarpments (25 to 60 percent slopes); and a small area of open water. These soils would be converted to plant site development with much of the area occupied by the facilities and covered by concrete and gravel areas. Soil at the Hill Avenue Site consist of Amnicon-Cuttre complex (0 to 4 percent slopes) and Bergland-Cuttre complex (0 to 3 percent slopes). The transmission line corridor would be cleared but only soil areas at the structure locations would be permanently excavated. Other Areas of hydric and statewide important soils would remain largely unaffected by construction and following any necessary stabilization would be available for agriculture and other activities.

3.4.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to geology or soil at or in the vicinity of the Study Area because no construction would occur.

3.4.3 Mitigation

Best management practice (BMP) erosion control techniques will be used to mitigate soil impacts. Topsoil will be kept separate from subsoils and will be stockpiled in a different location than subsoils. This topsoil will be used after construction to resurface areas disturbed by construction activities. Compacted soils will be disked prior to final stabilization. It is not anticipated that any subsoil removed for excavations will be spread in upland cropland or pasture. The Storm Water Management Technical Standards from WDNR will be used during construction and operation.

A Storm Water Pollution Prevention Plan (SWPPP) will be submitted to WDNR as part of Project permitting activities. The Owners will implement, monitor, and maintain BMPs, described in the SWPPP to minimize erosion and sedimentation. The Owners will comply with the construction site storm water discharge permit (Wis. Admin. Code NR 216) that was submitted to WDNR for the Project in December 2018.

3.5 Infrastructure, Transportation, Public Health and Safety, and Waste Management

The following sections provide information on the existing infrastructure; transportation; public health and safety; and waste management in the Study Area, and the potential impact the Project would have on these resources.

3.5.1 Affected Environment

The following sections provide information related to infrastructure, transportation, public health and safety, and waste management.

3.5.1.1 Utility Infrastructure

Natural gas distribution and retail electric services are provided to the Study Area by SWL&P. Potable water, also provided by SWL&P, is available in the area north and east of the Nemadji River Site. The Owners discussed its potable water needs with SWL&P. SWL&P has indicated potable water service is available by extending a tap from the existing line along 31st Avenue East into the Nemadji River Site. Sanitary wastewater in the area is discharged to the City of Superior municipal sewer system for offsite treatment. A CenturyLink fiberoptic cable is located within the existing transmission line corridor situated between the Hill Avenue and the Nemadji River sites.

Electric distribution lines are located along Stinson Avenue northwest of the Nemadji River Site, along Bardon Ave west of the Nemadji River Site, along Grand Avenue immediately west of the Nemadji River Site, and along 31st Avenue East to the east. Existing electric distribution near the Hill Avenue Site is found along North 28th Street to the north, Hill Avenue to the west, and in residential areas east of the site. Further south near the Switching Station Alternatives, distribution can be found extending parallel to 42nd Ave E, County Rd A, S Lyman Lake Rd, and County Rd E.

Two existing pipelines extend through the Nemadji River Site (Figure 2-11). A 10-inch diameter SWL&P natural gas line extends through western portion of the site, along the existing transmission corridor south through the Study Area. A 30-inch diameter Enbridge crude oil line extends along the western edge of the

Nemadji River Site. Both pipelines extend through the laydown yard north of the Nemadji River Site. In addition to these lines, several crude oil lines extend from southwest to northeast through the center of the laydown yard north of the Nemadji River Site. Multiple crude oil lines extend along the northern boundary of the temporary impact area and cross the north corner of the laydown yard. Two crude oil lines extend west-southwest from the area surrounding the Nemadji River Site, one of which continues in a southerly direction through the length of the Study Area, and another crude oil line extends southeast from the Nemadji River Site (Figure 2-11).

Several existing transmission lines are present within the Study Area (Figure 2-11). The Winter to Stinson 115-kV line extends along the north and east sides of the Hill Avenue Site, connecting into the north side of the Stinson Substation. Several lines extend from the Stinson Substation to the south, bypassing the Nemadji River Site, and continuing predominantly southward through the Study Area: the Gary to Stinson 115-kV transmission line, the Superior to Minong 161-kV transmission line, and the Ino to Superior 115-kV transmission line. The Lakehead Substation and Lakehead Tap are located west of the Nemadji River Site. The Arrowhead to Stone Lake 345-kV transmission line extends from the central western edge of the Study Area near the intersection of County Roads A and C, to the east to the existing Line No. 160 161-kV. Line No. 160 161-kV and Line No. 761 115-kV parallel each other and extend generally southeast from the Stinson Substation, crossing the Nemadji River and the railyard southeast of the Nemadji River Site. The lines parallel one another to the south side of City Limits Road, where Line No. 761 extends due east and Line No. 160 extends south along Lyman Lake Road. South of County Road C, Line No. 160 parallels a pipeline ROW southeast to the edge of the Study Area boundary.

3.5.1.2 Transportation

The Study Area is generally undeveloped woodland or wetland with few major roads. Roads within the Study Area include a range of paved and unpaved surfaces. There are no interstates within the Study Area and major roads include County Roads A, C, E, K, and Z (Figure 2-11). Hill Avenue, N 28th St E, 24th Avenue East extend through the northern portion of the Study Area near the two generation facility site alternatives. The central and southern portions of the Study Area are mostly undeveloped apart from 42nd Ave E and S Lyman Rd, respectively. There are no scenic byways within the Study Area.

Several rail lines are located within the Study Area (Figure 2-11). The rail lines are owned by BNSF and Canadian National lines. No air facilities are located within the Study Area; several are located within several miles of the Study Area, however. The nearest public use airport is the Richard I. Bong Airport, located approximately 1.8 nautical miles west from the Nemadji River Site. Other nearby air facilities include the Sky Harbor Airport and Seaplane Base, a public use airport located approximately 1.9 nautical

miles north of the Nemadji River Site; and the Carlson Airport, a private use airstrip located approximately 4.1 nautical miles southwest of the Nemadji River Site. The St. Mary's Hospital and St. Luke's Hospital heliports are private use facilities located 6.5 miles north-northwest of the Nemadji River Site. The Duluth International Airport is located approximately 10.5 miles northwest of the Nemadji River Site. There may be other private use facilities in the area that are not registered with the FAA. Because the locations of such facilities cannot be confirmed, they were not included in this report.

3.5.1.3 Public Health and Safety

The nearest medical facility to the Study Area is the Mariner Medical Clinic Urgent Care facility, located approximately 1.6 miles northwest of the Nemadji River Site on N 28th St. Emergency medical services are provided by Essentia Health St. Mary's-Superior Clinic, St. Luke's Mariner Medical Clinic Urgent Care and Gold Cross Ambulance. The Superior Police Department, located in the Superior city center, provides public safety. Fire protection is provided by the Superior Fire Department, with locations to the west (approx. 2.6 miles), to the east (approx. 0.7 mile), and to the north (approx. 3.6 miles).

The Study Area contains existing electric transmission lines. Voltages range from 69-kV to 345-kV. Electrical generation and transmission facilities generate electromagnetic fields (EMF). Electric fields are produced by the line voltage and magnetic fields are produced by electric current. EMF is produced by natural sources (such as build-up of electric charges from thunderstorms in the atmosphere) and human sources (such as household electronics, X-rays, and electric generation and transmission facilities). The strength of EMF is strongest closest to the source and rapidly decreases in strength the farther one is from the source (World Health Organization, 2018). The National Institute of Environmental Health Sciences and the National Institutes of Health prepared a Questions and Answers paper on Electric and Magnetic Fields Associated with the Use of Electric Power[9] (2002). The document indicates that at 50 feet from the centerline of a 500-kV transmission line (higher voltage than the 345-kV line for this Project), the typical electric field is 3.0 kilovolt per meter (kV/m) and the typical magnetic field is 29.4 milligauss (mG). For a 230-kV transmission line, the typical electric field is 1.5 kV/m and the typical magnetic field is 19.5 mG. These values are less than the International Commission on Non-Ionizing Radiation Protection (2010) levels for members of the general public of 4.2 kV/m for electric fields and 833 mG for magnetic fields.

The PSCW actively monitors research related to EMF and its potential to cause human health impacts. The PSCW has concluded the following based on current research (PSCW, 2017):

[9] The National Institute of Environmental Health Sciences and the National Institutes of Health did not address 345-kV lines specifically in this document. The document was considered a reasonable guide to what could be expected as it considered voltages higher and lower than 345-kV proposed for this Project.

- There is no mechanism identified that would explain how EMF could cause cancer.
- There is little evidence that magnetic fields cause childhood leukemia, and there is inadequate evidence that magnetic fields cause other cancers in children.
- Studies of adults' magnetic field exposure from power lines show little evidence of an association with leukemia, brain tumors, or breast cancer.
- Whole animal exposure studies have not shown evidence that long-term exposure to EMF causes cancer, and no link has been found to leukemia, brain cancer, and breast cancer.
- For power line magnetic fields below 500 mG, no plausible mechanisms have been identified by which biological effects can be caused in living systems.

3.5.1.4 Hazardous Materials and Waste Management

The EPA maintains a Facility Registry Service (FRS) database with information related to hazardous wastes, air pollution, water dischargers, toxic releases, superfund sites, brownfields, radiation, and controlled toxic substances (EPA, 2019). This database was used to identify registered facilities within the Study Area. No superfund sites, brownfield sites, or radiation sites are in the Study Area.

Five sites listed in the FRS are within the Study Area: Peterson Wood Treating, Inc., located at 2 Randy Johnson Street; Husky Energy – Superior Refinery, located at 2407 Stinson Avenue; BP Dome Petroleum Corporation Superior Terminal, located at 2600 East 21st Street; Enbridge Energy Company, located at 2800 East 21st Street; and Koppers, Inc. (Beazer East, Inc.), located at 3185 S. County Road A (Figure 3-2).

3.5.2 Environmental Consequences

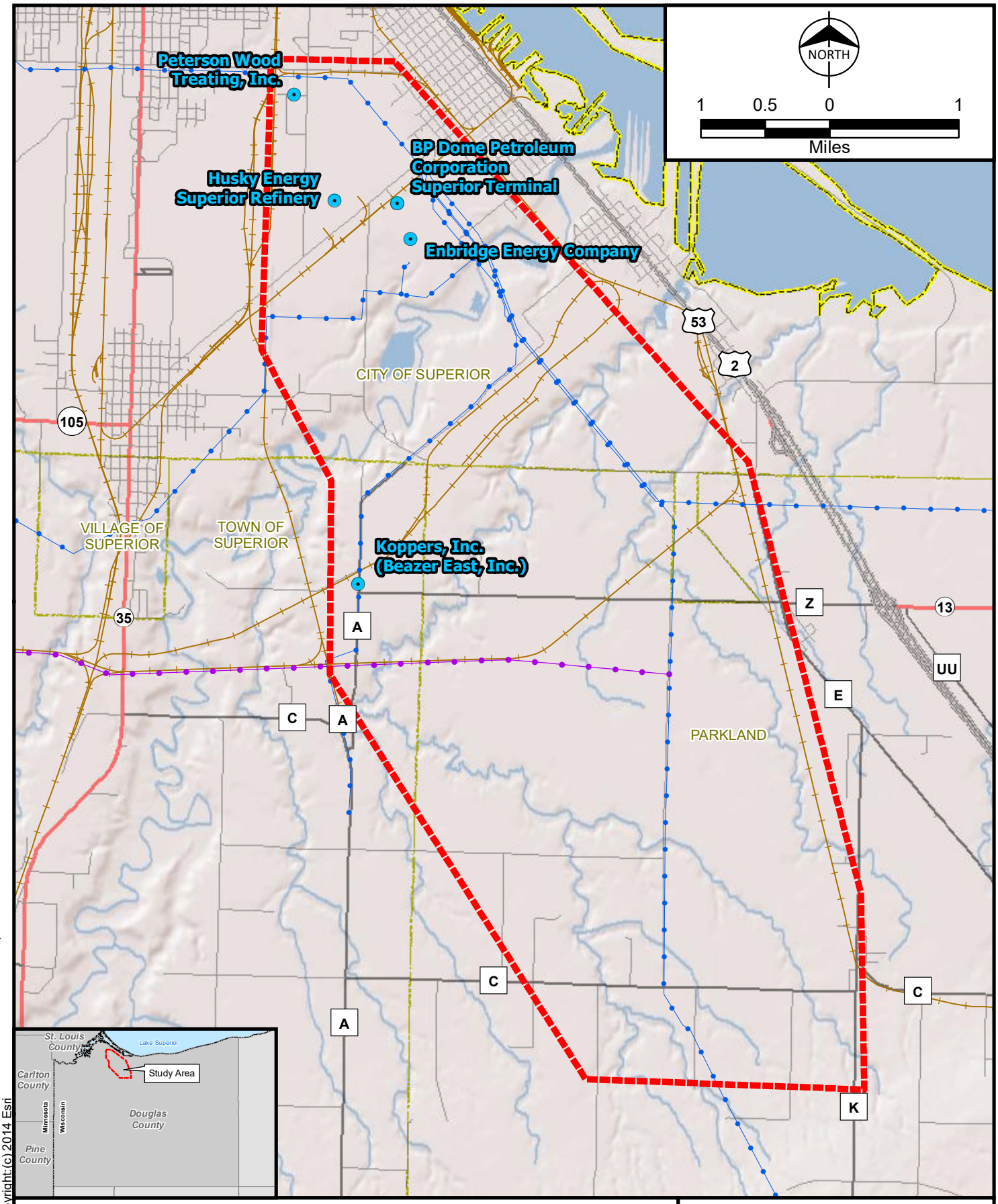
The following sections provide potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to utility infrastructure; transportation; public health and safety; and hazardous waste management.

3.5.2.1 Proposed Action Alternatives

The following sections provide information on the potential impacts of the proposed Action Alternatives on utility infrastructure; transportation; public health and safety; and hazardous waste management.

3.5.2.1.1 Utility Infrastructure

Several existing transmission lines would be affected by the Project. At the beginning of the Eastern Transmission Route, an existing 115-kV line would be replaced with a double circuit 345/161-kV line,



Study Area
Facility Registry Service Sites
Railroad

Existing Transmission
161kV and Below
345kV

Municipal Boundary
County Boundary

Figure 3-2
Facility Registry Service Sites
SSE and DPC
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior, US EPA, and Burns & McDonnell Engineering Company, Inc.

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and the 115-kV line would be shifted onto the existing 161-kV structures. This would result in the following arrangement (from north to south): Stinson-Bayfront 115-kV Line No.761 on former 161-kV structures, Stinson-Gordon 161-kV Line No 160 and the Project 345-kV Line on double circuit structures, and the Great River Energy 69-kV line. All these lines would be located within the current transmission line corridor extending south from the Nemadji River Site. The Great River Energy 69-kV line extends south from this corridor approximately 0.3 mile south of the plant site, while the 115-kV line (on the former 161-kV structures) and the 345/161-kV double circuit would continue in parallel with each other. Toward the southeast, the Eastern Transmission Route and the 161-kV line would then turn south and continue on double circuit structures to the Parkland Switching Station for this Project.

The Western Transmission Route extends southeast from the Nemadji River Site to the existing Line No. 160. The Western Transmission Route would be built double circuit with the 161kV Line 160 for a couple spans before extending southwest as a single-circuit transmission line.

The existing electric transmission lines that traverse the Nemadji River Site would need to be relocated to facilitate construction of the generation plant if this site is chosen for the Project. The existing electric transmission lines would be relocated to the south end of the site. The existing lines that need to be relocated are 115-kV Line No. 132, 115-kV Line No. 761 and 161-kV Line No. 160. Additionally, a Great River Energy 69-kV line and a SWL&P 13.8-kV distribution line would also be relocated. The relocated portions of the lines would predominately consist of steel self-supporting structures with concrete foundations.

Outages would be required on the Line No. 160 transmission line and the Line No. 761 transmission line to construct the new double circuit 345-kV Transmission Line for any Project alternative. Extended outages on the Line No. 761 are difficult to accommodate and would need to be minimized as much as practical to maintain reliable service to the area. The Project will require an outage to connect to the Arrowhead to Stone Lake 345 kV transmission line. During outages, the Owners would need to coordinate with local electrical service providers to provide for continued electrical service with minimal, if any, service interruptions.

The fiberoptic cable between the Nemadji River Site and the Hill Avenue Site would need to be relocated if the Nemadji River Site is constructed. An existing 10-inch natural gas line would need to be relocated at the Nemadji River Site.

The Project would require minor construction of water pipelines to connect with the municipal water system to meet the water needs for the plant. There would be no adverse impact to the municipal water

system or change in capacity requirements needed to the system related to the Project because the existing municipal sewer and water systems have sufficient capacity to accommodate the Project needs. The planned municipal water supply service would support sanitary needs and fire water back-up as well as support service water needs (housekeeping, seal cooling, etc.), to supply the water treatment system as needed to accommodate cycle make-up needs (make up for steam losses and HRSG blowdown), and potentially as a NO_x diluent in the gas turbine if fuel oil provisions are retrofitted in the future. SWL&P has indicated sufficient capacity is available to meet all these water needs.

3.5.2.1.2 Transportation

Construction traffic accessing the Project site would primarily consist of automobile traffic for craft labor, construction management staff, contractors, equipment, and vendors. Material and equipment deliveries may be made by large trucks as well as heavy haul vehicles. Onsite, traffic is anticipated to primarily consist of heavy construction equipment and material transport equipment.

The construction site would be operated as a closed worksite. Craft workers would be required to 'badge in' when arriving at the site for access after parking in the designated parking area. Designated walk paths to working locations would be constructed for craft workers to use. Craft workers would be expected to remain in the construction area onsite for the duration of their shifts, including a lunch break.

The frequency of the daily workforce automobile traffic would follow the Project workforce numbers onsite at a given time. The daily automobile traffic to the site would increase from approximately 25 to 50 vehicles per day in the initial stages of construction to approximately 200 to 260 vehicles per day during peak months (April through December 2023). The traffic would begin to decrease until it reaches approximately 25 vehicles per day near construction completion.

Material and equipment deliveries are anticipated to average between 15 and 25 trucks per day. Bulk deliveries for materials such as crushed stone, hot asphalt paving, and redi-mix concrete may occasionally exceed 25 vehicles on a given day. When possible, bulk deliveries would be scheduled to avoid peak traffic on local roads. The Project Site would include pull over areas for material delivery trucks to reduce congestion.

It is anticipated that material deliveries would utilize the Wisconsin Interstate highway system to US 53, US 2, and State Highway 35, then to the local roads and into the plant entrance roads. Heavy haul components such as transformers, HRSG tube bundles, combustion turbines, and generators could be transported via barge, rail, or heavy haul truck to the Superior area, then transported over local roads via heavy haul truck to the site. Heavy haul transports would likely utilize US 53, US 2, or State Highway 35

to access the Project site, subject to the limits imposed by the governing heavy haul permits. Construction material and workforce would come to the Project site via rubber-tired transport.

No permanent changes to existing roads are anticipated as part of this Project. No permanent damage to roads is anticipated with the implementation of mitigation measures proposed in Section 3.5.3. The Owners would work with the appropriate county or municipal authority on solutions to potential traffic congestion that may develop as a result of the construction traffic.

There is currently no connection or proposed connection to rail lines related to the Project. The Eastern Transmission Route would parallel the existing Line No. 761 transmission line and the SWL&P natural gas pipeline across the Burlington Northern and Santa Fe (BNSF) railyard southeast and East City Limits Road. The Eastern Transmission Route would also require crossing a Canadian National rail line south of City Limits Road. The Western Transmission Route crosses over two BNSF rail lines and County Road Z, then extends due south to the north side of a Canadian National rail line. The Western Transmission Route then extends east along the Canadian National rail line, crosses the rail line, and then continues east on the north side of the existing Arrowhead to Stone Lake 345-kV transmission line to the Parkland Switching Station Site along Lyman Lake Road. The Hill Avenue Site Route crosses a Canadian Pacific rail line near the Hill Avenue Site. These rail lines would be spanned by the Project.

Any structure (including permanent structures and temporary construction equipment) on the Project site that exceeds 200 feet above ground level in height would be considered an obstruction to navigable airspace and could impact aircraft safety unless it is marked and lighted in accordance with criteria set forth by the FAA. The FAA does not study potential impacts to private use airports unless that airport has instrument procedures approved by the FAA. The St. Mary's Hospital Heliport is a private use facility with FAA approved instrument approach procedures that are protected by the FAA obstruction evaluation process. However, the entire proposed Study Area is far outside the 5,000-ft radius notice criteria surface the FAA applies to such facilities. None of the remaining private use facilities in the area, including the St. Luke's Hospital Heliport, are subject to the FAA obstruction evaluation process, and the Sites are outside the navigable airspace for the Duluth International Airport. The Richard I Bong Airport has multiple published instrument procedures. Sky Harbor Airport does not have published instrument procedures.

An aeronautical study was completed by the FAA for the proposed stack at the Nemadji River Site and Hill Avenue Site, and a Notice of Presumed Hazard (NPH) was issued September 20, 2017. The NPH letter stated that if the stack height were reduced to 194 feet above ground level, the stack would not

create a substantial adverse effect and a favorable determination could then be issued. The Owners responded to the FAA on October 1, 2017, stating that the stack would not exceed the heights suggested by the FAA. The FAA subsequently issued Determination of No Hazard/Does Not Exceed (DNE) letters for the stacks on October 3, 2017.

For the transmission line structures, an aeronautical study was completed by the FAA for the structures along each route alternatives and NPHs were issued for three structures on July 24, 2018. The NPH letters stated that if the structure heights were reduced, these three structures would not create a substantial adverse effect and a favorable determination could then be issued. The Owners responded to the FAA on August 3, 2018, stating that the structure heights would be lowered as to not exceed the maximum heights provided by the FAA. The FAA subsequently issued a Determination of No Hazard/DNE letter for all the structures that were studied, including these three, on October 2, 2018.

The Owners consulted with the WisDOT Bureau of Aeronautics and the City of Superior regarding Project structure heights. The WisDOT Bureau of Aeronautics indicated that Project structures were under the authority of the City of Superior since the Project was located within City limits. The City of Superior stated that the FAA determinations were sufficient for their purposes and the City would not require additional tall structure permits.

The Project requires several temporary off-ROW access roads for construction access along the transmission line route. Temporary off-ROW access roads would be restored to pre-existing conditions, subject to the request of the landowner.

3.5.2.1.3 Public Health and Safety

The Project would minimize potential human health and safety impacts through restricting site access during construction and operation of the Project to employees, construction workers, emergency equipment, police, and fire protection. The roads serving the Project are adequate (width, grade, construction, overall safety and design capacity) to carry current and all prospective traffic. Access roads would be blocked from public access.

The Project would comply with all relevant Federal, state, and local requirements, including all requirements concerning public health and safety, including but not limited to requirements addressing land use, noise, and traffic.

Existing healthcare facilities are anticipated to be sufficient for the Project during construction and operation, and no necessary improvements are anticipated. The Project would have fire suppression

measures of its own, as well as facilities for the storage of hazardous materials (see Section 3.5.2.1.4 for a list of chemicals stored during construction). This storage would require coordination activities with the City Fire Department. No improvements are anticipated to be required due to the Project related to the City Fire Department. Police protection would be provided by the City of Superior and the Wisconsin State Patrol during both construction and operations, and no necessary improvements are anticipated related to police patrols.

3.5.2.1.4 Waste Management

Solid waste produced during the Project would only occur from construction debris, wastes produced by construction workers, and wastes produced by employees onsite during operation of the Project. These wastes would be collected in trash containers throughout the Project site and sent to a local landfill. Local waste disposal and sanitation facilities are not anticipated to be adversely affected by the additional waste streams generated during construction and operation of the Project. No additional solid wastes would be generated by the Project as byproducts from the production of electricity.

Table 3-24 and Table 3-25 provide chemicals needed during construction, pre-operational cleaning, and for regular operations and maintenance once the Project is in-service.

Table 3-24: Typical Chemicals Stored During Construction

Product	Storage Method
Di Ammonia EDTA[a]	Delivered by contractor at time of service and stored in temporary tanks onsite
Antifoam	Delivered by contractor at time of service and stored in temporary tanks onsite
Oxygen	Delivered by contractor at time of service and stored in temporary tanks onsite
Surfactant	Delivered by contractor at time of service and stored in temporary tanks onsite
Corrosion inhibitor	Delivered by contractor at time of service and stored in temporary tanks onsite
Paint	Delivered by contractor at time of service and stored in temporary tanks onsite
Solvents and cleaners	Delivered by contractor at time of service and stored in temporary tanks onsite
Concrete curing compound	Delivered by contractor at time of service and stored in temporary tanks onsite
Fuel oil and gasoline	Stored in separate tanks onsite
19% aqueous ammonia	Stored in tank(s) onsite

Product	Storage Method
Glycol	Stored in drums onsite
Chlorine	Stored in containers onsite
Lube oil	Stored in reservoir and/or tanks and drums onsite
Hydraulic oil	Stored in reservoir and/or tanks and drums onsite
Turbine Cleaning - Various detergents	Delivered by contractor at time of service and stored in temporary tanks onsite
Turbine Cleaning - Gas turbine generator water wash	Stored in separate tanks onsite

[(a)] ethylenediaminetetraacetic acid

Table 3-25: Typical Chemicals Stored for Operation

Product	Use
HRSG[a]/Boiler Chemicals - Ammonia	Boiler water treatment – condensate pH[b] control
HRSG[a]/Boiler Chemicals - Phosphate	Boiler water treatment – boiler water conditioner
Demineralizer and RO[c] chemicals - Sulfuric acid	RO feedwater treatment – pH adjustment and antiscalant
Demineralizer and RO[c] chemicals - Sodium bisulfite	RO feedwater treatment – dichlorination
Demineralizer and RO[c] chemicals - Antiscalant	RO feedwater treatment - antiscalant
Demineralizer and RO[c] chemicals - Sodium Hydroxide	RO second pass treatment - Carbon Dioxide removal
Service Water Treatment Chemicals - Sodium hypochlorite	Service water treatment – biocide
SCR System - Aqueous ammonia	NO_x[d] control

[(a)] HRSG = heat recovery steam generator
[(b)] pH = potential of hydrogen
[(c)] RO = reverse osmosis
[(d)] NO_x = nitrogen oxides

3.5.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to infrastructure; transportation; public health and safety; or waste management at or in the vicinity of the Study Area because no generation of additional traffic, human activity, or waste would occur.

3.5.3 Mitigation Measures

The following presents mitigation measures for transportation, public health, and waste management resources for the Project. No mitigation measures related to utility infrastructure are proposed.

Transportation

The Owners do not anticipate permanent damage to roads. As a precautionary measure, the Owners will video-document the condition of all roads on the construction vehicle routes to document the road condition prior to the start of construction. Any documented adverse impacts to the roads incurred due to the construction of the Project will be addressed through consultation with applicable road authorities regarding the Owners' responsibility for repairing the adversely impacted roads.

The Owners will coordinate the proper construction signage on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

Public Health and Safety

The Owners will develop a Health and Safety Plan to address public and worker safety during the construction and operation of the Project. The Health and Safety Plan would identify any requirements for temporary fencing around staging, excavation, and laydown areas during construction, as well as protocols for emergency responses. The Owners would work with local first responders to develop emergency response procedures in the plan. The plan would also include provisions for worker protection as is required under Occupational Safety and Health Administration (OSHA) CFR1926. During construction, all employees, contractors, and sub-contractors would be required to adhere to OSHA safety procedures, which will be taught in a mandatory training for all construction works on site. All heavy equipment would be up to OHSA safety standards and personal safety equipment would be required for all workers on site. Any accidents or incidents would be reported to the designated safety officer. During construction there is a risk of accidental fires being started by human activities such as refueling heavy equipment or the use of vehicles in dry vegetated areas. The Health and Safety Plan will have procedures in place to address and restrict the various activities that have a fire-related risk. A fire-suppression system will be incorporated into Project design. The Project will implement industry-approved design measures to reduce fire-related risks.

Waste Management

A Spill Prevention, Control and Countermeasures (SPCC) plan[10] has been created for the Project (SSE, Dairyland, Burns & McDonnell, 2019). This plan establishes procedures, methods and equipment, and other requirements for equipment to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines.

The oil/water separator will be designed to remove 20 micron and larger oil droplets to concentrations of less than 10 ppm. It will be designed to store 1,000 gallons of oil. The oil/water separator will be constructed as a double walled buried tank and will have a leak monitor to detect a breech in the inner tank wall. The tank will be cathodically protected. Any oil collected will be pumped out as required for disposal.

The Project will have a construction superintendent responsible for oil spill containment and cleanup. The construction superintendent will report spills and supervise cleanup and disposal of any contaminated soil and spill cleanup materials for any significant volume (defined as 55 gallons or more) of chemicals such as lubricants, fuel, grease, or other oil. Diesel and gasoline fuel will be temporarily stored at the Project site during construction in aboveground tanks. Preventative measures will be implemented during re-fueling or transfer of these fuels to reduce the risk of spills. Lubricating oils and certain other industrial chemicals required for the project will be stored in specially designed and covered containment areas. Also, equipment will be kept in good working condition through routinely inspections and service to reduce the risk of leaks of transmission, hydraulic, or brake fluid. Chemical storage areas will be well marked and include eye wash stations, first aid kits, safety showers, hose stations, and spill kits with absorbent pads and/or material.

Larger spills will be removed from the containment area using a vacuum tank truck or will be pumped into a suitable container for cleanup. Contaminated soil and/or absorbent pads or products used to cleanup a spill will be immediately removed, stored, and disposed of in accordance with Wisconsin state regulations. Absorbent pads or other manufactured absorbent products will be used to cleanup minor spills. These pads and absorbent products will be stored on maintenance trucks and/or in a dedicated cabinet that is readily accessible.

[10] The SPCC Plan is available on the PSCW website at: http://apps.psc.wi.gov/vs2015/ERF_search/content/searchResult.aspx?UTIL=9698&CASE=CE&SEQ=100&START=none&END=none&TYPE=none&SERVICE=none&KEY=none&NON=N. PSC Reference No. 357005.

The oil contaminated gravity drain system collects waste liquid which has the potential of containing quantities of oil and conveys the waste through an oil/water separator. Permanent combination safety shower/emergency eyewash stations with tepid water conditioning skid will be installed at all battery rooms and chemical storage areas including near the aqueous ammonia storage tank and SCR vaporization skids.

The Project site will be maintained to contain debris and waste in approved containers and locations. Regular trash and waste removal from the site will occur and a recycling program implemented for the site. Wastes are anticipated to be removed and disposed of at a local landfill by a local service provider. Recycling pickup services are anticipated to be provided by a local disposal company.

3.6 Land Use, Recreation, Farmland, and Coastal Facilities

The following sections provide information related to land use, public facilities, recreation, farmland, and coastal facilities for the various Project components.

3.6.1 Affected Environment

The Study Area contains large areas of wooded wetland, as well as deciduous forest, scrub/shrub, and grassland (Figure 2-8). The northern portion of the Study Area, near and within the City of Superior, is more developed than the rural, sparsely populated southern portion of the Study Area. Development includes residential areas and businesses; schools and parks; and industrial areas. The Study Area contains utility infrastructure such as oil tanks, electric transmission lines, electric distribution lines, crude oil pipelines, natural gas pipelines, fiber optic cable, water pipelines, and sewer pipelines and associated ROWs. The following sections provide more detailed information for the Project components related to land use, recreation, farmland, and coastal facilities.

3.6.1.1 Land Use

The following sections provide information related to land use for the Site alternatives, transmission line routes, and switching station sites.

3.6.1.1.1 Project Sites

The Nemadji River Site is divided between two separate tracts of land: the northwest portion which consists of a proposed laydown yard, and the southeast portion which is the proposed generation site location. The current land use for the northwest portion is land that is situated between two oil storage tank yards associated with the Husky Superior Oil Refinery. The southeast tract is situated on land that is

adjacent to the north side of the Nemadji River. These two tracts of land are bisected by 31st Ave E. The site is primarily undeveloped woodland, with areas of low intensity development, wetland, and grassland.

The Hill Avenue Site is located east of Hill Avenue and is bounded on the northeast side by the existing Winter to Stinson 115-kV transmission line. The site is undeveloped lowland scrub/shrub.

3.6.1.1.2 Switching Station Sites

The Superior Switching Station Site is located in the City of Superior (Figure 2-6). The Superior Switching Station Site is located along 42nd Avenue East south of 18th Street East. The site is predominantly forested wetland with areas of lowland scrub/shrub. An existing 69-kV transmission line extends along 42nd Avenue East along the south side of the switching station.

The Parkland Switching Station Site for the Project is located in the City of Parkland (Figure 2-6). The site is situated in a wooded lot that is predominantly wetland. The site is bordered to the north by County Road Z and to the east by S Lyman Lake Rd. Forested and shrub areas border the west and south sides of the site. An existing 345-kV transmission line is situated approximately 300 feet south of the site and an existing 161-kV transmission line and natural gas pipeline parallel the east side of S Lyman Lake Rd. A rail line operated by Duluth Missabe & Iron Range extends near the site, approximately 200 feet from the northwest corner.

3.6.1.1.3 Transmission Corridors

The transmission line macro-corridors are primarily forested wetland areas and deciduous forest areas. The macro-corridors also cross areas of agricultural land, coniferous forest land, grassland, wetlands, open water associated with rivers, and urban/developed areas.

3.6.1.2 Recreation

Recreational opportunities within the Study Area include the Nemadji Golf Course, Nemadji Sled Hill, and the Nemadji River canoe launch (Figure 2-10). There is also fishing access at 18th Street and 11th Street for the Nemadji River. There are also several hunting areas owned by the City of Superior and Douglas County within the Study Area (Figure 2-10). The Orange Trail extends through the northern portion of the Study Area near 31st Avenue East and the Enbridge Energy Facility. The Wild Rivers State Trail extends a short distance into the western boundary of the Study Area. Several small city parks can be found adjacent to the outside of the Study Area. However, none of these parks are located within 0.5 mile of the Nemadji River Site, Hill Avenue Site, or within the macro-corridors.

3.6.1.3 Farmland

Agricultural land in the Study Area is sparse as most of the Study Area is situated in urban/developed areas (predominately the northern third of the Study Area) and wetland/forestland/grassland (predominantly the southern two thirds of the Study Area). A small area of tilled land is adjacent to the northeast corner of the Parkland Switching Station area.

The NRCS Web Soil Survey was used to identify prime farmland and other important farmland soils in the Study Area. In Part 523 of the Farmland Protection Policy Act, the NRCS defines prime farmland as:

> …land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. The land could be cropland, pastureland, rangeland, forestland, or other land but not urban built-up land or water (USDA, 2012).

No prime farmland exists within the Study Area. Approximately 13.1 square miles of the 22-square mile Study Area is considered farmland of statewide importance[11] (Figure 2-12). The remaining land in the Study Area is designated as "not prime farmland[12]" by the NRCS (approximately 9.3 square miles).

No known agricultural buildings and animal dairy confinement operations are located in or near the Study Area.

3.6.1.4 Coastal Facilities

The Great Lakes coastline includes shoreline in Douglas County, Wisconsin. The Federal Emergency Management Agency (FEMA) has initiated a coastal analysis and mapping study to produce updated Flood Insurance Rate Maps (FIRMs) for coastal counties along the Great Lakes. In partnership with USACE Detroit District and the Engineer Research and Development Center (ERDC), FEMA conducted a comprehensive analysis of storm and high-water events within the Great Lakes Basin. The study uses the latest scientific methods and the best available data to comprehensively depict flood hazards along the lakeshore. The new flood risk information would be used to increase the understanding of local flood risk,

[11] USDA designates map units as 'farmland of statewide importance' when less than 50 percent of the map unit components are prime, but a combination of lands of prime or statewide importance is 50 percent or more of the map unit composition. Areas of statewide importance farmland are determined by the State Conservationist (USDA, 2012).

[12] Soils that are designated as "not prime farmland" do not have the combination of physical and chemical characteristics of prime farmland and is also not designated as farmland of statewide importance.

facilitate mitigation efforts, and improve local community resilience to flood losses (life, property, and business) along the Great Lakes.

The Wisconsin Coastal Management Program (WCMP) preserves and manages access to Wisconsin's natural and historic Great Lakes coastal resources (WCMP, 2019). The objectives of the WCMP are:

- To improve the implementation and enforcement of existing state regulatory and management policies and programs affecting key coastal uses and areas;
- To improve the coordination of existing policies and activities of governmental units and planning agencies on matters affecting key coastal uses and areas;
- To strengthen local governmental capabilities to initiate and continue effective coastal management consistent with identified state standards and criteria;
- To provide a strong voice to advocate the wise and balanced use of the coastal environment and the recognition in Federal, state, and local policies of the uniqueness of the coastal environment; and
- To increase public awareness and opportunity for citizens to participate in decisions affecting the Great Lakes resources.

The coastal zone boundaries subject to WCMP include the 15 counties with frontage on Lake Superior and Lake Michigan. Douglas County is one of the 15 counties in the WCMP. The Study Area and facilities are located within Douglas County, but do not contain Great Lakes coastline.

In addition to WCMP, the Coastal Barrier Resources Act of 1982 (CBRA) designated relatively undeveloped coastal barriers along the Atlantic, Gulf of Mexico, Great Lakes, U.S. Virgin Islands, and Puerto Rico coasts as part of the John H. Chafee Coastal Barrier Resources System (CBRS). CBRA was designed to encourage conservation of areas that are hurricane prone or biologically rich coastal barrier by restricting federal expenditures that encourage development, such as federal flood insurance. These locations are ineligible for most new federal expenditures and financial assistance. The nearest CBRS area is located approximately 30 miles northeast of the Project area along the Lake Superior shoreline in Bayfield County.

3.6.2 Environmental Consequences

The following sections provide potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to land use, recreation, farmland, and coastal facilities.

3.6.2.1 Proposed Action Alternatives

The following sections provide information on the potential impacts of the proposed Action Alternatives on land use, recreation, farmland, and coastal facilities.

3.6.2.1.1 Land Use

Construction of the proposed project at the Nemadji River Site would permanently convert approximately 7.1 acres of forest and approximately 7.2 acres of the forage grassland and wetland meadow communities to power generation use. This use is compatible with adjacent land uses, which include an oil tank farm and an oil refinery. The proposed project footprint at the Nemadji River Site avoids clearing trees and vegetation along the banks, immediately adjacent to the Nemadji River. A vegetation buffer with a minimum width of 100 feet would be maintained between the plant footprint and the Nemadji River.

Based on the results of a site survey that was conducted in October 2017, the Hill Avenue Site consists entirely a lowland scrub/shrub wetland community. No forest or grassland community occurs at the Hill Avenue Site. The Eastern Transmission Route for the transmission line would likely be constructed within an existing utility corridor that contains a natural gas pipeline and overhead electrical transmission lines; however, approximately 23.1 acres of woody vegetation would be cleared from forested lands and shrubland habitats to widen the corridor and accommodate the additional line. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.

The Western Transmission Route would require more clearing in forested areas for new ROW in addition to minor impacts to forested land along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 79.1 acres of the Western Transmission Route in forested lands and shrubland habitats. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.

The Hill Avenue Site Route would require clearing in forested areas for new ROW and along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 14.3 acres of the Hill Avenue Site Route in forested lands and shrubland habitats.

Construction of the either the Superior Switching Station or the Parkland Switching Station would convert approximately 14 acres of woody vegetation in forested lands and shrubland habitats to a switching station with electric transmission infrastructure.

It is anticipated that most of the impacts to grasslands along the transmission route would only be temporary construction impacts to existing grassland habitat along existing utility corridors. Some

permanent impacts to grassland habitats would occur where transmission line poles and foundations would be set. No grassland habitat is present within the footprint of either switching station site.

3.6.2.1.2 Recreation

No parks are located within 0.5 mile of the Nemadji River Site, Hill Avenue Site, or within the macro-corridors; therefore, impacts to any parks are not expected. While the Sites may be visible from these parks and loud Site noise such as from steam blows may be heard offsite, several streets with homes, combined with nearby commercial and industrial areas provide visual and sound buffers between the Sites and the existing parks. The transmission line routes primarily extend through undeveloped wooded areas. The switching station sites are also mostly surrounded by woodland, which helps provide visual buffers.

The fishing access at 18th Street and Nemadji canoe launch are accessed from roads also used to access the Nemadji River Site and are near the transmission routes south of the Nemadji River Site. Though not directly crossed, the access may be impacted during construction of facilities through temporary road closures and temporary increased noise associated with construction. If the Nemadji River Site is constructed, there would be increased traffic and operation noise near the fishing access at 18th Street during operation. Traffic during operation would primarily include employees entering or exiting the plant facility, as well as occasional maintenance vehicles. Traffic during operation of the Project would increase vehicles on nearby roads but is not anticipated to significantly increase traffic due to the number of employees anticipated or reduce access to these facilities.

The Project may impact visitors to the Orange Trail, a snowmobile and ATV trail that generally extends along 31st Avenue East and Grand Avenue southwest of the site. Impacts would include increased traffic crossing the trail or temporary closures during Project construction, as well as slightly increased traffic crossing the trail during Project operation. Construction traffic and any road closures would be temporary in nature and cease after construction is complete.

The Nemadji River Site is not located within a hunting area. The transmission line route south of the Nemadji River Site would require clearing woodland in a portion of the Allouez Area Parcel 1 hunting area, the Itasca Area hunting area, and the Annex hunting area. The route generally follows existing transmission line and natural gas line through these parcels, however. Clearing would remove woodland habitat and result in a minor change to the habitat mix on these areas. Access to all or portions of these areas may also be controlled during construction. Once completed, access to these areas would be restored. The Hill Avenue Site would reduce the size of the Murphy Oil – 5 hunting area by approximately 72 acres. This would reduce the amount of area available for hunting in the northern

portion of the hunting area. The transmission line route from the Hill Avenue Site south to the Nemadji River would also remove a portion of the Murphy Oil – 5 hunting area from hunting activities. The Eastern and Western Transmission Routes would both cross the Allouez Area Parcel 1 hunting area. The Eastern Transmission Route would also cross the Itasca Area hunting area as well as the Annex hunting area. The Western Transmission Route would cross a small portion of the Allouez Area Parcel 2 hunting area. The connecting facilities extending from the Hill Avenue Site to the southeast would cross greenfield and would introduce a new utility corridor through the hunting area.

3.6.2.1.3 Farmland

No farming activities currently occur at either Site. No farming has occurred in the recent past. A review of earliest available records from 1938 through 2015 show the majority of the Nemadji River Site property has remained undeveloped and heavily wooded, with the exception of a gravel parking lot and a storm water pond located on the western side. Based on historical topographic maps, the Hill Avenue Site has been marsh/swamp, and no agricultural or residential use on the Hill Avenue Site was identified.

The Western Transmission Route and Hill Avenue Site Route do not cross farmland. The Eastern Transmission Route extends along the edge of a row crop field north of its intersection with County Road Z for approximately 930 feet. This length is entirely within existing ROW, however.

The row crop field crossed by the Eastern Transmission Route would be impacted during construction of the Project. This section of route is within existing ROW, however, which helps restrict impacts to already impacted areas. Soil along this portion of the route would likely be disturbed during transmission line construction and temporary access. If planted, crops in the ROW could be damaged during construction. After construction is complete in the area, farming activities can resume.

No known agricultural buildings and animal dairy confinement operations are located near the Project. In addition, the Project's electrical clearances and ROW width are designed to limit neutral-to-earth and induced voltages that can create concern with livestock operations.

An agricultural impact notice was sent to the Wisconsin DATCP on December 18, 2018. An Agricultural Impact Statement was not required as the Project does not cross private agricultural land. See Appendix D for correspondence with the Wisconsin DATCP as well as the formal release letter.

3.6.2.1.4 Coastal Facilities

No coastal facilities are located within the Project Study Area or macro-corridors. The nearest CBRS area is located approximately 30 miles northeast of the Project area along the Lake Superior shoreline in Bayfield County. As such, no impacts to coastal facilities are anticipated due to the Project.

3.6.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to land use, recreation, farmland, or coastal facilities at or in the vicinity of the Study Area because no construction would occur.

3.6.3 Mitigation Measures

During construction, portions of the Project site will be cleared, grubbed, graded, excavated, and revegetated. In areas not impacted by these activities, such as riparian vegetation along the Nemadji River outside the ROW and areas of the transmission line ROW that do not require clearing, existing vegetation will be preserved where practicable. The amount of soil exposed during construction will be minimized. Seed mixtures will be selected to produce dense vegetation based on soil and site conditions, along with intended final use. In areas were restoration is required, seeding and mulching will be completed in accordance with WDNR Technical Standard 1059 – Seeding for Construction Site Erosion Control, Chapter DATCP 20, WAC regarding noxious weed seed content and labeling, and Wisconsin Department of Transportation (WisDOT) Mix 75 – Erosion Control Native Mix.

Temporary seeding will be applied to areas of exposed soil where the establishment of vegetation is desired, but the areas have not been brought to final grade or on which land-disturbing activities will not be performed for a period greater than 30 days, but vegetative cover is required for less than 1 year. Areas needing protection during periods when permanent seeding is not applied, must be seeded with annual species.

Final stabilization is achieved when all soil-disturbing activities at the site have been completed and a uniform (i.e., evenly distributed, without large bare areas) perennial vegetation cover with a density of 70 percent of the native background vegetative cover has been established on all unpaved areas or areas not covered by permanent structures or with alternative surfacing, such as riprap or crushed rock.

During construction, areas that have been seeded will be inspected by a qualified person at least once every 7 days and within 24 hours after every precipitation event that produces 0.5 inch of rain or more during a 24-hour period. Where areas of concern are identified, the area will be re-seeded and watered, and fertilizer will be applied, if applicable. The Project site will be inspected at least once per month to

monitor vegetative growth until final stabilization is achieved after construction and stabilization activities are complete.

The Owners will comply with WAC, Chapter Natural Resources (NR) 40, WAC – Invasive Species Identification, Classification and Control during monitoring and management of invasive plant species. The Owners will control any prohibited plant species identified onsite during inspection and monitoring activities and will minimize the spread of restricted plant species beyond their known boundaries throughout the duration of the Project.

In accordance with Chapter Department of Agriculture, Trade and Consumer Protection (DATCP) 20, WAC, seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities will be avoided. Seed will be tested for purity, germination, and noxious weed seed content, and will meet the minimum requirements prescribed in the current edition of Rules for Testing Seed, published by the Association of Official Seed Analysts.

To minimize impacts to agricultural areas, construction of the transmission line will occur after harvest and/or before spring planting and be contained within the existing ROW to the greatest extent practicable, to reduce the potential for loss of crop production. Outside of winter months, matting will be used in wet areas to spread out heavy vehicle loads and minimize soil disturbance.

The Owners will coordinate the proper construction signage near recreation area access points on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

3.7 Noise

The following sections provide information related to noise associated with the Project.

3.7.1 Affected Environment

The land use immediately surrounding the proposed generating station locations is industrial, commercial, and residential. There are residential properties to the north and east of the Nemadji River Site and an industrial tank farm to the west. The Hill Avenue Site has residential property to the northeast and east, with commercial property to the north and industrial property to the west and south. Noise is primarily generated by activities in industrial areas, traffic on existing area roads, air traffic at nearby airports and airstrips, and rail traffic along area railroads.

Applicable Federal, state, county, and municipal noise ordinances were reviewed for the Study Area. The Project would be in the City of Superior, Wisconsin. The State of Wisconsin, Douglas County, and City of Superior do not have noise ordinances with applicable numerical sound level limits for the Project. The EPA established noise guidelines to protect public health and welfare in 1971. Though the guidelines are not enforceable Federal limits or standards, they represent valid criteria for evaluating the effect of Project-generated noise on public health and welfare.

Environmental sound level measurements were obtained to establish the existing ambient sound levels in the areas surrounding the Sites. The environmental sound level measurements were taken in accordance with the PSCW Measurement Protocol for Sound and Vibration. Sound levels at each frequency were measured for 10 minutes and logged by the sound level meter at each location. The sound levels varied at each measurement point depending on the extraneous sounds that occurred during each measurement.

3.7.2 Environmental Consequences

The following sections provide potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to noise.

3.7.2.1 Proposed Action Alternatives

Project construction would result in temporary and minor noise impacts in the surrounding area. Construction-related sounds would vary in intensity and duration depending on specific stages and activities of construction but would not be permanent. Nearby residences may temporarily experience increased noise during construction. Minor temporary disturbances to wildlife could occur.

As there are no specific government agency-related numeric noise limits for the Project, the Owners have elected to follow the EPA noise guidelines in order to minimize sound level impacts to the neighboring residences. The EPA's overall L_{eq} and L_{dn} guidelines are shown in Table 3-26. The L_{eq} is the average sound level for a specific time period, and the L_{dn} is the average sound level over a 24-hour period with the inclusion of a 10-dB penalty during the nighttime hours of 10 P.M. to 7 A.M.

The noise levels contained in Table 3-26 were established as required by the Act, but do not constitute enforceable Federal regulations or standards. However, these noise levels represent valid criteria for evaluating the effect of Project-generated noise on public health and welfare. Many noise studies performed for new projects compare residential noise levels to these EPA-established guidelines.

The recommended EPA guideline for outdoor activity in residential areas is an L_{dn} of 55 dBA or less.

Table 3-26: EPA Noise Levels Identified to Protect Public Health and Welfare

Effect	Noise Level	Area
Hearing Loss	$L_{eq(24)} \leq 70$ dBA	All areas.
Outdoor activity interference	$L_{dn} \leq 55$ dBA	Outdoor residential and farm areas, and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use
Outdoor activity interference	$L_{eq(24)} \leq 55$ dBA	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{dn} \leq 45$ dBA	Indoor residential areas
Indoor activity interference and annoyance	$L_{eq(24)} \leq 45$ dBA	Other indoor areas with human activities, such as school, etc.

Source: EPA, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, 1974

Using industry-accepted sound modeling software (CadnaA), the expected sound pressure levels of the Project were predicted. The software is a scaled, three-dimensional program which considers each piece of sound-emitting equipment and predicts sound-pressure levels over a gridded geographic area of interest. The model calculates sound propagation based on International Organization for Standardization (ISO) 9613-2:1996, General Method of Calculation. ISO 9613-2 assesses the sound levels based on the octave band center frequency range from 31.5 to 8,000 hertz.

Equipment sound power levels were provided for the gas turbine, fin fan heat exchanger, steam duct, and air cooled condenser. Gas turbine sound levels provided by the equipment manufacturer are considered to be unmitigated. Other noise sources were assumed based on historical data from projects of similar size and scope. In the model, appropriate sound generation was applied to all sound-radiating surfaces and points. The planned site grading topography changes have been included in the respective noise models.

Modeled results for the Nemadji River Site show a maximum total A-weighted sound level emitted from the Project that would be in excess of the EPA guideline noise levels at the nearest residential properties. The Nemadji River Site, however, can meet the EPA guidelines with mitigation (Table 3-27). Modeled results for the Hill Avenue Site show a maximum predicted A-weighted sound level emitted from the Project that would be in excess of the EPA guideline noise levels at the nearest residential property. The Hill Avenue Site would need further mitigation to reduce sound levels to below the EPA guidelines (Table 3-28). However, these guidelines are not enforceable sound level limits and are only provided as a suggested design goal.

Table 3-27: Sound Modeling Results at the Nemadji River Site with and without Mitigation

Location	Baseline Modeled Sound Level (L_{eq} / L_{dn} dBA)	Mitigated Modeled Sound Level (L_{eq} / L_{dn} dBA)
Res 1 (MP4)	50.1 / 56.5	48.0 / 54.4
Res 2	42.8 / 49.2	41.6 / 48.0
Res 3 (MP5)	44.8 / 51.2	43.1 / 49.5
Res 4 (MP6)	44.9 / 51.3	43.4 / 49.8

Table 3-28: Sound Modeling Results at the Hill Avenue Site with and without Mitigation

Location	Baseline Modeled Sound Level (L_{eq} / L_{dn} dBA)	Mitigated Modeled Sound Level (L_{eq} / L_{dn} dBA)
Res 1 (MP1)	51.9 / 58.3	50.0 / 56.4
Res 2 (MP4)	55.1 / 61.5	53.3 / 59.7
Res 3 (MP5)	48.5 / 54.9	47.8 / 54.2

Steam blows, which are an uncommon commissioning and maintenance activity occurring prior to commercial operation of the facility and in association with major plant maintenance, have the potential to significantly increase sound levels near the Project, regardless of the site, during their temporary operation. Following the initial steam blow for commercial operation, subsequent steam blows would be rare occurrences, anticipated once every 10 to 15 years as part of major system maintenance. Because these are rare and not long-term sources of noise, their impact is expected to be minimal.

3.7.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to existing noise levels at or in the vicinity of the Study Area because no construction would occur.

3.7.3 Mitigation Measures

Within twelve months of the date when the project is fully operational, and within two weeks of the anniversary date of the pre-construction ambient noise measurements, sound level measurements will be repeated both with and without the Project in operation to verify noise levels do not exceed contractually guaranteed levels, as well as EPA guideline levels. Sound measurements will be taken at the same measurement points that were analyzed for the ambient measurements. The Owners will provide notice to nearby residents of expected timeframes for steam blow operation.

3.8 Socioeconomics and Environmental Justice

The following section provides information related to socioeconomics and environmental justice.

3.8.1 Affected Environment

Various public facilities are located within the Study Area. One school, the Great Lakes Elementary School, is located in the northern portion of the Study Area along North 28th Street East. St. Luke's Mariner Medical Clinic Urgent Care is also located in the northern part of the Study Area on the north side of North 28th Street East. Two religious facilities are located along North 28th Street East: Christ Lutheran Church and Memorial Garden (located on the south side of North 28th Street East) and United Presbyterian Church (located on the north side of North 28th Street East).Two retirement facilities are located within 0.5 mile of the Hill Avenue Site: Villa Rita, a low-income housing development for age 55 and older and Villa Marina Health and Rehabilitation. Both facilities are located at the northwest corner of North 28th Street and Hill Avenue. The St. Francis Catholic Cemetery and Nemadji Cemetery are located to the northeast of the Nemadji River Site along 31st Ave E and are buffered by approximately 130 feet of trees. Two cemeteries are located in the central portion of the Study Area with access from County Road Z: Woodland Cemetery and the County Hospital Cemetery. Lastly, there are three public facilities (post office, fire department, and a Town of Parkland office) located in the southeastern portion of the Study Area on County Road K.

3.8.1.1 Population Growth Trends

The Study Area is within Douglas County, Wisconsin. It includes portions of the City of Superior, Town of Superior, and Town of Parkland. Wisconsin, Douglas County, the Town of Superior, and the Town of Parkland experienced growth between 2000 and 2017, while the City of Superior decreased in population slightly (Table 3-29). According to the U.S. Census Bureau (2000, 2017), Wisconsin had a growth rate of 7.4 percent from 2000 to 2017. The Town of Parkland had the highest growth rate of communities in the study area at 6.5 percent, considerably higher than Douglas County (0.5 percent), but lower than the State overall.

Table 3-29: Population Trends

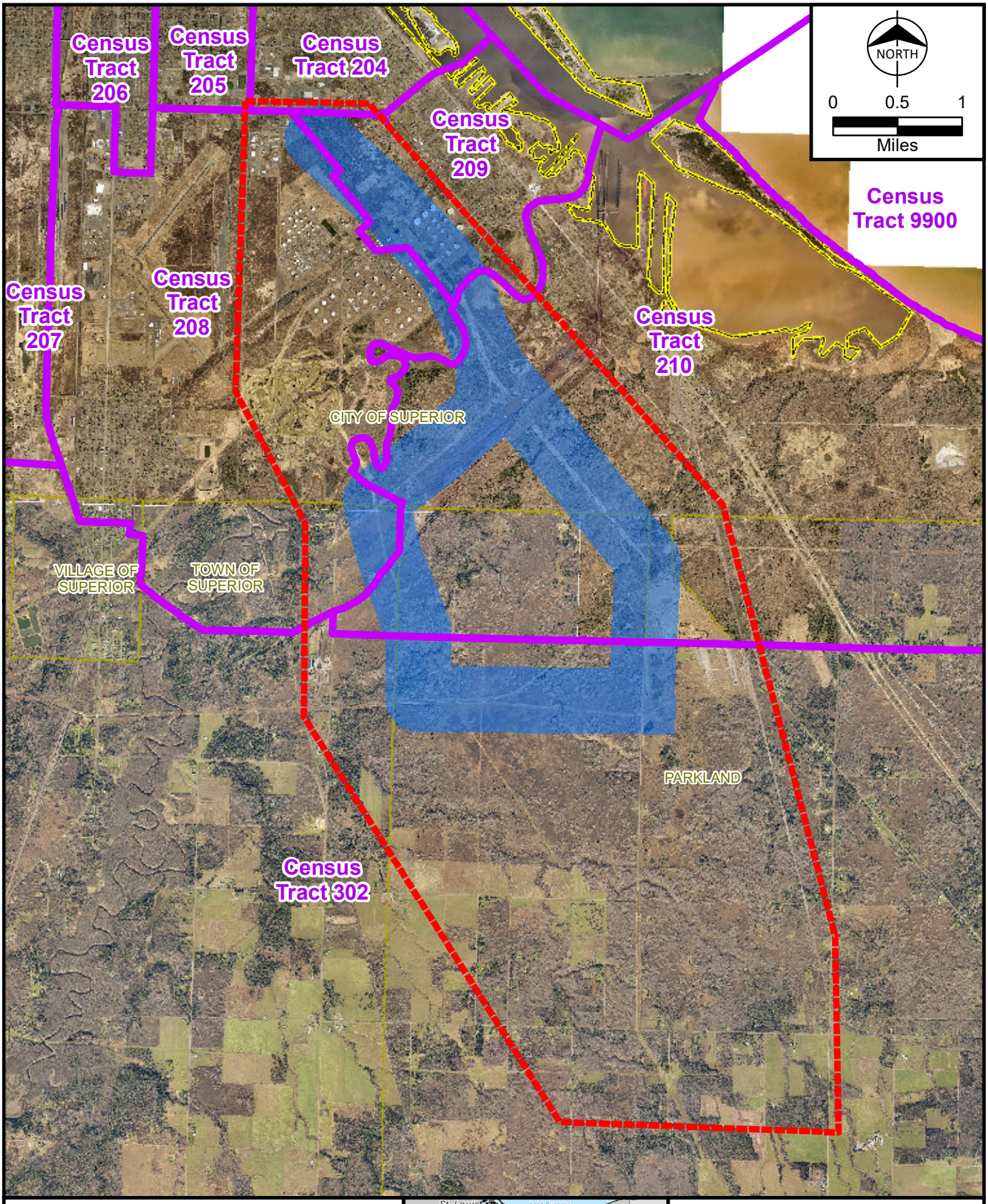
	2000	2010	2017 5-Year Estimate	Percent Change 2000-2017
Wisconsin	5,363,675	5,686,986	5,763,217	7.4
Douglas County	43,287	44,159	43,503	0.5
City of Superior	27,368	27,244	26,473	-3.3
Town of Superior	2,058	2,166	2,140	4.0
Town of Parkland	1,240	1,220	1,321	6.5

Source: U.S. Census Bureau, 2000 and 2010 Censuses; U.S. Census Bureau American Community Survey 2013-2017 5-Year Estimates

3.8.1.2 Population, Race, and Income Levels

The U.S. Census Bureau (2017) American Community Survey 5-Year Estimates has published demographic data for 2013-2017. Table 3-30 shows estimates for the State of Wisconsin, Douglas County, City of Superior, Town of Superior, Town of Parkland, and for the census tracts within which Project components would be located (Figure 3-3).

The Study Area population composition is primarily white, with small percentages of black or African American, American Indian, Asian, and other races. The median household income levels within the Study Area range from $43,836 in the City of Superior, to $70,875 in the Town of Superior. The City of Superior had the greatest percentage of people whose income in the past 12 months was below poverty level (18.0 percent) while the Town of Superior had the lowest percentage (5.9 percent).



Study Area
Macro-Corridors
Municipal Boundary
County Boundary
Census Tract Boundary

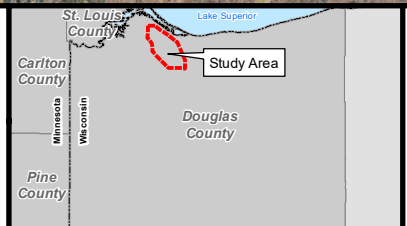


Figure 3-3
Census Tracts
SSE and DPC
Nemadji Trail Energy Center
Douglas County, WI

Source: Esri, Minnesota Power, City of Superior 2019 Aerials, USGS PADUS, FAA, USGS NHD, and Burns & McDonnell Engineering Company, Inc.

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Service Layer Credits:

Table 3-30: Population Characteristics – City of Superior and Census Tracts near Project

Demographic Group	Douglas County, Wisconsin	City of Superior	Town of Superior	Town of Parkland	Census Tract 204	Census Tract 205	Census Tract 208	Census Tract 209	Census Tract 210	Census Tract 302
Total population	43,503	26,473	2,140	1,321	3,429	2,961	3,267	2,359	1,674	5,188
White (percent)	93.0	91.8	97.0	93.6	92.2	88.0	91.9	92.6	90.4	94.9
Black or African American (percent)	1.2	1.8	0.0	0.0	1.1	5.5	1.7	1.7	3.9	0.3
American Indian and Alaska Native (percent)	1.7	1.8	1.5	4.1	0.3	1.2	2.3	1.1	3.5	2.2
Asian (percent)	1.0	1.4	0.2	1.3	0.6	4.0	1.9	0.0	0.7	0.4
Native Hawaiian and Other Pacific Islander (percent)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Some other race (percent)	0.3	0.3	0.3	0.0	0.0	0.3	0.3	0.0	0.0	0.2
Two or more races (percent)	2.7	2.9	1.0	1.1	5.7	1.0	1.7	4.6	1.4	2.0
Hispanic or Latino (percent)	1.5	1.8	1.1	1.0	2.0	2.3	0.7	0.4	0.0	2.0
Median household income	$ 50,730	$ 43,836	$70,875	$57,404	$ 49,977	$ 63,152	$ 51,563	$ 51,985	$ 45,439	$ 65,906
All people whose income in the past 12 months is below the poverty level (percent)	15.5	18.0	5.9	6.8	9.8	13.6	15.0	10.7	11.6	7.9

Source: U.S. Census Bureau American Community Survey 5-Year Estimates, 2013-2017

3.8.1.3 Employment

Table 3-31 provides employment characteristics for the State of Wisconsin, Douglas County, the City of Superior, Town of Superior, and Town of Parkland. The Town of Superior had an estimated unemployment rate of 6.8 percent for its civilian labor force, while the Town of Parkland, City of Superior, and Douglas County had slightly lower unemployment rates (5.1 percent, 5.4 percent, and 5.6 percent, respectively).

Table 3-31: Employment Characteristics

	Douglas County	City of Superior	Town of Superior	Town of Parkland
Population 16 years and over	35,571	21,685	1,774	1,083
In labor force	22,911	14,279	1,191	743
Employed (civilian labor force)	21,594	13,494	1,110	701
Unemployed (civilian labor force)	1,293	776	81	38
Armed forces	24	9	0	4
Not in labor force	12,660	7,406	583	340
Unemployment rate, civilian labor force (percent)	5.6	5.4	6.8	5.1
Top occupation	Management, business, science, and arts occupations	Management, business, science, and arts occupations	Management, business, science, and arts occupations	Management, business, science, and arts occupations
Top industry	Educational services, and health care and social assistance	Educational services, and health care and social assistance	Educational services, and health care and social assistance	Educational services, and health care and social assistance

Source: U.S. Census Bureau American Community Survey 2013-2017 5-Year Estimates

The top occupation category for Douglas County, the City of Superior, Town of Superior, and Town of Parkland was management, business, science, and arts occupations. The top industry category was educational services, and health care and social assistance (USCB, 2017).

3.8.1.4 Environmental Justice

Environmental justice concerns may arise from the human health or environmental effects of a project on minority or low-income populations. Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of

its programs, policies, and activities on minority populations and low-income populations" (CEQ, 1997). In the memorandum that accompanied EO 12898, the President specifically recognized the importance of procedures under NEPA for identifying and addressing environmental justice concerns. The memorandum states that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA."

Environmental justice issues are identified by first determining whether minority or low-income populations are present. If so, then any disproportionate effects on these population would be identified and considered. The CEQ guidance states that minority populations should be identified when the percentage of minority residents in the affected area exceeds 50 percent or is meaningfully greater than the percentage of minority residents in the general population (CEQ, 1997). If the percentage of minority residents of the population in the area census tract exceeds the county level by more than 10 percent, it is considered to be "meaningfully greater" for the purposes of the analysis. The CEQ guidance also states that low-income populations should be identified based on poverty thresholds as reported by the U.S. Census Bureau (USCB). If the poverty rate for the population of the area census tract exceeds the county poverty rate by more than 10 percent, it is considered to be an area of environmental justice concern for the purposes of the analysis. Table 3-32 provides total minority and poverty information for the Study Area.

Table 3-32: Total Minority and Poverty near Project

Environmental Justice Factor	Douglas County, WI	Census Tract 204	Census Tract 205	Census Tract 208	Census Tract 209	Census Tract 210	Census Tract 302
Total minority (percent)	8	9	12	12	7	11	7
Low-income population (percent)	33	27	33	34	28	45	22

Source: EPA EJScreen, 2019

Based on this methodology, Census Tract 210 is considered to be in an environmental justice low-income area. The low-income population of Census Tract 210 is 10 percentage points higher than Douglas County. The poverty rates for the remaining Study Area census tracts are not substantially higher (and for Census Tracts 204, 209, and 302, the poverty rates are lower) than the county poverty rate.

As identified in Table 3-32, the percentage of minority residents in Census Tracts 204, 205, 208, 209, 210, and 302 is only slightly higher (and for Census Tracts 209 and 302, slightly lower) than the percentage for Douglas County as a whole. Therefore, no environmental justice minority areas were identified in the Study Area.

3.8.2 Environmental Consequences

The following sections provide potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to socioeconomics and environmental justice.

3.8.2.1 Proposed Action Alternatives

During construction at either site, the Project would create up to 260 jobs during peak activity. These jobs would include construction management staff, site superintendents, skilled craftsmen, engineers, start-up support personnel, and other miscellaneous services. Contractors would be chosen from a competitive bid process and would be local whenever practical.

Craft labor, including carpenters, heavy equipment operators, laborers, millwrights, ironworkers, masons, pipefitters, and electricians, would be required during construction. Other staff would also be onsite during construction, such as management, engineering, technical, and start-up staff. The number of workers onsite would begin at nominal levels at the beginning of construction and steadily increase over time, declining as major construction activities are completed.

Contractors would be chosen from a competitive bid process and would be local whenever practical. The workforce may be sourced from different locations locally or nationwide. The Owners, construction contractor, and sub-contractors would supply staff for management, engineering, technical, start-up, and other support staff. Skilled labor such as carpenters, heavy equipment operators, laborers, millwrights, ironworkers, insulators, painters, boilermakers, sheet metal workers, masons, pipefitters, electricians etc., would be sourced as available from sub-contractors and/or local union labor halls. Local businesses near the Facility, such as gas stations, convenience stores, and restaurants, may experience increases in business during construction due to construction workers onsite. Local materials such as concrete, lumber, and general hardware may be purchased from local businesses. This increased demand would cease after construction is complete and would not add considerably to the demand on existing business, services, or community facilities.

The new permanent employment positions (up to 25 full-time permanent jobs) include Control Room Operators; Mechanical Maintenance Technicians; and Electrical, Instrument, and Control Technicians. These new permanent employees may be from the local workforce or may relocate to the area for the

position. Considering the population of the City of Superior (26,473 residents) and Douglas County (43,503 residents), the addition of 25 jobs is not anticipated to considerably increase demand for housing, schools, or other local services.

The City of Superior and Douglas County would receive payments in lieu of taxes of around one million dollars annually (two-thirds to the city; one-third to the county) from the State of Wisconsin for hosting a generation facility. The City of Superior would also receive considerable fees from the facility for increased use of the City's wastewater treatment system. County sales tax revenues are likely to increase over time, especially during the intense construction phase. There could be a negative local budget impact due to the increased use of 31st Avenue East, which is currently a short-paved road with an extended gravel portion that would need to be paved and maintained over time.

Census Tract 210 is considered to be in an environmental justice low-income area, based on the environmental justice analysis described in Section 3.8.1.4. Census Tract 210 within the Study Area contains 52 residences. The nearest residence is located approximately 230 feet west of the Eastern Transmission Route on 42nd Avenue East. The nearest residence to the Western Transmission Route in Census Tract 210 is nearly 300 feet east of the route on East 18th Street. Both portions of transmission line alternatives in this area are within an existing transmission line corridor. The ROW is surrounded by trees in this area, which provide a partial visual buffer. The minimal impacts within Census Tract 210 do not constitute disproportionately high and adverse impacts to this environmental justice area.

The Project would not directly impact any residences, public facilities, farming structures, cemeteries, religious facilities, or other structures. Temporary disruptions to normal traffic may occur during construction as equipment and employees commute to and from the Project. The frequency of the daily workforce automobile traffic would follow the Project workforce numbers onsite at a given time. The daily automobile traffic to the site would increase from approximately 25 to 50 vehicles in the initial stages of construction to approximately 200 to 260 vehicles for peak months (April through December 2023). The traffic would begin to decrease until it reaches approximately 25 vehicles near construction completion.

Regional economic benefits are estimated at around one billion dollars over 20 years. The facility owners are both active in their other host communities and intend to continue that commitment to the City of Superior and Douglas County. For example, the Owners have co-sponsored a bike sharing program in the City for the next two years. The Project is in discussions with local partners to create a trail near the facility and to upgrade the canoe launch near the facility.

3.8.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to socioeconomics or environmental justice communities at or in the vicinity of the Study Area because no construction would occur.

3.8.3 Mitigation Measures

Construction activities will primarily be scheduled between the hours of 7:00 a.m. and 10:00 p.m. to minimize noise impacts to nearby residences. The Owners will provide notice to nearby residents of expected timeframes for steam blow operation.

The Owners do not anticipate permanent damage to roads. As a precautionary measure, the Owners will video-document the condition of all roads on the construction vehicle routes to document the road condition prior to the start of construction. Any documented adverse impacts to the roads incurred due to the construction of the Project will be addressed through consultation with applicable road authorities regarding the Owners' responsibility for repairing the adversely impacted roads.

The Owners will coordinate the proper construction signage on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

Contractors will be chosen from a competitive bid process and will be local whenever practical. Local materials such as concrete, lumber, and general hardware may be purchased from local businesses.

3.9 Visual Resources

The following section provide information related to existing visual resources near the Project.

3.9.1 Affected Environment

The Study Area is primarily undeveloped wooded wetland areas with some areas of industrial and residential development, both denser subdivision and scattered rural in nature. The Nemadji River Site is surrounding by the Husky Superior Oil Refinery on the north and west sides, the Nemadji River on the south side, and a cemetery on the east. The site is buffered from the cemetery by approximately 130 feet of trees. The topography is relatively flat with riparian areas near the river. The Hill Avenue Site is within undeveloped scrub/shrub and is relatively flat, sloping slightly to the northeast.

The closest scenic byway to either Site is the Skyline Parkway Scenic Byway, a Minnesota State Byway located along West Skyline Parkway in Duluth, Minnesota, outside the Study Area. Veterans Evergreen

Memorial Drive, along Highway 23, is the only scenic byway in Douglas County, Wisconsin. It is a Minnesota State Scenic Byway that crosses approximately 0.5 mile of Douglas County, also outside the Study Area.

The switching station sites are situated in undeveloped wooded areas. The Superior Switching Station is bounded to the south by an existing 69-kV transmission line and 42nd Avenue East. All other sides of the site are surrounded by forested lands and shrubland habitats. The Parkland Switching Station location is bounded by County Road Z to the north, South Lyman Lake Road to the east, woodland to the west, and woodland/existing transmission corridor to the south. Man-made features in the area include existing roads, buildings, homes, railroads, utilities, and communication towers.

A significant portion of the transmission line routes would be located parallel to or double circuit with existing transmission infrastructure or located near other existing linear infrastructure. The majority of its length extends through undeveloped wooded areas. No designated scenic overlooks or vantage points were identified in the Study Area.

3.9.2 Environmental Consequences

The following sections provide potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to visual resources.

3.9.2.1 Proposed Action Alternatives

The aesthetics of the surrounding area would be altered by the Project. Vegetation would need to be cleared permanently for the Project Site, transmission line ROW, and switching station site. Light emissions at the Project Site would increase compared to current levels of light emissions as a result of facility lighting. The lighting regime near the Nemadji River Site is currently influenced by lighting at the existing oil and gas facilities located immediately adjacent to the site property, although no light emitting sources currently occur on the site itself. The Hill Avenue Site also has no light emitting sources currently onsite.

The Project site would require exterior lighting for safety and security. Lights would be required in parking areas, on service roads around the facility, at pedestrian entrances to various buildings, and along walkways on the property. Plant service roads, parking areas, and walkways would be illuminated with roadway lighting fixtures on poles. The trees on the eastern boundary of the Nemadji River Site would provide a buffer and help mitigate additional lighting impacts. Wooded areas located offsite of the Hill Avenue Site would provide a buffer to help mitigate light impacts to surrounding development. Building entrances would be illuminated with fixtures mounted directly above doors. Outdoor light fixtures would

be fully shielded and directed downward to minimize light visible from adjacent properties and to reduce glare in the area. Any floodlights required for the operation of the Project would be directed inward towards the facility and would have top and side shields.

The dominant visual features of the Project would be a stack and finned heat exchanger. The finned heat exchanger would be somewhat larger than the other facility equipment at the Project Site. A simulation of the facility is provided in Figure 3-4. The tallest features of the site would be the stack, which would be approximately 194 feet above ground level at the Nemadji River Site or 171 feet above ground level at the Hill Avenue Site. The proposed transmission line structures would predominately range in height from 120 feet to 160 feet above grade based on similar structure designs used for other projects. The proposed structures would likely be steel self-supporting structures on concrete foundations. The stack and transmission line, and potentially the finned heat exchanger, would be visible from multiple viewpoints throughout the area; most of the transmission line route is within undeveloped forested areas along existing utilities, however, as well as within existing transmission line corridors. The Nemadji River Site is located adjacent to existing industrial areas. The Hill Avenue Site is undeveloped lowland scrub/shrub surrounded by wooded areas and Hill Avenue on the west side. The transmission line routes parallel existing linear infrastructure for the majority of its length. The switching station sites are surrounded by undeveloped forested and shrubland habitats. None of the Project facilities are out of character with features already present across the visual landscape and the Project does not generally introduce new visual elements into the viewshed, keeping new facilities in proximity to already developed locations. Due to these factors and the distance from these scenic byways, it is anticipated that the Project would not significantly impact visual resources in the area.

3.9.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts to visual resources at or in the vicinity of the Study Area because no construction would occur.

3.9.3 Mitigation Measures

Building entrances will be illuminated with fixtures mounted directly above doors. Outdoor light fixtures will be fully shielded and directed downward to minimize light visible from adjacent properties and to reduce glare in the area. Any floodlights required for the operation of the Project will be directed inward towards the facility and will have top and side shields.

Figure 3-4: Nemadji Trail Energy Center Simulation

*View from residential area east of Plant

Cleared ROW would be revegetated as soon as practicable as described in Section 3.2.3.5. Existing vegetation outside the plant footprint, ROW, switching station areas, and laydown yards will be left intact to reduce visibility of the Project and provide screening. During construction, work areas would be maintained in an orderly manner and trash and construction debris removed to help avoid unsightly areas. All disturbed areas would be restored as soon as practicable. Disturbance would be limited to those areas necessary for construction, limiting clearing and ground disturbance.

3.10 Water Resources

The following sections provide information related to water resources in the Study Area.

3.10.1 Affected Environment

The Project is located within the St. Louis River Watershed and Lower Nemadji River - Frontal Lake Superior Watershed of the St. Louis SubBasin and Beartrap - Nemadji SubBasin in the Great Lakes

Region. Waterways in the area include the Nemadji River (which is adjacent to the south side of the Nemadji River Site), Bear Creek, Bluff Creek, Newton Creek, and various unnamed streams. Several small ponds are located throughout the area as well.

3.10.1.1 Surface Water

Surface water features were identified using the National Hydrography Dataset (NHD). The NHD represents the surface water drainage network of the United States, providing georeferenced locations for features such as rivers, streams, canals, lakes, and ponds. Waterbodies in the area include Lake Superior, the Nemadji River, Bear Creek, Bluff Creek, Newton Creek, and various unnamed streams. Several small ponds are located throughout the area as well. The City of Superior obtains its water supply from Lake Superior.

Based on interpretation of Wisconsin Statutes, Chapter 30 "*Navigable Waters, Harbors, and Navigation*", waterway WW-019f (Nemadji River) is classified as being a Navigable Water of the State. WW-019f is also listed a navigable water of the United States under USACE jurisdiction. Additionally, the WDNR made an in-person determination on August 2, 2018 that the lower majority of WW-501f is considered navigable under Wisconsin Statutes, Chapter 30 "Navigable Waters, Harbors, and Navigation". However, WW-501f is not considered to be a navigable water of the United States under USACE jurisdiction. No other waterways, wetlands, or waters within or near the Project are considered as navigable waters.

3.10.1.1.1 Water Quality

The Nemadji River is a 303d listed impaired river (WDNR, 2019b). The Nemadji River flows north and empties into Superior Bay. The impairment of the Nemadji River is degraded habitat due to erosion. The main pollutant of the Nemadji River is sediment/total suspended solids from severe natural and human-induced erosion, which is carried into Superior Bay (WDNR, 2019b). The Duluth-Superior Harbor is dredged periodically to maintain channels for ship traffic. The Nemadji River contributes 23,000 tons of silt and clay, and 14,000 tons of sand to Superior Bay on average every year (WDNR, 2019b).

Bear Creek is a 303d listed impaired stream. It is a small, partially intermittent stream that flows into Allouez Bay. It has variable and seasonal flows. The condition of Bear Creek is poor and its impairment is unknown (WDNR, 2019b). The main pollutant of Bear Creek is total phosphorus.

Bluff Creek is a 303d listed impaired stream. Its condition is poor and its impairment is unknown (WDNR, 2019b). The main pollutant of Bluff Creek is total phosphorus. Bluff Creek flows into Allouez Bay on the southeast side of the City of Superior.

Newton Creek is a 303d listed impaired stream in poor condition with limited aquatic life (WDNR, 2019b). Newton Creek drains a large wetland area west of Murphy Oil refinery, which discharges into the creek. Newton Creek flows north and empties into Hog Island Inlet, which then empties into Superior Bay. Impairments include chronic aquatic toxicity and degraded biological community. Pollutants in Newton Creek include foam/flocs/scum/oil slicks, polycyclic aromatic hydrocarbons (PAHs), unspecified metals, and other unknown pollutants (WDNR, 2019b).

3.10.1.1.2 Exceptional or Outstanding Resource Waters

The only Exceptional or Outstanding Resource Waters within 10 miles of the Project Sites are the Red River (Exceptional) and the Amnicon River (Outstanding). A small area of Lake Superior at the mouth of the Amnicon River is also considered an exceptional water. The Red River is approximately 9.3 miles from the Nemadji River Site and approximately 8.6 miles from the Hill Avenue Site. The Amnicon River is approximately 7.3 miles from the Nemadji River Site and approximately 8.7 miles from the Hill Avenue Site. Neither are crossed by the transmission line alternatives.

3.10.1.1.3 Trout Streams

The following trout streams are located within 10 miles of the Project Sites:

- Balsam Creek
- Black River
- Copper Creek
- Little Amnicon River
- Red River
- Rock Creek
- Silver Creek

The nearest trout stream to the Project is the Black River, located over 5 miles south-southwest of the Project. It is not crossed by the transmission line alternatives.

3.10.1.1.4 Wild or Scenic Rivers

The only wild or scenic river in Douglas County is the St. Croix River, located approximately 25 miles south of the Project (Appendix E). There are no other state or federally designated wild or scenic rivers in Douglas county.

3.10.1.2 Groundwater

The regional aquifer near Superior consists of a thick unit of glacial deposits that are comprised of clay, silt, sand, and gravel. These glacial deposits directly overlie Precambrian age sandstone bedrock. The bedrock units in Douglas County are not considered groundwater aquifers due to their low yield and mineralized water quality. The thickness of the glacial materials is variable through the County and generally increases towards Lake Superior, with a maximum thickness of over 600 feet near the St. Louis River (Weidman and Schultz, 1913). At the Nemadji River Site, the maximum thickness of the glacial deposits is approximately 280 feet. The aquifer underlaying the site and proposed to provide water for the Project is the Copper Falls Formation, characterized by sandy glacial till.

Two municipal water users are located near the Nemadji River Site: the City of Superior, and the Village of Oliver. The City of Superior obtains its water supply from a surface water source (Lake Superior). The Village of Oliver is located 7.3 miles west of the Nemadji River Site and uses groundwater as its water supply. The WDNR online mapping tool, the Water Withdrawal and High Capacity Well Viewer, was used to conduct research on high capacity groundwater users that are located within a 10-mile radius of the Nemadji River Site. Four high capacity permitted groundwater users were shown as existing within the search radius. The nearest high capacity groundwater user is located over 3 miles west of the Nemadji River Site. The nearest high capacity municipal groundwater user is the Village of Oliver. The permitted capacities, distances from the Nemadji River Site, and type of water use are listed in Table 3-33.

Table 3-33: High Capacity Groundwater Users near the Nemadji River Site

User Name	Use Type	Approved Maximum Withdrawal (gpd)[a]	Distance from Site (miles)
Precision Foods Inc.	Industrial	500,000	3.0
Wisconsin Central Railway	Industrial	48,000	5.1
Wisconsin Central Railway	Industrial	48,000	6.0
Village of Oliver	Municipal	80,000	7.3

Source: WDNR Wisconsin Water Quality Data View
(a) gallons per day

3.10.1.3 Floodplains

FIRMs have been prepared for Douglas County, Wisconsin (Appendix F). Near the Study Area, 100-year floodplain occurs along the Nemadji River, Bluff Creek, and Bear Creek. A portion of the Nemadji River Site is located within the 100-year floodplain due to its proximity to the Nemadji River. Other smaller streams are located near the Project but there are no identified 100-year floodplains associated with these

smaller streams. Nearby Superior Bay and Allouez Bay have associated 100-year floodplains (Figure 2-13). Small areas of 500-year floodplain existing along the Nemadji River, Bluff Creek, and Bear Creek in the Study Area (Figure 2-13). Appendix G shows water features, including floodplains, within the Project study area.

3.10.1.4 Wetlands/Riparian Areas

The Study Area is predominantly wetland (Figure 2-8 and Figure 2-13; Appendix G). Wetland types include emergent/wet meadow; emergent/wet meadow, open water; filled/drained wetland, forested, emergent/wet meadow; filled/drained wetland, forested, scrub/shrub; filled/drained wetland, Scrub/shrub; forested; forested, emergent/wet meadow; forested, open water; forested, scrub/shrub; open water; scrub/shrub; scrub/shrub, emergent/wet meadow; and upland.

A field wetland delineation was conducted in September 2016 and October 2017 for the Project, including site and line alternatives and associated facilities. Data forms and photographs for these identified features were surveyed using a sub-meter-accurate GPS unit. Some areas were inaccessible due to lack of survey permission. In these inaccessible areas, a desktop delineation was completed to identify where wetlands and waterways are likely to occur. The methodology for the desktop delineation consisted of reviewing several baseline datasets including, but not limited to recent high-resolution aerial imagery, USFWS National Wetland Inventory (NWI) data, Wisconsin Wetland Inventory (WWI) data, NRCS SSURGO hydric soils, LiDAR contours, and USGS topographic maps. The desktop delineation was conducted following the field delineation in order to further evaluate wetlands and waterways based on known adjacent field verified boundaries. Following the field and desktop delineation, approximately 120 wetlands and 25 waterways were identified within the Wetland Survey Area (Appendix G).

In addition to the NWI designated wetlands and field delineated wetlands, the State of Wisconsin has programs for identification and designation of special wetlands. Wisconsin Chapter NR 103.04 defines unique and significant wetlands as “identified in special area management plans (SAMP), special wetland inventory studies (SWIS), advanced delineation and identification studies (ADID) and areas designated by the U.S. EPA under section 404 (c), 33 USC 1344 (c)”. The City of Superior has a SAMP for specific unique and significant wetlands within their jurisdictional boundary. However, none of the City of Superior SAMP wetlands occur within the Nemadji River Site. Additionally, no other State special wetland designations as outlined in Wisconsin Chapter NR 103.04 are applicable for wetlands within the Nemadji River Site. As a result, none of the wetlands within the Nemadji River Site are considered to be significant. One state designated SAMP wetland (W-117d) is within the Eastern Transmission Route Wetland Survey Area. W-117d is a detention pond associated with a rail yard and would be spanned

entirely. No other State special wetland designations as outlined in Wisconsin Chapter NR 103.04 are applicable for wetlands within the Study Area.

Based on interpretation of Wisconsin Statutes, Chapter 30 "*Navigable Waters, Harbors, and Navigation*", the Nemadji River (waterway WW-019f) is classified as being a Navigable Water of the State. The Nemadji River is also listed a navigable water of the United States under USACE jurisdiction. No other waterways, wetlands, or waters within or near the Project are considered as navigable waters.

3.10.1.5 Wastewater

The Project would produce wastewater. All wastewater, microfiltration and ultrafiltration (MF/UF) backwash, and RO reject water would be piped offsite to the City's wastewater system. Tie-ins to the City sewer would be constructed. No additional treatment is expected to be necessary to meet the City's discharge quality limitations. HRSG blowdown would discharge to the City sewer system.

The discharge of wastewater to the City of Superior's sewer system from the Nemadji River Site would require installation of sewer pipeline from the northern boundary of the site to a tie-in location northeast of the site along 31st Avenue East. The primary tie-in location would be the East 2nd Interceptor, while the alternate tie-in location would be Manhole 040176. The Hill Avenue Site would also require an extension of the City's sewer pipeline system from the central portion of the site to the tie-in location at Manhole 050314, located northwest of the site along Hill Avenue.

Sanitary wastewater from bathrooms, showers, and other employee areas would be collected and routed to a lift station, which would also discharge to the municipal sewer system for offsite treatment. Drains for areas around equipment that could be contaminated with oil would be gravity drained and directed through an oil/water separator prior to discharge to the municipal sewer system. No additional treatment is expected to be necessary to meet the City of Superior's discharge quality limitations. Based on preliminary plant design, it is anticipated that the City of Superior has the capacity to treat wastewater from the Project.

3.10.1.6 Stormwater

In the State of Wisconsin, projects that would disturb one or more acres of land must obtain coverage under the WPDES General Permit No. WI-S067831-5 (WPDES General Permit), which authorizes the discharge of storm water associated with land-disturbing construction activities into State waters. Coverage under the WPDES General Permit is obtained by developing Erosion Control and Storm Water

Management Plans and submitting a Water Resources Application for Project Permits (WRAPP)[13] to the WDNR for approval prior to the start of Project construction.

Land-disturbing construction activities within the boundaries and jurisdiction of the City of Superior, Wisconsin must obtain an Erosion Control/Grading Permit and Storm Water Management Permit from the Public Works Department. The application requirements include the permit application forms, an Erosion & Sediment Control Plan, Storm Water Management Plan, and the required fees.

The Nemadji River Site has an existing stormwater pond that discharges via an underground pipe to the Nemadji River. It would be expanded to attenuate the increase in non-contaminated stormwater runoff volume from Project construction. A new storm water detention pond is proposed for the Hill Avenue Site and would be constructed in the northeast corner of the site. Storm water would be pumped from the pond and would drain at existing surface grade to the east/northeast to a stream that discharges to Superior Bay. Drains for areas around equipment that could be contaminated with oil would be gravity drained and directed through an oil/water separator prior to discharge to the municipal sewer system.

3.10.2 Environmental Consequences

The following sections provide potential environmental consequences of the proposed Action Alternatives and No Action Alternative related to water resources.

3.10.2.1 Proposed Action Alternatives

The following sections provide potential environmental consequences of the proposed Action Alternatives related to water resources.

3.10.2.1.1 Surface Water

Table 3-34 and Table 3-35 provide the types and length of each waterway delineated at each Site and within 0.5 mile of its boundary (see Appendix G for maps of surface waters, wetlands, and floodplains near the Project).

Table 3-34: Waterways Identified Within 0.5 Mile of Nemadji River Site (Total Length - 3,246 feet)

Waterway ID[a]	Name	Within Project Site or Within 0.5mile	Flow Regime	Centerline Length in Site Limits (feet)
WW-018f	UNT to Nemadji River	Within 0.5 Mile	Ephemeral	221
WW-019f	Nemadji River	Within Project Site	Perennial	953

[13] A WRAPP is also referred to as a Notice of Intent.

Waterway ID[a]	Name	Within Project Site or Within 0.5mile	Flow Regime	Centerline Length in Site Limits (feet)
WW-022d	Newton Creek	Within 0.5 Mile	Intermittent	1,397
WW-501f	UNT to Nemadji River	Within Project Site	Ephemeral	675

(a) A waterway ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.
(b) Centerline length is based on an average length down the center of the waterway that intersects within the site boundary.

Table 3-35: Waterways Identified Within 0.5 Mile of Hill Avenue Site (Total Length - 3,025 feet)

Waterway ID[a]	Name	Within Project Site or Within One-half mile	Flow Regime	Centerline Length in Site Limits (feet)[b]
WW-019f	Nemadji River	Within 0.5 Mile	Perennial	953
WW-022d	Newton Creek	Within Project Site[c]	Intermittent	1,397
WW-501f	UNT to Nemadji River	Within 0.5 Mile	Ephemeral	675

(a) A waterway ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.
(b) Centerline length is based on an average length down the center of the waterway that intersects within the site boundary.
(c) WW-022d is within the water supply line area, approximately 0.6 miles southeast of the Hill Avenue Site boundary.

Nine waterways (totaling 1,686 centerline linear feet) were delineated within the Eastern Transmission Route Wetland Survey Area. Seven waterways (totaling 1,883 centerline linear feet) were delineated within the Western Transmission Route Wetland Survey Area. Two waterways (totaling 407 centerline linear feet) were delineated within the Hill Avenue Site Route Wetland Survey Area. Table 3-36, Table 3-37, and Table 3-38 provide the types and length of each delineated waterway.

Table 3-36: Waterways Identified Within the Eastern Transmission Route Wetland Survey Area (Total Length - 1,686 feet)

Waterway ID[a]	Name	Flow Regime	Centerline Length in Wetland Survey Area (feet)[b]
WW-007f	UNT to Bear Creek	Intermittent	151
WW-008f	Bear Creek	Perennial	246
WW-009f	Bear Creek	Perennial	169
WW-010f	UNT to Bluff Creek	Ephemeral	180
WW-011f	UNT to Bluff Creek	Intermittent	162
WW-012f	UNT to Bluff Creek	Intermittent	194

Waterway ID[a]	Name	Flow Regime	Centerline Length in Wetland Survey Area (feet)[b]
WW-014f	Bluff Creek	Perennial	155
WW-015f	UNT to Nemadji River	Intermittent	246
WW-019f	Nemadji River	Perennial	183

(a) A waterway ID ending in "d" indicates it was delineated via desktop evaluation, while "f' indicates it was field delineated.
(b) Centerline length is based on an average length down the center of the waterway that intersects within the Wetland Survey Area.

Table 3-37: Waterways Identified Within the Western Transmission Route Wetland Survey Area (Total Length - 1,883 feet)

Waterway ID[a]	Name	Project Component Association	Flow Regime	Centerline Length in Wetland Survey Area (feet)[b]
WW-015f	UNT to Nemadji River	Shared Eastern and Western Transmission Route	Intermittent	1061
WW-016f	UNT to Nemadji River	Western Transmission Route Only	Ephemeral	174
WW-017f	UNT to Nemadji River	Western Transmission Route Only	Ephemeral	30
WW-018f	UNT to Nemadji River	Western Transmission Route Only	Ephemeral	46
WW-019f	Nemadji River	Shared Eastern and Western Transmission Route	Perennial	178
WW-020f	UNT to Nemadji River	Western Transmission Route Only	Intermittent	226
WW-021d	Bluff Creek	Western Transmission Route Only	Perennial	168

(a) A waterway ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.
(b) Centerline length is based on an average length down the center of the waterway that intersects within the Wetland Survey Area.

Table 3-38: Waterways Identified Within the Hill Avenue Site Route Wetland Survey Area (Total Length - 407 feet)

Waterway ID[a]	Name	Flow Regime	Centerline Length in Wetland Survey Area (feet)[b]
WW-019f	Nemadji River	Perennial	257

Waterway ID[a]	Name	Flow Regime	Centerline Length in Wetland Survey Area (feet)[b]
WW-022d	Newton Creek	Perennial	150

(a) A waterway ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.
(b) Centerline length is based on an average length down the center of the waterway that intersects within the Wetland Survey Area.

Table 3-39 provides the waterways that are proposed to be crossed by the transmission line routes.

Table 3-39: Waterways Proposed to Be Crossed for Construction

Waterway ID[a]	Name	Route Alternative	Crossing Method[b]
WW-007f	UNT to Bear Creek	Eastern Transmission Route	Temporary Prefabricated Span Bridge
WW-011f	UNT to Bluff Creek	Eastern Transmission Route	Temporary Prefabricated Span Bridge
WW-012f	UNT to Bluff Creek	Eastern Transmission Route	Temporary Prefabricated Span Bridge
WW-015f	UNT to Nemadji River	Eastern and Western Transmission Route	Temporary Prefabricated Span Bridge
WW-016f	UNT to Nemadji River	Western Transmission Route	Temporary Prefabricated Span Bridge
WW-017f	UNT to Nemadji River	Western Transmission Route	Temporary Prefabricated Span Bridge
WW-018f	UNT to Nemadji River	Western Transmission Route	Temporary Prefabricated Span Bridge
WW-020f	UNT to Nemadji River	Western Transmission Route	Temporary Prefabricated Span Bridge
WW-021d	Bluff Creek	Western Transmission Route	Temporary Span Bridge

(a) A waterway ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.
(b) Temporary spans would avoid disturbance below the ordinary high-water mark (OHWM) via supported prefabricated span bridge across each bank. A permanent span bridge would avoid placement of any structures within and below the OHWM and would not result in a floodplain water rise.

A temporary span bridge would be needed at WW-021d to allow for construction access within the Western Transmission Line ROW. Based on discussions with the WDNR, it is understood that temporary culvert and fill would not be allowable based on the waterway size and potential public use for recreation.

All other waterway crossings would be temporary in nature and utilize prefabricated span bridges placed above the OHWM.

Considering the distance of the Project from Outstanding or Exceptional Resource Waters; trout streams; and wild and scenic rivers, and with the implementation of mitigation measures described in Section 3.10.3, it is anticipated that construction and operation of the Project would not result in impacts to these features.

3.10.2.1.2 Groundwater

No groundwater would be used for the Project. There would be no impacts to groundwater.

3.10.2.1.3 Floodplains

The Nemadji River Site is located adjacent to the Nemadji River floodplain and a small portion of the property boundary extends into the 100-year and 500-year floodplain (see Appendix G for maps of floodplain near the Project). All equipment for the facility is located outside the 100-year and 500-year floodplain, however. The Hill Avenue Site, Superior Switching Station, Parkland Switching Station, and all laydown yards are not within 100-year floodplain. The Eastern and Western Transmission Routes would require crossing floodplain associated with the Nemadji River, Bear Creek, and Bluff Creek by the transmission line. The macro-corridors contain both 100-year and 500-year floodplain. All rivers would be spanned by the transmission line. Two transmission line structures would need to be placed within the Nemadji River floodplain due to the floodplain width.

3.10.2.1.4 Wetlands/Riparian Areas

A total of six wetlands (7.4 acres) were delineated[14] within the Nemadji River Site (see Appendix G for maps of wetlands near the Project). One wetland (totaling 75.6 acres) was delineated within the Hill Avenue Site. According to the Wetland Rapid Assessment Methodology (WRAM) assessment[15] provided in the wetland delineation report, the wetlands at the Sites have low-to-medium functional values because they are dominated by invasive wetland plant species, have a low vegetative diversity, are degraded due to adjacent existing roads and industrial facilities, and no threatened, endangered or species of concern

[14] The wetland delineation for the Project is available on the PSCW website at: http://apps.psc.wi.gov/vs2015/ERF_search/content/searchResult.aspx?UTIL=9698&CASE=CE&SEQ=100&START=none&END=none&TYPE=none&SERVICE=none&KEY=none&NON=N. PSC Reference Numbers 357006, 357007, 357008, 357009, 357229, 357228, 357227, 357230, 357231, 357232, 357234, 357235, 357236, 357237, 357238, 357239, 357240, 357026, and 357241.

[15] The WRAM assessments for the Project components are included in the wetland delineation report.

were observed. Table 3-40 and Table 3-41 provides the types and size of each wetland delineated at each Site.

Table 3-40: Wetlands Identified at Nemadji River Site (Total Area - 7.4 acres)

Wetland ID[a]	Wetland Classification Cowardin[b]	Wetland Classification WWI[c]	Area in Site Limits (acres)
W-501f	PFO	T3Kr	3.192
W-502f	PSS	S3Kr	2.133
W-503f	PEM	E1Kr	1.291
W-504f	PEM	E1Kr	0.074
W-505f	PUB	W0Hx	0.385
W-517f	PFO	T3Kr	0.289

(a) A wetland ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.
(b) PEM = palustrine emergent, PSS = palustrine shrub/scrub, and PUB = palustrine unconsolidated bottom. Source: Based on Cowardin, L. M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C.
(c) E1Kr = emergent/wet meadow, persistent, wet soil, palustrine, red clay complex; S3Kr = shrub/scrub, broad-leaved deciduous, wet soil, palustrine, red clay complex; W0Hx = open water, subclass unknown, standing water, palustrine, excavated. Source: Wisconsin Wetland Inventory Classification Guide (http://dnr.wi.gov/topic/wetlands/documents/WWI_Classification.pdf)

Table 3-41: Wetlands Identified at Hill Avenue Site (Total Area - 75.591 acres)

Wetland ID[a]	Wetland Classification Cowardin[b]	Wetland Classification WWI[c]	Area in Site Limits (acres)
W-513f	PSS	S3Kr	75.591

(a) A wetland ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.
(b) PSS = palustrine shrub/scrub, Source: Based on Cowardin, L. M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C.
(c) S3Kr = shrub/scrub, broad-leaved deciduous. Source: Wisconsin Wetland Inventory Classification Guide (http://dnr.wi.gov/topic/wetlands/documents/WWI_Classification.pdf)

For the Nemadji River Site, approximately 3.47 acres of wetlands would be permanently impacted (1.32 acres of PEM wetlands, 0.33 acre of PFO wetlands, and 1.82 acres of PSS wetlands) from placement of facility components. One existing detention basin would be relocated and expanded. Additionally, the Nemadji River Site's staging area would temporarily impact approximately 14.82 acres of wetlands (4.54 acres of PEM wetlands and 10.28 acres of PFO wetlands). As a result of the temporary staging area impacts, approximately 10.3 acres of PFO wetlands would be converted to PEM wetlands.

For the Hill Avenue Site, approximately 27.65 acres of PSS wetlands would be permanently impacted from placement of facility components. Additionally, the Hill Avenue Site's staging area would temporarily impact approximately 23.91 acres of PSS wetlands. As a result of the temporary staging area impacts, approximately 23.91 acres of PSS wetlands would be converted to PEM wetlands.

A total of 30 wetlands (49.5 acres) were delineated within the Eastern Transmission Line Wetland Survey Area. A total of 42 wetlands (totaling 86.4 acres) were delineated within the Western Transmission Route Wetland Survey Area. A total of 16 wetlands (totaling 18.7 acres) were delineated within the Hill Avenue Site Route Wetland Survey Area. According to the WRAM assessment provided in the wetland delineation report, the wetlands in the Wetland Survey Area have low-to-medium functional values because they are dominated by invasive wetland plant species, have a low vegetative diversity, are likely degraded due to presence within and adjacent to utility and road easements, and no threatened, endangered or species of concern were observed (SSE, Dairyland, Burns & McDonnell, 2019b). Table 3-42, Table 3-43, and Table 3-44 provide the types and size of each wetland delineated for each route in the Wetland Survey Area.

Table 3-42: Wetlands Identified Within the Eastern Transmission Route Wetland Survey Area (Total Area - 49.51 acres)

Wetland ID[a]	Project Component Association	Wetland Classification Cowardin[b]	Wetland Classification WWI[c]	Acreage in Wetland Survey Area
W-023f	Eastern Transmission Route Only	PEM	E1Kr	1.20
W-024f	Eastern Transmission Route Only	PFO	T3Kr	0.13
W-030f	Eastern Transmission Route Only	PEM	E1Kr	2.43
W-031f	Eastern Transmission Route Only	PSS	S3Kr	0.29
W-032f	Eastern Transmission Route Only	PSS	S3Kr	0.03
W-035f	Eastern Transmission Route Only	PEM	E1Kr	0.09
W-037f	Eastern Transmission Route Only	PEM/PSS	E1Kr/S3Kr	2.64
W-038d	Eastern Transmission Route Only	PFO	T3Kr	2.43
W-040f	Eastern Transmission Route Only	PEM	E1Kr	1.49
W-041f	Eastern Transmission Route Only	PEM	E1Kr	3.43
W-045f	Eastern Transmission Route Only	PEM	E1Kr	6.40
W-047f	Eastern Transmission Route Only	PFO	T3Kr	0.01
W-049f	Eastern Transmission Route Only	PEM	E1Kr	0.43
W-051f	Eastern Transmission Route Only	PEM	E1Kr	0.66
W-053d	Eastern Transmission Route Only	PFO	T3Kr	0.05

Wetland ID[a]	Project Component Association	Wetland Classification Cowardin[b]	Wetland Classification WWI[c]	Acreage in Wetland Survey Area
W-054f	Eastern Transmission Route Only	PEM/PSS	E1Kr/S3Kr	0.85
W-055f[d]	Eastern Transmission Route Only	PEM/PSS	E1Kr/S3Kr	5.28
W-055f[d]	Shared Eastern and Western Transmission Routes	PEM/PSS	E1Kr/S3Kr	1.35
W-057f[d]	Eastern Transmission Route Only	PFO	T3Kr	0.32
W-057f[d]	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.06
W-061f[d]	Eastern Transmission Route Only	PEM	E1Kr	0.40
W-061f[d]	Shared Eastern and Western Transmission Routes	PEM	E1Kr	1.05
W-062f[d]	Eastern Transmission Route Only	PFO	T3Kr	1.83
W-062f[d]	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.04
W-064f[d]	Eastern Transmission Route Only	PEM	E1Kr	0.02
W-064f[d]	Shared Eastern and Western Transmission Routes	PEM	E1Kr	0.04
W-081f[d]	Eastern Transmission Route Only	PSS	S3Kr	3.14
W-081f[d]	Shared Eastern and Western Transmission Routes	PSS	S3Kr	0.68
W-084f[d]	Eastern Transmission Route Only	PFO	T3Kr	8.77
W-084f[d]	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.74
W-117d	Eastern Transmission Route Only	PUB	W0Hx	1.01
W-119d	Eastern Transmission Route Only	PEM	E1Kr	0.01
W-120d	Eastern Transmission Route Only	PEM	E1Kr	0.27
W-121d	Eastern Transmission Route Only	PEM	E1Kr	0.22
W-501f[d]	Eastern Transmission Route Only	PFO	T3Kr	0.15
W-501f[d]	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.58
W-514d	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.44
W-515d	Shared Eastern and Western Transmission Routes	PEM	E1Kr	0.55

(a) A wetland ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.

(b) PEM = palustrine emergent, PSS = palustrine shrub/scrub, and PUB = palustrine unconsolidated bottom, PFO = palustrine forested wetland. Source: Based on Cowardin, L. M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C.

(c) E1Kr = emergent/wet meadow, persistent, wet soil, palustrine, red clay complex; S3Kr = shrub/scrub, broad-leaved deciduous, wet soil, palustrine, red clay complex; T3Kr = forested, broad-leaved deciduous, wet soil, palustrine, red clay complex; W0Hx = open water, subclass unknown, standing water, palustrine, excavated. Source: Wisconsin Wetland Inventory Classification Guide (http://dnr.wi.gov/topic/wetlands/documents/WWI_Classification.pdf)

(d) W-055f, W-057f, W-061f, W-062f, W-064f, W-081f, W-084f, and W-501f have portions that exist in both the Eastern Transmission Route only and shared Eastern and Western Transmission Routes and are broken up for the purposes of denoting the different acres within each project component.

Table 3-43: Wetlands Identified Within the Western Transmission Route Wetland Survey Area (Total Area - 86.43 acres)

Wetland ID[a]	Project Component Association	Wetland Classification Cowardin[b]	Wetland Classification WWI[c]	Acreage in Wetland Survey Area
W-055f[d]	Western Transmission Route Only	PEM/PSS	E1Kr/S3Kr	3.62
W-055f[d]	Shared Eastern and Western Transmission Routes	PEM/PSS	E1Kr/S3Kr	1.35
W-057f[d]	Western Transmission Route Only	PFO	T3Kr	1.47
W-057f[d]	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.06
W-058f	Western Transmission Route Only	PFO	T3Kr	0.06
W-059f	Western Transmission Route Only	PFO	T3Kr	1.87
W-061f[d]	Western Transmission Route Only	PEM	E1Kr	2.21
W-061f[d]	Shared Eastern and Western Transmission Routes	PEM	E1Kr	1.05
W-062f	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.32
W-064f[d]	Western Transmission Route Only	PEM	E1Kr	1.17
W-064f[d]	Shared Eastern and Western Transmission Routes	PEM	E1Kr	0.04
W-065f	Western Transmission Route Only	PSS	S3Kr	11.6
W-066f	Western Transmission Route Only	PFO	T3Kr	9.07
W-067f	Western Transmission Route Only	PSS	S3Kr	1.37
W-068f	Western Transmission Route Only	PFO	T3Kr	4.11
W-069f	Western Transmission Route Only	PFO	T3Kr	1.4
W-070f	Western Transmission Route Only	PEM	E1Kr	0.21
W-071f	Western Transmission Route Only	PSS	S3Kr	5.82
W-072f	Western Transmission Route Only	PFO	T3Kr	1.1
W-073d	Western Transmission Route Only	PSS	S3Kr	3.96
W-074d	Western Transmission Route Only	PFO	T3Kr	0.33
W-075d	Western Transmission Route Only	PFO	T3Kr	1.15

Wetland ID[a]	Project Component Association	Wetland Classification Cowardin[b]	Wetland Classification WWI[c]	Acreage in Wetland Survey Area
W-076d	Western Transmission Route Only	PFO	T3Kr	1.12
W-077d	Western Transmission Route Only	PEM	E1Kr	0.43
W-078d	Western Transmission Route Only	PFO	T3Kr	5.15
W-081f[d]	Western Transmission Route Only	PSS	S3Kr	3.80
W-081f[d]	Shared Eastern and Western Transmission Routes	PSS	S3Kr	0.68
W-082f	Western Transmission Route Only	PFO	T3Kr	0.01
W-083f	Western Transmission Route Only	PFO	T3Kr	0.53
W-084f	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.75
W-087d	Western Transmission Route Only	PFO	T3Kr	1.74
W-088d	Western Transmission Route Only	PEM	E1Kr	0.47
W-089d	Western Transmission Route Only	PFO	T3Kr	1.31
W-090d	Western Transmission Route Only	PSS	S3Kr	5.14
W-091d	Western Transmission Route Only	PEM	E1Kr	0.27
W-092d	Western Transmission Route Only	PEM	E1Kr	0.05
W-093d	Western Transmission Route Only	PSS	S3Kr	5.26
W-094d	Western Transmission Route Only	PEM	E1Kr	0.28
W-095d	Western Transmission Route Only	PUB	W0Hx	0.48
W-096d	Western Transmission Route Only	PEM	E1Kr	0.31
W-097d	Western Transmission Route Only	PFO	T3Kr	0.72
W-098d	Western Transmission Route Only	PSS	S3Kr	2.08
W-099d	Western Transmission Route Only	PFO	T3Kr	0.73
W-100d	Western Transmission Route Only	PSS	S3Kr	0.15
W-501f[d]	Western Transmission Route Only	PFO	T3Kr	0.06
W-501f[d]	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.58
W-514d	Shared Eastern and Western Transmission Routes	PFO	T3Kr	0.44
W-515d	Shared Eastern and Western Transmission Routes	PEM	E1Kr	0.55

(a) A wetland ID ending in "d" indicates it was delineated via desktop evaluation, while "f" indicates it was field delineated.

(b) PEM = palustrine emergent, PSS = palustrine shrub/scrub, and PUB = palustrine unconsolidated bottom, PFO = palustrine forested wetland. Source: Based on Cowardin, L. M., V. Carter, F.C. Golet,

and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C.

(c) E1Kr = emergent/wet meadow, persistent, wet soil, palustrine, red clay complex; S3Kr = shrub/scrub, broad-leaved deciduous, wet soil, palustrine, red clay complex; T3Kr = forested, broad-leaved deciduous, wet soil, palustrine, red clay complex; W0Hx = open water, subclass unknown, standing water, palustrine, excavated. Source: Wisconsin Wetland Inventory Classification Guide (http://dnr.wi.gov/topic/wetlands/documents/WWI_Classification.pdf)

(d) W-055f, W-057f, W-061f, W-064f, W-081f, and W-501f has portions that exist in both the Western Transmission Route only and shared Eastern and Western Transmission routes and are broken up for the purposes of denoting the different acres within each project component.

Table 3-44: Wetlands Identified Within the Hill Avenue Site Route Wetland Survey Area (Total Area - 18.66 acres)

Wetland ID[a]	Wetland Classification Cowardin[b]	Wetland Classification WWI[c]	Acreage in Wetland Survey Area
W-061f	PEM	E1Kr	1.17
W-062f	PFO	T3Kr	0.33
W-101d	PEM	E1Kr	1.80
W-102d	PSS	S3Kr	0.42
W-104d	PSS	S3Kr	0.16
W-106d	PSS	S3Kr	0.80
W-107d	PSS	S3Kr	1.00
W-108d	PEM	E1Kr	0.25
W-115d	PSS	S3Kr	10.02
W-118d	PUB	W0Hx	0.07
W-501f	PFO	T3Kr	0.72
W-503f	PEM	E1Kr	0.43
W-506d	PEM	E1Kr	0.69
W-510d	PFO	T3Kr	0.57
W-513f	PSS	S3Kr	0.17
W-517f	PFO	T3Kr	0.06

(a) A wetland ID ending in “d” indicates it was delineated via desktop evaluation, while “f” indicates it was field delineated.

(b) PEM = palustrine emergent, PSS = palustrine shrub/scrub, and PUB = palustrine unconsolidated bottom, PFO = palustrine forested wetland. Source: Based on Cowardin, L. M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C.
E1Kr = emergent/wet meadow, persistent, wet soil, palustrine, red clay complex; S3Kr = shrub/scrub, broad-leaved deciduous, wet soil, palustrine, red clay complex; T3Kr = forested, broad-leaved deciduous, wet soil, palustrine, red clay complex; W0Hx = open water, subclass unknown, standing water, palustrine, excavated. Source: Wisconsin Wetland Inventory Classification Guide (http://dnr.wi.gov/topic/wetlands/documents/WWI_Classification.pdf)

For the Eastern Route, approximately 0.017 acre of wetlands would be permanently impacted (0.007 acre of PEM wetlands, 0.006 acre of PEM/PSS wetlands, and 0.004 acre of PFO wetlands) from placement of structures in wetlands. Similarly, approximately 7.47 acres of wetlands would be temporarily impacted (4.36 acres of PEM wetlands, 2.43 acres of PEM/PSS wetlands, 0.66 acre of PFO wetlands, and 0.02 acre of PSS wetlands) from temporary wetland matting. As a result of clearing activities, approximately 5.61 acres of PFO wetlands and approximately 5.35 acres of PSS wetlands would be converted to PEM wetlands. Additionally, the Eastern Route's laydown area would temporarily impact 0.99 acre of wetlands (0.44 acre of PEM wetlands and 0.55 acre of PFO wetlands). As a result of the temporary laydown area impacts, approximately 0.55 acre of PFO wetlands would be converted to PEM wetlands.

For the Western Route, approximately 0.046 acre of wetlands would be permanently impacted (0.004 acre of PEM wetlands, 0.003 acre of PEM/PSS wetlands, 0.018 acre of PFO wetlands, and 0.021 acre of PSS wetlands) from placement of structures in wetlands. Similarly, approximately 16.32 acres of wetlands would be temporarily impacted (0.94 acre of PEM wetlands, 1.17 acres of PEM/PSS wetlands, 6.54 acres of PFO wetlands, and 7.67 acres of PSS wetlands) from temporary wetland matting. As a result of clearing activities, approximately 29.1 acres of PFO wetlands and approximately 35.6 acres of PSS wetlands would be converted to PEM wetlands. Additionally, the Western Route's laydown area would temporarily impact 0.99 acre of wetlands (0.44 acre of PEM wetlands and 0.55 acre of PFO wetlands). As a result of the temporary laydown area impacts, approximately 0.55 acre of PFO wetlands would be converted to PEM wetlands.

For the Hill Avenue Site Alternative Route, approximately 0.015 acre of wetlands would be permanently impacted (0.002 acre of PEM wetlands, 0.003 acre of PFO wetlands, and 0.010 acre of PSS wetlands) from placement of structures in wetlands. Similarly, approximately 3.37 acres of wetlands would be temporarily impacted (0.46 acre of PEM wetlands, 0.23 acre of PFO wetlands, and 2.68 acres of PSS wetlands) from temporary wetland matting. As a result of clearing activities, approximately 1.55 acres of PFO wetlands and 12.58 acres of PSS wetlands would be converted to PEM wetlands.

A total of 13 transmission poles would likely be placed in wetlands within the Eastern Transmission Route Wetland Survey Area (see Appendix G for maps of transmission line structures near or within wetlands). A total of 40 transmission poles would be permanently placed in wetlands within the Western Transmission Route Wetland Survey Area. A total of 10 transmission poles would be permanently placed in wetlands within the Hill Avenue Site Route Wetland Survey Area.

Switching station sites that minimized wetland impacts were considered as part of Project development. Although both selected switching station sites are entirely within wetland areas, these sites would minimize the potential wetland impacts associated with the switching stations. Wetlands are prevalent in this area and could not be avoided. Locating the switching stations adjacent to the transmission line corridors minimizes additional wetland impacts that could have occurred in association with additional transmission line construction, construction access and road/driveway construction. Forested and shrub/scrub wetland areas would be cleared of vegetation at the switching station sites.

For the Parkland Switchyard, approximately 13.33 acres of wetlands would be permanently impacted (9.51 acres of PFO wetlands and 3.82 acres of PSS wetlands) from switchyard pad fill. There would be no temporary impacts to wetlands from the Parkland Switchyard.

For the Superior Switchyard, approximately 13.96 acres of wetlands would be permanently impacted (6.26 acres of PFO wetlands and 7.70 acres of PSS wetlands) from switchyard pad fill. There would be no temporary impacts to wetlands from the Parkland Switchyard.

3.10.2.1.5 Wastewater

Wastewater impacts would be the same for either the Hill Avenue or Nemadji River Site. Wastewater quantity and quality would be the same during operation of either plant site. The Project would be responsible for installation of the sewer extension and tie-in to connect to the City's wastewater system. The Owners would work with the City of Superior to install the wastewater discharge interconnection facilities to the City's wastewater treatment plant. While the design of this installation has not been completed, it is expected that the plant would be connected as an industrial customer, would utilize existing piping to the extent practical, and any new piping would be high-density polyethylene (HDPE) and would be routed in existing ROW to the extent practical. Use of the City's ROW for construction would require City Council resolution. Additionally, the City of Superior would require the Owners to take ownership of the sewer line extension and lift station because they would be constructed to service a single, privately held facility. Delivery meters would also be owned by the Project, and the monthly flow rate reading would be communicated to the City of Superior for processing as a wastewater bill.

The treatment of process waters (e.g., demineralization, RO, MF/UF) prior to use would generate waste streams that contain concentrated dissolved and suspended constituents. The chemical and physical attributes of the discharged waters, excluding sanitary wastewater, are provided below in Table 3-45 and are based on preliminary municipal water quality.

Table 3-45: Wastewater Constituent Concentrations

Parameter	Estimated Discharge Concentration (mg/L)(1)
Total Alkalinity at $CaCO_3$	<175[2]
Calcium, Ca	<147
Magnesium, Mg	<45
Sodium, Na	<419
Potassium, K	<17
Sulfates, SO_4	<599
Chloride, Cl	<498
Silica, SiO_2	<51
Total Dissolved Solids	<1808
Total Alkalinity as HCO_3	<213

(1) The estimated concentrations are based on makeup water treatment processes and the municipal water quality data received to date. Sanitary wastewater is not included.

Metal concentrations in wastewaters would be below Federal, State, and City of Superior pretreatment limits found in Section 114-26, Article II of the City of Superior, Wisconsin Code of Ordinances and in 40 CFR 423.17 – Pretreatment standards for new sources.

The wastewater temperature would range from 40 °F in the cold winter ambient scenarios to about 150 °F in the maximum summer ambient scenario. The City of Superior requires discharges to its sewer system to have a daily maximum temperature of no more than 150 °F.

At maximum summer municipal water consumption is estimated to be 1.5 MGD with the maximum annual average consumption being around 0.3 MGD. On average, approximately 50 percent of the water utilized for the Project, would be lost through evaporation. The remainder would be discharged to the City sewer. Delivery meters would be used to collect wastewater volume readings and would be owned by the

Project. The maximum (summer) wastewater discharge is estimated to be around 0.6 MGD (0.93 cubic feet per second [cfs]) with the maximum annual average discharge being around 0.15 MGD (0.23 cfs).

The Project would be assessed a charge for discharge into the City wastewater system. User charges would include a fixed charge and variable user charge for use of the City's sewer system to discharge industrial wastewaters. The expected fixed charge is $5.50 per month, which is levied against every residential, commercial, and industrial connection. Connections which include more than one unit of service are charged $5.50 per month per unit of service. The variable user charge for each industrial connection is computed according to the discharge characteristics listed in Table 3-46. User charges are detailed in Article II, Section 114-62 of the City of Superior, Wisconsin Code of Ordinances.

Table 3-46: Variable User Charges for Industrial Connections to the City of Superior Sewer System

Discharge Characteristics	Unit Charges
BOD (per pound)	$0.58
Suspended solids (per pound)	$0.46
Phosphorus (per pound)	$8.43
Volume (per 1,000 gallons)	$3.59

Source: Article II, Section 114-62 of the City of Superior, Wisconsin Code of Ordinances

The WDNR's Pretreatment Program is a requirement of the Federal Clean Water Act and is administered according to the regulations contained in WAC NR 211 and NR 220-297. The City of Superior has operated a State-approved Pretreatment Program since 1994 and is a designated "control authority". Therefore, the City of Superior is authorized to issue pretreatment permits to industrial dischargers in accordance with Chapter 114, Article II of the City of Superior, Wisconsin Code of Ordinances. Because the Project would discharge industrial wastewater to the City's sewer system and would discharge more than 25,000 gallons per day, the Facility is required to obtain an Individual Wastewater Discharge Permit from the City of Superior. The Pretreatment Program application materials were submitted to the City of Superior on December 18, 2018.

3.10.2.1.6 Stormwater

The Project Erosion Control Plan and Storm Water Management Plan was formatted and designed to meet or exceed compliance with the erosion control and storm water management technical standards and the construction and post-construction performance standards identified in WAC NR 151 and 216 as well as the City of Superior's Site Erosion Control Ordinance and Long-Term Stormwater Management Ordinance. The Erosion Control and Storm Water Management Plan addresses both the control of sediment and pollutants during construction until site stabilization is complete and the storm water management practices that would be installed during the construction phase to address the discharge of total suspended solids, to control peak flow, to provide for infiltration, and to maintain protective areas during Facility operation. Site-specific plans would be developed during the final design phase of the Project and provided to the WDNR and the City of Superior for review and approval prior to commencement of construction.

Non-contaminated storm water runoff on the Nemadji River Site would be collected and directed to an onsite storm water detention pond located near the southwestern boundary of the site. The existing pond discharges via underground pipe to the Nemadji River and would be expanded to attenuate the increase in runoff volume from Project construction.

Storm water runoff on the Hill Avenue Site would be collected and routed to a new storm water detention pond located in the northeast corner of the site. The new pond would be pumped, and storm water would be discharged at existing surface grade to the east/northeast to a stream that discharges to Superior Bay. The post-construction storm water management facilities would be designed to meet the performance standards addressed in NR 151. Drains for areas around equipment that could be contaminated with oil would be gravity drained and directed through an oil/water separator prior to discharge to the municipal sewer system.

At either Site, the wet detention pond would be used as a sediment basin during Project construction to remove sediment loads from storm water runoff in accordance with WAC NR 151.11(6m)(b)2, which states that construction sites may discharge no more than 5 tons per acre per year, or to the maximum extent practicable, of the sediment load carried in runoff from initial grading to final stabilization. Following site stabilization, the sediment basin would be cleaned out and converted to a wet detention basin. The detention basin is designed to reduce the total suspended solids load by at least 80 percent, based on an average annual rainfall.

Drains for areas around equipment that could be contaminated with oil would be gravity drained and directed through an oil/water separator prior to discharge to the municipal sewer system.

3.10.2.2 No Action Alternative

The No Action Alternative would have no short- or long-term impacts on water resources in the Study Area because no construction would occur.

3.10.3 Mitigation Measures

Minimization efforts will be utilized to the extent practical where wetland impacts are unavoidable. Construction activities will be prioritized during winter months to take advantage of ground freeze and use of ice roads to limit ground disturbance. Outside of winter months, matting will be used in wetland areas to spread out heavy vehicle loads and minimize soil disturbance. Additionally, tracked vehicles will be used to the extent practical to further spread out vehicle loads throughout wetland area with matting.

Existing site entrances will be used to the extent practical to reduce the number of new roadside and wetland crossings required for construction vehicles to access the site. BMPs outlined in the SWPPP will be used to avoid and minimize stormwater sedimentation and disturbance within wetland areas.

The Sites will be designed to avoid and minimize temporary and permanent impacts to waterways. The post-construction storm water management facilities would be designed to meet the performance standards addressed in NR 151.

To the extent practicable, off-ROW access roads eliminate the need to cross wide waterways during construction. For smaller intermittent and ephemeral waterways within the ROW, temporary prefabricated span bridges will be used to span waterways. Following the removal of all temporary bridges, contours will be regraded to pre-construction conditions as needed.

A Spill Prevention, Control and Countermeasures (SPCC) plan has been created for the Project. This plan establishes procedures, methods and equipment, and other requirements for equipment to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines. The equipment at the site is outside the 100-year and 500-year floodplain.

The wetlands and waterways WDNR permit application materials were submitted on December 18, 2018. USACE was sent a wetland delineation report to review in preparation for PSCW decision. The Owners will provide the USACE with wetland permit information throughout the CPCN application process. An

Individual Permit application was sent to the USACE on March 31 for the NTEC 625-megawatt (MW) gas turbine generation facility, natural gas supply pipeline, and 345-kilovolt transmission line, new switching station, staging areas, and laydown yards. Pre-construction notification was sent to the USACE on March 31 for the 10-inch natural gas pipeline relocation for Section 404 permit coverage under the Utility Regional General Permit. Pre-construction notification was sent to the USACE on March 31 for the transmission line relocation for Section 404 permit coverage under the Utility Regional General Permit and authorization under Section 10 of the Rivers and harbors Act. The USACE published these applications for 30-day public review and comment on September 14, 2020 (Appendix G). The Owners will comply with permit application requirements for wetlands and waterways.

3.11 Summary of Impacts

The following table (Table 3-47) provides a summary of potential impacts by Alternative.

Table 3-47: Summary of Potential Impacts

Resource	Impacts common to all Project Alternatives	Hill Avenue 1 Impacts	Hill Avenue 2 Impacts	Nemadji River 1 Impacts	Nemadji River 2 Impacts
Air Quality	The existing air quality in the Douglas County area is designated as attainment or unclassifiable in regard to the NAAQS for all criteria pollutants. Construction of the Project has the potential for short-term adverse effects on air quality in the immediate area around the site. Minor and temporary generation of criteria pollutants and GHGs would occur during construction. It is anticipated that the Project would not affect the attainment status for Douglas County. The Owners would comply with the issued WDNR construction air permit that would include emission limitations, monitoring requirements, and other terms and conditions. The Project would not cumulatively contribute to significant adverse air quality impacts.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.
Biological Resources	Temporary impacts from the Project could occur as a result of the increased presence of human and vehicle disturbance during construction. Temporary displacement of species might occur due to increased human activity in the area, vehicle traffic, and material transfer. Impacts to wildlife as a result of vehicle collisions would also be an increased risk during construction and operation. The majority of species affected would be mobile and able to move away from any impacts, but others could be vulnerable. Construction and operation of the Project would result in the permanent loss of vegetation communities, wildlife habitat, and plant and animal populations within the construction footprint. Additionally, some of the wildlife communities that occur at and in the vicinity of the Project would be temporarily displaced to surrounding areas where habitat is available. Construction of the either the Superior Switching Station or the Parkland Switching Station would impact approximately 14 acres of woody vegetation in forested lands	No forest or grassland communities occurs at the Hill Avenue Site. The Hill Avenue Site Route would require clearing in forested areas for new ROW and along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 14.3 acres of the Hill Avenue Site Route in forested lands and shrubland habitats. The Eastern Transmission Route would require approximately 23.1 acres of woody vegetation to be cleared from forested lands and shrubland habitats to widen the corridor and accommodate the additional line. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.	No forest or grassland communities occurs at the Hill Avenue Site. The Hill Avenue Site Route would require clearing in forested areas for new ROW and along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 14.3 acres of the Hill Avenue Site Route in forested lands and shrubland habitats. The Western Transmission Route would require clearing in forested areas for new ROW in addition to minor impacts to forested land along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 79.1 acres of the Western Transmission Route in forested lands and shrubland habitats. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.	Construction of the proposed project at the Nemadji River Site would permanently impact approximately 7.1 acres of forest (approximately 4.6 acres of the quaking aspen forest in the northeastern portion of the site and approximately 2.5 acres of the mixed quaking aspen and black willow forest in the southeastern portion of the site) as well as impact approximately 7.2 acres of the forage grassland and wetland meadow communities The proposed project footprint at the Nemadji River Site avoids clearing trees and vegetation along the banks, immediately adjacent to the Nemadji River. A vegetation buffer with a minimum width of 100 feet would be maintained between the proposed project footprint and the Nemadji River. The loss of plant and animal habitat would occur adjacent to existing areas that have already been developed. The Nemadji River Site is adjacent to an existing tank farm and utility corridors. This area has experienced some level of habitat fragmentation associated with	Construction of the proposed project at the Nemadji River Site would permanently impact approximately 7.1 acres of forest (approximately 4.6 acres of the quaking aspen forest in the northeastern portion of the site and approximately 2.5 acres of the mixed quaking aspen and black willow forest in the southeastern portion of the site) as well as impact approximately 6.47.2 acres of the forage grassland and wetland meadow communities The proposed project footprint at the Nemadji River Site avoids clearing trees and vegetation along the banks, immediately adjacent to the Nemadji River. A vegetation buffer with a minimum width of 100 feet would be maintained between the proposed project footprint and the Nemadji River. The loss of plant and animal habitat would occur adjacent to existing areas that have already been developed. The Nemadji River Site is adjacent to an existing tank farm and utility corridors. This area has experienced some level of habitat fragmentation associated with

Resource	Impacts common to all Project Alternatives	Hill Avenue 1 Impacts	Hill Avenue 2 Impacts	Nemadji River 1 Impacts	Nemadji River 2 Impacts
	and shrubland habitats. No grassland habitat is present within the footprint of the switching station site. Forested areas adjacent to the Project could provide potential habitat for the northern long eared bat. Snags that include potential summer roost trees for the northern long-eared bat were observed during the site visit along Bear Creek, adjacent to Study Area. No potential summer roost habitat was observed at either proposed facility site. No caves were identified within the Study Area. no bald or golden eagle nests were observed during field surveys that occurred within the Study Area. One invasive plant species, reed canary grass, was identified along all portions of the transmission line route and switching station site during the wetland delineation field. The three other invasive plant species were more sparsely distributed and were not observed at each Project component.			development in and around the City of Superior. The Eastern Transmission Route would require approximately 23.1 acres of woody vegetation to be cleared from forested lands and shrubland habitats to widen the corridor and accommodate the additional line. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.	development in and around the City of Superior. The Western Transmission Route would require clearing in forested areas for new ROW in addition to minor impacts to forested land along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 79.1 acres of the Western Transmission Route in forested lands and shrubland habitats. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.
Cultural Resources	Based on the distance from NRHP properties and the concurrence from SHPO that no historic properties would be affected, it is anticipated that the Project would not have adverse impacts on cultural resources.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.

Resource	Impacts common to all Project Alternatives	Hill Avenue 1 Impacts	Hill Avenue 2 Impacts	Nemadji River 1 Impacts	Nemadji River 2 Impacts
Geology and Soils	Both Project sites would need to be graded and grading design would change the topography to facilitate storm water drainage patterns. Storm water runoff on the Nemadji River Site would be collected and directed to an onsite storm water detention pond. Storm water runoff on the Hill Avenue Site would be collected and routed to a new storm water detention pond. Both sites require excavation for underground utilities and deep structures such as pump pits. For the transmission line, foundation construction would occur after vegetation clearing is complete. Excavated soils from foundation drilling would be used for foundation backfill if appropriate. Surplus soils would be spread within upland areas of the right of way and stabilized. After all line construction is complete, the ROW is restored. Construction and operation of any Project alternative is not expected to affect geological formations. Soils at the Project site would be converted to plant site development with much of the area occupied by the facilities and covered by concrete and gravel areas. The transmission line corridor would be cleared but only soil areas at the structure locations would be permanently excavated. Other areas of hydric and statewide important soils would remain largely unaffected by construction and following any necessary stabilization would be available for agriculture and other activities.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.

Infrastructure, Transportation, Public Health and Safety, and Hazardous Materials	*Utilities:* Outages would be required on the Line No. 160 transmission line and the Line No. 761 transmission line to construct the new double circuit 345-kV The Project would require an outage to connect to the Arrowhead to Stone Lake 345 kV transmission line. The Project would require minor construction of water and wastewater pipelines to connect with the municipal system. *Transportation:* The daily automobile traffic to the site would increase from approximately 25 to 50 vehicles per day in the initial stages of construction to approximately 200 to 260 vehicles per day during peak months (April through December 2023). The traffic would begin to decrease until it reaches approximately 25 vehicles per day near construction completion. Material and equipment deliveries are anticipated to average between 15 and 25 trucks per day. Bulk deliveries for materials such as crushed stone, hot asphalt paving, and redi-mix concrete may occasionally exceed 25 vehicles on a given day. No permanent changes to existing roads are anticipated as part of this Project. No permanent damage to roads is anticipated with the implementation of mitigation measures. There is currently no connection or proposed connection to rail lines related to the Project. Rail lines would be spanned by the Project transmission lines. The FAA issued Determination of No Hazard/Does Not Exceed (DNE) letters for the stacks at the Project sites. The FAA issued a Determination of No Hazard/DNE letter for all the transmission line structures that were studied on October 2, 2018. The Project would require off-ROW access roads. *Public health and safety:* Access roads would be blocked from public access. Existing healthcare facilities are anticipated to be sufficient for the Project during construction and operation, and no necessary improvements are anticipated. The Project would have fire suppression measures of its	At the beginning of the Eastern Transmission Route, an existing 115-kV line would be replaced with a double circuit 345/161-kV line, and the 115-kV line would be shifted onto the existing 161-kV structures.	The Western Transmission Route extends southeast from the Nemadji River Site to the existing Line No. 160. The Western Transmission Route would be built double circuit with the 161kV Line 160 for a couple spans before extending southwest as a single-circuit transmission line.	The existing electric transmission lines that traverse the Nemadji River Site would need to be relocated to facilitate construction of the generation plant. At the beginning of the Eastern Transmission Route, an existing 115-kV line would be replaced with a double circuit 345/161-kV line, and the 115-kV line would be shifted onto the existing 161-kV structures. The fiberoptic cable between the Nemadji River Site and the Hill Avenue Site would need to be relocated if the Nemadji River Site is constructed. An existing 10-inch natural gas line would need to be relocated at the Nemadji River Site.	The existing electric transmission lines that traverse the Nemadji River Site would need to be relocated to facilitate construction of the generation plant The Western Transmission Route extends southeast from the Nemadji River Site to the existing Line No. 160. The Western Transmission Route would be built double circuit with the 161kV Line 160 for a couple spans before extending southwest as a single-circuit transmission line. The fiberoptic cable between the Nemadji River Site and the Hill Avenue Site would need to be relocated if the Nemadji River Site is constructed. An existing 10-inch natural gas line would need to be relocated at the Nemadji River Site.

Resource	Impacts common to all Project Alternatives	Hill Avenue 1 Impacts	Hill Avenue 2 Impacts	Nemadji River 1 Impacts	Nemadji River 2 Impacts
	own, as well as facilities for the storage of hazardous materials. No City fire department improvements are anticipated. Police protection would be provided by the City of Superior and the Wisconsin State Patrol during both construction and operations, and no improvements are anticipated. *Waste management:* Local waste disposal and sanitation facilities are not anticipated to be adversely affected by the additional waste streams generated during construction and operation of the Project. No additional solid wastes would be generated by the Project as byproducts from the production of electricity.				

Land Use, Recreation, Farmland, and Coastal Facilities	*Land use:* Construction of either switching station would convert approximately 14 acres of woody vegetation in forested lands and shrubland habitats to a switching station with electric transmission infrastructure. It is anticipated that most of the impacts to grasslands along the transmission route would only be temporary construction. Some permanent impacts to grassland habitats would occur where transmission line poles and foundations would be set. No grassland habitat is present within the footprint of either switching station site. *Recreation:* No direct impact to parks anticipated. While the Sites may be visible from these parks and loud Site noise such as from steam blows may be heard offsite, several streets with homes, combined with nearby commercial and industrial areas provide visual and sound buffers between the Sites and the existing parks. The transmission line routes primarily extend through undeveloped wooded areas. The switching station sites are also mostly surrounded by woodland, which helps provide visual buffers. The 18th Street and Nemadji canoe launch access may be impacted during construction of facilities through temporary road closures and temporary increased noise. The Project may impact visitors to the Orange Trail by increased traffic crossing the trail or temporary closures during Project construction, as well as slightly increased traffic crossing the trail during Project operation. Construction traffic and any road closures would be temporary in nature and cease after construction is complete. The Eastern and Western Transmission Routes south of the Nemadji River Site would require clearing woodland in a portion of the Allouez Area Parcel 1 hunting area. The routes generally follows existing transmission line and natural gas line through this area. Clearing would remove woodland habitat and result in a minor change to the habitat mix on these areas.	*Land use:* The Hill Avenue Site consists entirely of undeveloped lowland scrub/shrub wetland community. No forest or grassland community occurs at the Hill Avenue Site. The Hill Avenue Site Route would require clearing in forested areas for new ROW and along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 14.3 acres of the Hill Avenue Site Route in forested lands and shrubland habitats. The Eastern Transmission Route for the transmission line would likely be constructed within an existing utility corridor that contains a natural gas pipeline and overhead electrical transmission lines; however, approximately 23.1 acres of woody vegetation would be cleared from forested lands and shrubland habitats to widen the corridor and accommodate the additional line. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor. *Recreation:* The Hill Avenue Site would reduce the size of the Murphy Oil – 5 hunting area by approximately 72 acres. The Eastern Transmission Route would cross the Itasca Area hunting area and the Annex hunting area. The route generally follows existing transmission line and natural gas line through these parcels. The transmission line route from the Hill Avenue Site south to the Nemadji River would also remove a portion of the Murphy Oil – 5 hunting area from hunting activities. Clearing would remove woodland habitat and result in a minor change to the habitat mix on these areas. Access to all or portions of these areas may also be controlled during construction. Once completed, access to these areas would be restored. The connecting facilities extending from the Hill Avenue Site to the southeast	*Land use:* The Hill Avenue Site consists entirely of undeveloped lowland scrub/shrub wetland community. No forest or grassland community occurs at the Hill Avenue Site. The Hill Avenue Site Route would require clearing in forested areas for new ROW and along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 14.3 acres of the Hill Avenue Site Route in forested lands and shrubland habitats. The Western Transmission Route would require more clearing in forested areas for new ROW in addition to minor impacts to forested land along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 79.1 acres of the Western Transmission Route in forested lands and shrubland habitats. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor. *Recreation:* The Hill Avenue Site would reduce the size of the Murphy Oil – 5 hunting area by approximately 72 acres. The Western Transmission Route would cross a small portion of the Allouez Area Parcel 2 hunting area. The transmission line route from the Hill Avenue Site south to the Nemadji River would also remove a portion of the Murphy Oil – 5 hunting area from hunting activities. Clearing would remove woodland habitat and result in a minor change to the habitat mix on these areas. Access to all or portions of these areas may also be controlled during construction. Once completed, access to these areas would be restored. The connecting facilities extending from the Hill Avenue Site to the southeast	*Land use:* Construction of the proposed project at the Nemadji River Site would permanently convert approximately 7.1 acres of forest and approximately 7.2 acres of the forage grassland and wetland meadow communities to power generation use. This use is compatible with adjacent land uses, which include an oil tank farm and an oil refinery. *Recreation:* Increased traffic and operation noise near the fishing access at 18th Street during operation. Traffic during operation of the Project would increase vehicles on nearby roads but is not anticipated to significantly increase traffic due to the number of employees anticipated or reduce access to these facilities. The Eastern Transmission Route would cross the Itasca Area hunting area and the Annex hunting area. The route generally follows existing transmission line and natural gas line through these parcels. Clearing would remove woodland habitat and result in a minor change to the habitat mix on these areas. Access to all or portions of these areas may also be controlled during construction. Once completed, access to these areas would be restored. *Farmland*: The Eastern Transmission Route extends along the edge of a row crop field north of its intersection with County Road Z for approximately 930 feet. The row crop field crossed by the Eastern Transmission Route would be impacted during construction of the Project. This section of route is within existing ROW, limiting impacts to already impacted areas. Soil along this portion of the route would likely be disturbed during transmission line construction and temporary access. If planted, crops in the ROW could be damaged during construction. After construction is complete in the area, farming activities can resume.	*Land use:* Construction of the proposed project at the Nemadji River Site would permanently convert approximately 7.1 acres of forest and approximately 7.2 acres of the forage grassland and wetland meadow communities to power generation use. This use is compatible with adjacent land uses, which include an oil tank farm and an oil refinery. The Western Transmission Route would require more clearing in forested areas for new ROW in addition to minor impacts to forested land along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 79.1 acres of the Western Transmission Route in forested lands and shrubland habitats. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor. *Recreation:* Increased traffic and operation noise near the fishing access at 18th Street during operation. Traffic during operation of the Project would increase vehicles on nearby roads but is not anticipated to significantly increase traffic due to the number of employees anticipated or reduce access to these facilities. The Western Transmission Route would cross a small portion of the Allouez Area Parcel 2 hunting area. Clearing would remove woodland habitat and result in a minor change to the habitat mix on these areas. Access to all or portions of these areas may also be controlled during construction. Once completed, access to these areas would be restored.

Resource	Impacts common to all Project Alternatives	Hill Avenue 1 Impacts	Hill Avenue 2 Impacts	Nemadji River 1 Impacts	Nemadji River 2 Impacts
	Access to all or portions of these areas may also be controlled during construction. Once completed, access to these areas would be restored. *Farmland*: No farming activities currently occur at either Site. No farming has occurred in the recent past. The Western Transmission Route and Hill Avenue Site Route do not cross farmland. No known agricultural buildings and animal dairy confinement operations are located near the Project. In addition, the Project's electrical clearances and ROW width are designed to limit neutral-to-earth and induced voltages that can create concern with livestock operations. *Coastal:* No coastal facilities are located within the Project Study Area or macro-corridors. The nearest CBRS area is located approximately 30 miles northeast of the Project area along the Lake Superior shoreline in Bayfield County. No impacts to coastal facilities are anticipated due to the Project.	would introduce a new utility corridor through the hunting area. *Farmland*: The Eastern Transmission Route extends along the edge of a row crop field north of its intersection with County Road Z for approximately 930 feet. The row crop field crossed by the Eastern Transmission Route would be impacted during construction of the Project. This section of route is within existing ROW, limiting impacts to already impacted areas. Soil along this portion of the route would likely be disturbed during transmission line construction and temporary access. If planted, crops in the ROW could be damaged during construction. After construction is complete in the area, farming activities can resume.	would introduce a new utility corridor through the hunting area.		

Resource	Impacts common to all Project Alternatives	Hill Avenue 1 Impacts	Hill Avenue 2 Impacts	Nemadji River 1 Impacts	Nemadji River 2 Impacts
Noise	Project construction would result in temporary and minor noise impacts in the surrounding area. Construction-related sounds would vary in intensity and duration depending on specific stages and activities of construction but would not be permanent. Nearby residences may temporarily experience increased noise during construction. Minor temporary disturbances to wildlife could occur. Steam blows have the potential to significantly increase sound levels near the Project during their temporary and infrequent occurrence. Following the initial steam blow for commercial operation, subsequent steam blows would be rare occurrences, anticipated once every 10 to 15 years as part of major system maintenance. Because these are rare and not long-term sources of noise, their impact is expected to be minimal. A preliminary noise study was conducted incorporating dry cooling equipment. The results of this study showed noise levels that would be in excess of EPA noise guideline levels. These levels were discussed with the finned heat exchanger suppliers and they confirmed the EPA noise guideline levels are achievable for the required equipment with proper mitigation measures. The Project will incorporate appropriate noise mitigation required to achieve EPA noise guideline levels.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.

Socioeconomics and Environmental Justice	During construction, the Project would create up to 260 jobs during peak activity. The number of workers onsite would begin at nominal levels at the beginning of construction and steadily increase over time, declining as major construction activities are completed. Local businesses near the Facility, such as gas stations, convenience stores, and restaurants, may experience increases in business during construction due to construction workers onsite. Local materials such as concrete, lumber, and general hardware may be purchased from local businesses. This increased demand would cease after construction is complete and would not add considerably to the demand on existing business, services, or community facilities. The Project would create up to 25 full-time permanent jobs. These new permanent employees may be from the local workforce or may relocate to the area for the position. Considering the population of the City of Superior and Douglas County, the addition of 25 jobs is not anticipated to considerably increase demand for housing, schools, or other local services. The City of Superior and Douglas County would receive payments in lieu of taxes of around one million dollars annually (two-thirds to the city; one-third to the county) from the State of Wisconsin for hosting a generation facility. The City of Superior would also receive considerable fees from the facility for increased use of the City's wastewater treatment system. County sales tax revenues are likely to increase over time, especially during the intense construction phase. There could be a negative local budget impact due to the increased use of 31st Avenue East, which is currently a short-paved road with an extended gravel portion that would need to be paved and maintained over time. Regional economic benefits are estimated at around one billion dollars over 20 years.	Census Tract 210 is considered to be in an environmental justice low-income area. Census Tract 210 within the Study Area contains 52 residences. The nearest residence is located approximately 230 feet west of the Eastern Transmission Route on 42nd Avenue East. This portion of transmission line is within an existing transmission line corridor. The ROW is surrounded by trees in this area, which provide a partial visual buffer. The minimal impacts within Census Tract 210 do not constitute disproportionately high and adverse impacts to this environmental justice area.	No environmental justice areas crossed by Hill Avenue 2	Census Tract 210 is considered to be in an environmental justice low-income area. Census Tract 210 within the Study Area contains 52 residences. The nearest residence is located approximately 230 feet west of the Eastern Transmission Route on 42nd Avenue East. This portion of transmission line is within an existing transmission line corridor. The ROW is surrounded by trees in this area, which provide a partial visual buffer. The minimal impacts within Census Tract 210 do not constitute disproportionately high and adverse impacts to this environmental justice area.	No environmental justice areas crossed by Nemadji River 2

Resource	Impacts common to all Project Alternatives	Hill Avenue 1 Impacts	Hill Avenue 2 Impacts	Nemadji River 1 Impacts	Nemadji River 2 Impacts
	The Project would not directly impact any residences, public facilities, farming structures, cemeteries, religious facilities, or other structures. Temporary disruptions to normal traffic may occur during construction as equipment and employees commute to and from the Project. The frequency of the daily workforce automobile traffic would follow the Project workforce numbers onsite at a given time. The daily automobile traffic to the site would increase from approximately 25 to 50 vehicles in the initial stages of construction to approximately 200 to 260 vehicles for peak months (April through December 2023). The traffic would begin to decrease until it reaches approximately 25 vehicles near construction completion and during operation.				
Visual Resources	The aesthetics of the surrounding area would be altered by the Project. Vegetation would need to be cleared permanently for the Project Site, transmission line ROW, and switching station site. The Project site would require lighting for safety and security. Light emissions at the Project Site would increase compared to current levels of light emissions as a result of facility lighting. The dominant visual features of the Project would be a stack, a finned heat exchanger, and other facility equipment at the Project Site. The transmission line routes parallel existing linear infrastructure for the majority of its length. The switching station sites are surrounded by undeveloped forested and shrubland habitats. None of the Project facilities are out of character with features already present across the visual landscape and the Project does not generally introduce new visual elements into the viewshed, keeping new facilities in proximity to already developed locations. Due to these factors and the distance from these scenic byways, it is anticipated that the Project would not significantly impact visual resources in the area.	The Hill Avenue Site has no light emitting sources currently onsite. Wooded areas located offsite of the Hill Avenue Site would provide a buffer to help mitigate light impacts to surrounding development. The stack and transmission line would be visible from multiple viewpoints throughout the area; most of the transmission line route is within undeveloped forested areas along existing utilities as well as within existing transmission line corridors. The tallest features of the site would be the stack, which would be approximately 171 feet above ground level at the Hill Avenue Site. The Hill Avenue Site is undeveloped lowland scrub/shrub surrounded by wooded areas and Hill Avenue on the west side.	The Hill Avenue Site has no light emitting sources currently onsite. Wooded areas located offsite of the Hill Avenue Site would provide a buffer to help mitigate light impacts to surrounding development. The stack and transmission line would be visible from multiple viewpoints throughout the area; most of the transmission line route is within undeveloped forested areas along existing utilities, however, as well as within existing transmission line corridors. The tallest features of the site would be the stack, which would be approximately 171 feet above ground level at the Hill Avenue Site The Hill Avenue Site is undeveloped lowland scrub/shrub surrounded by wooded areas and Hill Avenue on the west side.	The lighting regime near the Nemadji River Site is currently influenced by lighting at the existing oil and gas facilities located immediately adjacent to the site property, although no light emitting sources currently occur on the site itself. The trees on the eastern boundary of the Nemadji River Site would provide a buffer and help mitigate additional lighting impacts. The stack and transmission line would be visible from multiple viewpoints throughout the area; most of the transmission line route is within undeveloped forested areas along existing utilities, however, as well as within existing transmission line corridors. The tallest features of the site would be the stack, which would be approximately 194 feet above ground level at the Nemadji River Site. The Nemadji River Site is located adjacent to existing industrial areas.	The lighting regime near the Nemadji River Site is currently influenced by lighting at the existing oil and gas facilities located immediately adjacent to the site property, although no light emitting sources currently occur on the site itself. The trees on the eastern boundary of the Nemadji River Site would provide a buffer and help mitigate additional lighting impacts. The stack and transmission line would be visible from multiple viewpoints throughout the area; most of the transmission line route is within undeveloped forested areas along existing utilities, however, as well as within existing transmission line corridors. The tallest features of the site would be the stack, which would be approximately 194 feet above ground level at the Nemadji River Site. The Nemadji River Site is located adjacent to existing industrial areas.

Water Resources	*Surface Water*: Considering the distance of the Project from Outstanding or Exceptional Resource Waters; trout streams; and wild and scenic rivers, and with the implementation of mitigation measures described in Section 3.10.3, it is anticipated that construction and operation of the Project would not result in impacts to these features. *Groundwater*: No groundwater would be used for the Project. Therefore, there would be no impacts to groundwater. No impacts to domestic or high capacity pumping wells are anticipated. *Floodplain*: The Superior Switching Station, Parkland Switching Station, and all laydown yards are not within 100-year floodplain. All rivers would be spanned by the transmission line. Two transmission line structures would need to be placed within the Nemadji River floodplain due to the floodplain width. *Wetlands/Riparian:* The switching station sites would be placed entirely within wetland areas. Forested and shrub/scrub wetland areas would be cleared of vegetation at the switching station sites. *Wastewater*: The Project would be responsible for installation of the sewer extension and tie-in to connect to the City's wastewater system. It is expected that the plant would be connected as an industrial customer, would utilize existing piping to the extent practical, and any new piping would be high-density polyethylene and would be routed in existing ROW to the extent practical. The City of Superior would require the Owners to take ownership of the sewer line extension and lift station because they would be constructed to service a single, privately held facility. Approximately 0.6 MGD) would be discharged to the City sewer. Delivery meters would be used to collect wastewater volume readings and would be owned by the Project.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.	No unique impacts anticipated for this alternative.

Resource	Impacts common to all Project Alternatives	Hill Avenue 1 Impacts	Hill Avenue 2 Impacts	Nemadji River 1 Impacts	Nemadji River 2 Impacts
	Stormwater: The post-construction storm water management facilities would be designed to meet the performance standards addressed in NR 151. Drains for areas around equipment that could be contaminated with oil would be gravity drained and directed through an oil/water separator prior to discharge to the municipal sewer system. At either Site, the wet detention pond would be used as a sediment basin during Project construction to remove sediment loads from storm water runoff in accordance with WAC NR 151.11(6m)(b)2. Following site stabilization, the sediment basin would be cleaned out and converted to a wet detention basin. The detention basin is designed to reduce the total suspended solids load by at least 80 percent, based on an average annual rainfall.				

4.0 CUMULATIVE IMPACTS

This chapter lists the past, present, and reasonably foreseeable future actions (RFFAs) in the Study Area that may affect the resources analyzed in this EA. An assessment of cumulative effects of the Project for each resource is provided as well. The CEQ regulations implementing NEPA defines cumulative impacts as, "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such action." (40 CFR §1508.7).

4.1 Past, Present, and Reasonably Foreseeable Future Actions

Past, present, and RFFAs that have affected the resources of the Douglas County include:

- Construction of a new 16-inch natural gas line from the Nemadji River Site to the existing Great Lakes Transmission natural gas line
- Relocation of 10-inch natural gas line at the Nemadji River Site
- Relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site
- Relocation of existing electric transmission at the Nemadji River Site
- Construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station Alternative is constructed)
- Past residential and business development in the surrounding area
- Existing Husky Energy Superior Refinery operations and April 2018 fire
- Forest management and timber harvesting in Douglas County

4.2 Cumulative Impacts by Resource

The following sections provide anticipated cumulative impacts by resource.
provides a summary of cumulative impacts.

4.1.1 Air Quality

Previous activities in the Study Area that have impacted air quality include construction activities associated with residential and business development, and forest management activities. The existing Husky Energy Superior Refinery had a fire in April 2018. Residents were evacuated in the surrounding area. The incident at the refinery included the combustion of oil and asphalt, which contributed to air emissions in the area.

Table 4-1: Summary of Cumulative Impacts Assessment

Resource	Cumulative Impacts	Contribution of Proposed Project to Cumulative Effects
Air Quality	Emissions from NTEC facility and vehicles/equipment used during construction	Minor. Minimal effects on the NAAQS or PSD Class I area or Class II area increment
Biological Resources	Removal of vegetation/habitat; temporary displacement of wildlife during construction due to increased traffic and noise; permanent displacement of wildlife at Nemadji River Site and where vegetation permanently removed; potential mortality to wildlife individuals	Minor; most wildlife displacement would be temporary, habitat loss minimal compared to overall available
Cultural Resources	No adverse impacts on cultural resources with the implementation of proposed mitigation measures	None anticipated
Geology and Soils	Potential for erosion. Soil disturbance at site and along transmission line ROW. No cumulative geological effects are anticipated, and Project not anticipated to contribute considerably to cumulative soil impacts	Minor with implementation of mitigation measures
Infrastructure, Transportation, Public Health and Safety, and Hazardous Materials	Temporary impact of outages and minimal impacts to other existing infrastructure; temporary impact of construction traffic and off-ROW access roads	Project not anticipated to create considerable additional demands on existing infrastructure that would contribute to adverse cumulative effects
Land Use	Clearing of wooded areas and conversion to open grassland or paved/gravel surfaces as part of infrastructure facilities and ROW	Minor with implementation of mitigation measures. Changes generally consistent with existing land uses.
Noise	Temporary increases in noise levels during construction. Modeling showed the Project would be below EPA guideline noise levels at nearest residential properties during operation.	No considerable adverse cumulative noise effects are expected
Socioeconomics and Environmental Justice	Jobs generated, temporary construction-related economic benefits, and the economic benefits of the Project during operation	Project would not contribute cumulatively to adverse socioeconomic impacts. Would provide some financial benefits due to permanent jobs and tax collection
Visual Resources	Visual landscape would be altered by the Project through vegetation clearing, increased light emissions, construction, and operation of the Project. Project facility site is located adjacent to industrial areas. Transmission line parallels existing utilities for the majority of length.	Minor

Resource	Cumulative Impacts	Contribution of Proposed Project to Cumulative Effects
Water Resources	Several water resources crossed by the Project or within Project footprint. Several wetlands would be located within Project footprint.	Minimal with implementation of mitigation measures

Husky Energy monitored air quality between April 2018 and June 2018 at the Superior Refinery site and in the surrounding area. None of that monitoring showed concentrations above health-based thresholds.

The following RFFAs would contribute to vehicle emissions in the area: construction of a new 16-inch natural gas line from the Nemadji River Site to the existing Great Lakes Transmission natural gas line; relocation of a 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of existing electric transmission at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed). These construction activities are anticipated to be intermittent and temporary in nature, ceasing after construction is complete. During operation, the transmission line, pipelines, and fiberoptic cable may require periodic inspection and maintenance. Vehicles used during these activities would contribute to vehicle emissions in the area, though these activities would also be intermittent and temporary in nature.

During construction of the Project, exhaust emissions, fugitive dust, and other construction-related emissions would occur. However, these increases would be temporary in nature and cease when construction is complete. As such, these emissions are not anticipated to substantially impact the overall air quality in the region, and no cumulative impacts to air quality would occur as a result of construction activities.

Based on the air quality modeling results for the Project during operation, it has been predicted that the Project would have minimal effects on the NAAQS and PSD Class I and Class II Increment. No other industrial projects are known in the Study Area. It is anticipated that the Project would not cause or contribute to adverse ambient air quality impacts. Because this Class II modeling considered cumulative effects of other existing and proposed sources, the Project would not cumulatively contribute to adverse air quality impacts.

4.1.2 Biological Resources

Other past, present, and RFFAs that may have affected biological resources in the region include residential and business development (including the Husky Energy Superior Refinery), particularly near the City of Superior; forest management and timber harvesting; the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed). These activities would cause permanent loss of vegetation communities and wildlife habitat through ROW clearing and may increase plant and animal mortalities within the construction footprint. Also, these RFFAs may temporarily displace wildlife communities during construction due to increased human and vehicle presence in the area and increase the risk for wildlife vehicle collisions during construction and operation.

As discussed in Section 3.2.2, the Project is not anticipated to affect Canada lynx, gray wolf, Kirtland's warbler, piping plover, rufa red knot, or Fassett's locoweed. The Project footprint contains potential habitat for the northern long-eared bat and bald eagle. Invasive species were also identified along the transmission line alternatives during wetland delineations. With the implementation of mitigation measures described in Section 3.2.3.1, it is not anticipated that these species and their habitats would be considerably affected by the Project. The Owners would implement the mitigation measures in Sections 3.2.3.3 and 3.2.3.4 to minimize the spread of invasive species. As such, the project would not contribute considerable adverse cumulative effects to protected species in the Project area.

Temporary impacts to biological resources include displacement of wildlife communities during construction due to increased human and vehicle presence in the area. Impacts to wildlife as a result of vehicle collisions would also be an increased risk during construction and operation. Most species affected would be mobile and able to move away from any impacts, but individuals or other less mobile species could be vulnerable. It is anticipated that most of the impacts to grasslands along the transmission route would only be temporary construction impacts to existing grassland habitat along existing utility corridors. Temporary impacts from the Project could occur as a result of the increased presence of human and vehicle disturbance during construction. These temporary impacts due to construction would cease once construction is complete.

Construction and operation of the Project would result in the permanent loss of vegetation communities, wildlife habitat, and some limited mortality to individuals within the plant and animal populations in the

construction footprint (Table 4-2). For the Nemadji River Site, the loss of plant and animal habitat would occur adjacent to existing areas that have already been developed. The Nemadji River Site is adjacent to an existing tank farm and utility corridors. This area has experienced some level of habitat degradation and fragmentation associated with development in and around the City of Superior. The Hill Avenue Site is in the same general vicinity as the Nemadji River Site but would require more woody vegetation clearing in lowland scrub/shrub wetland and is not immediately adjacent to the existing tank farm.

Table 4-2: Summary of Habitat Loss

Project Component	Habitat Permanently Impacted	Impacted Habitat (acres)	Total Habitat in Douglas County[a] (acres)	Percentage of Douglas County Acres Impacted
Nemadji River Site	Forested and shrubland areas[b]	7.1	754,342.2	< 0.1
Nemadji River Site	Forage grassland and wetland meadow	7.2	64,237.9	< 0.1
Hill Avenue Site	Lowland scrub/shrub wetland community	75.5	37,921.4	0.2
Eastern Transmission line	Forested areas	6.7	715,768.1	< 0.1
Eastern Transmission line	Grassland	16.3	48,047.7	< 0.1
Eastern Transmission line	Non-forested wetland	28.7	16,190.2	0.2
Western Transmission Line	Forested areas	34.7	715,768.1	< 0.1
Western Transmission Line	Grassland	3.0	48,047.7	< 0.1
Western Transmission Line	Non-forested wetland	45.1	16,190.2	0.3
Hill Avenue Site Route	Forested area	1.6	715,768.1	< 0.1
Hill Avenue Site Route	Grassland	0.3	48,047.7	< 0.1
Hill Avenue Site Route	Non-forested wetland	17.0	16,190.2	0.1
Parkland Switching Station	Forested lands and shrubland areas	14.0	754,342.2	< 0.1

a – Wiscland2 dataset used to calculate Douglas County landcover totals
b – "Forested areas" include forested wetland and upland forests

As shown in Table 4-2, the Nemadji River Site would remove less than 0.1 percent of forest and shrubland land from Douglas County overall. The Nemadji River Site would remove less than 0.1 percent of forage grassland and wetland meadow. The Hill Avenue Site, however, would remove 0.2 percent of lowland scrub/shrub wetland community from Douglas County overall. The Eastern and Western Transmission Routes would remove less than 0.1 percent of forested areas and grassland from Douglas County overall. The Eastern Transmission Route would require ROW in non-forested wetland, crossing 0.2 percent of the non-forested wetland in Douglas County. The Western Transmission Route would cross 0.3 percent of non-forested wetland in Douglas County. If the Hill Avenue Site were constructed, the Hill Avenue Site Route would require crossing an additional 0.1 percent of Douglas County's non-forested wetland. Much of this is along the transmission line route near existing utility corridors. Lastly, the Parkland Switching Station would require clearing less than 0.1 percent of the forested lands and shrubland areas in Douglas County. This level of clearing and changes in habitat are insignificant compared to the changes and disturbance to wildlife and vegetation associated with clearing, harvesting, and replanting of timber resources. Due to the small percentages of land cover cleared, cumulative effects on biological resources due to habitat loss are not considered significant.

4.1.3 Cultural Resources

Other past, present, and RFFAs that may have affected the cultural resources in the region include residential and business development, including the existing Husky Energy Superior Refinery; forest management and timber harvesting; the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed). These activities may have or may impact cultural resources through construction activities that require grading, excavation, or other disturbance of soils.

On February 4, 2019, the RUS submitted a finding of no historic properties affected to the WHS in accordance with 36 CFR § 800.4(d)(1) and provided the cultural resources survey report as documentation for review and consideration (see Gottsfield et al. 2019). The WHS concurred with this determination in March 2019 (Appendix C). Based on the distance from NRHP properties, the concurrence from SHPO that no historic properties will be affected, and the mitigation measures proposed in Section 3.3.3, it is anticipated that the Project would not have adverse impacts on cultural resources. As a result, the Project is not anticipated to result in adverse cumulative effects on cultural resources with the implementation of mitigation measures described in Section 3.3.3.

4.1.4 Geology and Soils

Past and present actions that have affected geology in the Study Area include the establishment of industrial facilities (particularly the nearby tank farm), businesses and residential development, particularly development where wells were installed. RFFAs that may impact geology include the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed). Installation and relocation of the pipelines and fiberoptic cable would require excavation of a trench for placement of the pipeline. Trench excavation would be relatively shallow and would not be expected to have any impact on the area geology. Transmission line structures would require foundations be installed. Care would need to be taken during excavation and installation of pipeline, fiberoptic cable, and transmission line structures to minimize overall soil disturbance, control runoff, and avoid mixing of soil profiles and compaction during storage and trench backfilling. Should trenchless techniques be used for installation of pipeline and fiberoptic cable at some locations, potential disturbance to soils would be reduced compared to trench installation.

The Project Site would be graded and grading design would change the topography to facilitate site construction and storm water drainage patterns. Storm water runoff on the Nemadji River Site would be collected and directed to an onsite storm water detention pond, which would be enlarged. Storm water runoff on the Hill Avenue Site would be collected and routed to a new storm water detention pond located in the northeast corner of the site. The new pond would be pumped, and storm water would be discharged at existing surface grade to the east/northeast to a stream that discharges to Superior Bay. There would be some excavation for underground utilities and deep structures such as pump pits and the suitable material from these excavations would be used for trench backfill and site grading. Installation of the sheet pile wall would require excavation and select material backfill.

Transmission line structures will require excavation limited to structure foundation locations. Holes for the 345-kV structure foundations will range from approximately 55 feet to 95 feet deep and 7 to 12 feet in diameter, depending on soil conditions and design. Foundation construction would begin with drilling for structure foundations. After the structure bases are installed, the remaining structure is assembled at each pole location by a crane. Excavated soils would be used for foundation backfill if appropriate. Surplus soils would be spread within the right of way and stabilized. After all line construction is complete, the ROW would be restored.

At the Project Sites, soils would be converted to plant site development with much of the area occupied by the facilities and covered by concrete and gravel areas. The transmission line corridor would be cleared but only soil areas at the structure locations would be permanently excavated. Other soil disturbance would be limited to surface disturbance from clearing and construction activities. Areas of hydric and statewide important soils would remain largely unaffected by construction and following any necessary stabilization would be available for agriculture and other activities.

Based on the amount of excavation required, the type of substrate at the Project sites, and erosion control techniques that would be implemented (see Section 3.4.4), construction and operation of the Project is not expected to affect geological formations and is not anticipated to considerably impact soils. Therefore, no cumulative geological effects are anticipated and it is not anticipated that the Project would contribute considerably to cumulative soil impacts.

4.1.5 Infrastructure, Transportation, Public Health, and Waste Management

Human health and safety infrastructure in the Study Area are used by existing residential and business development. Forest management workers also use the local health and safety infrastructure. RFFAs that may impact human health and safety include the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed).

Infrastructure: The 16-inch natural gas line would require the construction of a tap point on the existing Great Lakes Transmission natural gas line. Several existing transmission lines would be affected by the Project and outages would be required on the Line No. 160 transmission line and the Line No. 761 transmission line to construct the new double circuit 345-kV Transmission Line. Extended outages on the Line No. 761 are difficult to accommodate and would need to be minimized as much as practical to maintain reliable service to the area. During outages, the Owners would need to coordinate with local electrical service providers to provide for continued electrical service with minimal, if any, service interruptions. The Project would require minor construction of water pipelines to connect with the municipal system. There would be no adverse impact to the municipal water system or change in capacity requirements needed to the system related to the Project because the existing municipal sewer and water systems have sufficient capacity to accommodate the Project needs.

Transportation: The RFFAs will increase traffic during construction and during maintenance activities. These impacts would be intermittent and temporary in nature. Project construction traffic accessing the Project site would primarily consist of automobile traffic for craft labor, construction management staff, contractors, equipment, and vendors. Material and equipment deliveries may be made by large trucks as well as heavy haul vehicles. Onsite, traffic is anticipated to primarily consist of heavy construction equipment and material transport equipment. The construction site would be operated as a closed worksite. Designated walk paths to working locations would be constructed for craft workers to use.

The frequency of the daily workforce automobile traffic would follow the Project workforce numbers onsite at a given time. The traffic would begin to decrease until it reaches approximately 25 vehicles near construction completion. When possible, bulk deliveries would be scheduled to avoid peak traffic on local roads. The Nemadji River Site would include pull over areas for material delivery trucks to reduce congestion.

No permanent changes to existing roads are anticipated as part of this Project. No permanent damage to roads is anticipated with the implementation of mitigation measures proposed in Section 3.5.3. The Owners would work with the appropriate county or municipal authority on solutions to potential traffic congestion that may develop as a result of the construction traffic. There is currently no connection or proposed connection to rail lines related to the Project.

The FAA issued Determination of No Hazard/Does Not Exceed (DNE) letters for the plant stacks on October 3, 2017. The FAA also issued a Determination of No Hazard/DNE letter for all transmission line structures that were studied on October 2, 2018.

The Project requires several temporary off-ROW access roads for construction access along the transmission line route. Temporary off-ROW access roads would be restored to pre-existing conditions, subject to the request of the landowner.

Public health and safety: RFFAs have the potential to increase risks to public health and safety. Any construction and operation activities related to the aforementioned RFFAs would be required to comply with applicable Federal, state, and local permits and regulations.

The Project would minimize potential human health and safety impacts through restricting site access during construction and operation of the Project to employees, construction workers, emergency equipment, police, and fire protection. The roads serving the Project are adequate (width, grade,

construction, overall safety and design capacity) to carry current and all prospective traffic. Access roads would be blocked from public access.

The Project would comply with all relevant Federal, state, and local requirements, including all requirements concerning public health and safety, including but not limited to requirements addressing land use, noise, and traffic.

Existing healthcare facilities are anticipated to be sufficient for the Project during construction and operation, and no necessary improvements are anticipated. The Project would have fire suppression measures of its own, as well as facilities for the storage of hazardous materials. This storage would require coordination activities with the City Fire Department. No improvements are anticipated to be required due to the Project related to the City Fire Department. Police protection would be provided by the City of Superior and the Wisconsin State Patrol during both construction and operations, and no necessary improvements are anticipated related to police patrols.

Waste Management: The aforementioned RFFAs have the potential to generate solid waste through construction, wastes produced by construction workers, and waste produced by employees during future operations and maintenance activities. Wastes produced during operation would likely be minimal as operations and maintenance activities would be intermittent and temporary in nature.

Solid waste produced during the Project would occur from construction debris, wastes produced by construction workers, and wastes produced by employees onsite during operation of the Project. These wastes would be collected in trash containers throughout the Project site and sent to a local landfill. Local waste disposal and sanitation facilities are not anticipated to be adversely affected by the additional waste streams generated during construction and operation of the Project. No additional solid wastes would be generated by the Project as byproducts from the production of electricity.

Summary: Based on the temporary impact of outages and minimal impacts to other existing infrastructure; temporary impact of construction traffic and off-ROW access roads; compliance with relevant Federal, state, and local public health and safety requirements; and proposed waste management procedures, it is not anticipated that the Project would create noticeable additional demands on existing infrastructure that would contribute to adverse cumulative effects.

4.1.6 Land Use

Land use in the Study Area has been altered by existing residential and business development, including the Husky Energy Superior Refinery, and forest management and timber harvesting. RFFAs that may impact land use in the Study Area include the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed).

Land use: RFFAs will cause permanent loss of vegetation through ROW clearing. Land use would be converted from current uses to pipeline, fiberoptic cable, or transmission line ROW use.

Construction of the Project at the Nemadji River Site would permanently convert approximately 7.1 acres of forest and approximately 6.4 acres of the forage grassland and wetland meadow communities to power generation use. This use is compatible with adjacent land uses, which include an oil tank farm and an oil refinery. The proposed project footprint at the Nemadji River Site avoids clearing trees and vegetation along the banks, immediately adjacent to the Nemadji River. A vegetation buffer with a minimum width of 100 feet would be maintained between the plant footprint and the Nemadji River. Based on the results of a site survey that was conducted in October 2017, the Hill Avenue Site consists entirely a lowland scrub/shrub wetland community. No forest or grassland community occurs at the Hill Avenue Site.

The Eastern Transmission Route for the transmission line would likely be constructed within an existing utility corridor that contains a natural gas pipeline and overhead electrical transmission lines; however, approximately 23.1 acres of woody vegetation, forested and shrub lands, would be cleared to widen the corridor and accommodate the additional line. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.

The Western Transmission Route would require more clearing in forested areas for new ROW in addition to minor impacts to forested land along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 79.1 acres of the Western Transmission Route in forested lands and shrubland habitats. Woody vegetation would be removed where additional, new ROW is needed and along the edges of the existing utility corridor.

The Hill Avenue Site Route would require clearing in forested areas for new ROW and along the existing shared utility corridors. Woody vegetation clearing would occur along approximately 14.3 acres of the Hill Avenue Site Route in forested lands and shrubland habitats.

Construction of the either the Superior Switching Station or the Parkland Switching Station would convert approximately 14 acres of woody vegetation in forested lands and shrubland habitats to a switching station with electric transmission infrastructure.

It is anticipated that most of the impacts to existing grasslands along the transmission route would only be temporary construction impacts. Some permanent impacts to grassland habitats would occur where transmission line poles and foundations would be set. No grassland habitat is present within the footprint of either switching station site.

Recreation: RFFAs have the potential to impact nearby recreation resources during construction and operation, depending on the location of routes. Impacts may include increased traffic near recreational trails, temporary road closures, and increased noise. These impacts would likely be intermittent and temporary in nature. During operation of the aforementioned RFFAs, inspection and maintenance activities may cause minor impacts via slightly increased traffic and noise.

No parks are located within 0.5 mile of the Nemadji River Site, Hill Avenue Site, or within the macro-corridors; therefore, impacts to any parks are not expected. While the Sites may be visible from parks outside the study area and macro-corridors and loud Site noise such as from steam blows may be heard offsite, the Project would likely only potentially impact visitors to the Orange Trail, fishing access at 18th Street, and the Nemadji canoe launch. Impacts would include increased traffic crossing the trail or temporary closures during Project construction, as well as increased traffic crossing the trail during Project operation. Construction traffic and any road closures would be temporary in nature and cease after construction is complete.

The transmission line route south of the Nemadji River Site would require clearing woodland in a portion of the Allouez Area Parcel 1 hunting area. The Eastern Transmission Route will cross the Itasca Area hunting area, and the Annex hunting area. The route generally follows existing transmission line and natural gas line through these parcels, however. The Hill Avenue Site would reduce the size of the Murphy Oil – 5 hunting area by approximately 72 acres. This would reduce the amount of area available for hunting in the northern portion of the hunting area. The transmission line route from the Hill Avenue Site south to the Nemadji River would also remove a portion of the Murphy Oil – 5 hunting area from hunting activities. The eastern and western transmission line routes would both cross the Allouez Area

Parcel 1 hunting area. The Eastern Transmission Route would also cross the Itasca Area hunting area as well as the Annex hunting area. The Western Transmission Route would cross a small portion of the Allouez Area Parcel 2 hunting area. The connecting facilities extending from the Hill Avenue Site to the southeast would introduce a new utility corridor through the hunting area. Clearing would remove woodland habitat and result in a minor change to the habitat mix on these areas. Access to all or portions of these areas may also be controlled during construction. Once completed, access to these areas would be restored.

Farmland: The RFFAs may cross farmland. These areas may be unavailable for agricultural activities during construction and may have vegetation restrictions during operation of the RFFAs. Construction activities will impact soils in the ROW for these RFFAs through soil disturbance associated with trenching, drilling, or transmission line structure installation.

No farming activities currently occur at either Site and no farming has occurred in the recent past. The transmission line route extends along the edge of a row crop field north of its intersection with County Road Z for approximately 930 feet. This length is entirely within existing ROW, however.

The Western Transmission Route and Hill Avenue Site Route do not cross farmland. The row crop field crossed by the transmission line route would be impacted during construction of the Project. This section of route is within existing ROW, however, which helps limit impacts to already impacted areas. Soil along this portion of the route would likely be disturbed during transmission line construction and temporary access. If planted, crops in the ROW could be damaged during construction. After construction is complete in the area, farming activities can resume.

No known agricultural buildings and animal dairy confinement operations are located near the Project. In addition, the Project's electrical clearances and ROW width are designed to limit neutral-to-earth and induced voltages that can create concern with livestock operations.

An agricultural impact notice was sent to the Wisconsin DATCP on December 18, 2018. An Agricultural Impact Statement is not required as the Project does not cross private agricultural land. See Appendix D for correspondence with the Wisconsin DATCP as well as the formal release letter.

Coastal facilities: No coastal facilities are located within the Study Area or the macro-corridors.

Summary: As described in Section 4.2.2, the clearing of the Project Site, transmission line ROW, and switching station site would contribute to the cumulative loss of habitat throughout the Study Area. The Project would introduce industrial and utility land uses compatible with current land uses that are already

present in the surrounding area. Only temporary impacts to recreation facilities are anticipated. The Project is not anticipated to adversely impact agricultural lands. No coastal facilities are located in the Study Area. Due to this, cumulative effects on land use are not considered significant.

4.1.7 Noise

Existing industrial, residential, and business development, forest management, and associated traffic all currently contribute to noise in the Study Area. RFFAs that may contribute to existing noise include these current activities and construction of the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the

Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed). Any noise increases associated with these RFFAs are anticipated to be temporary in nature and cease upon completion of construction.

Project construction would result in temporary and minor noise impacts in the surrounding area. Construction-related sounds would vary in intensity and duration depending on specific stages and activities of construction but would not be permanent. Nearby residences may temporarily experience increased noise during construction. Minor temporary disturbances to wildlife could occur.

The modeled noise results for the operation of a facility at the Nemadji River Site show a maximum total A-weighted sound level emitted from the Project that would be below the EPA guideline noise levels at the nearest residential properties. The Nemadji River Site can meet the EPA guidelines without further mitigation. Modeled results for the Hill Avenue Site show a maximum predicted A-weighted sound level emitted from the Project that would be in excess of the EPA guideline noise levels at the nearest residential property. The Hill Avenue Site would need further mitigation to reduce sound level to below the EPA guidelines. Steam blows have the potential to significantly increase sound levels near the Project during their temporary operation. Because these are rare and not long-term sources of noise, their impact is expected to be minimal. Based on this, no adverse cumulative noise effects are expected as a result of the Project.

4.1.8 Socioeconomics and Environmental Justice

Past and present actions that have affected socioeconomics in the Study Area include the establishment of businesses and residential development, particularly in the City of Superior. Construction of the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the

relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed) would have little if any impacts to the socioeconomic conditions of the area, although they may provide a small number of temporary jobs, temporarily increase traffic on local surrounding roads and increase sales of lodging, food, fuel, and building materials during construction.

During construction, the Project would create up to 260 jobs during peak activity. The workforce may be sourced from different locations locally or nationwide. Local businesses near the Facility may experience increases in business during construction due to construction workers onsite. Local materials may be purchased from local businesses. This increased demand would cease after construction is complete and would not add considerably to the demand on existing businesses, services, or community facilities.

The Project would require up to 25 full-time permanent jobs. These new permanent employees may be from the local workforce or may relocate to the area for the position. Considering the population of the City of Superior (26,473 residents) and Douglas County (43,503 residents), the addition of 25 jobs is not anticipated to considerably increase demand for housing, schools, or other local services.

The City of Superior and Douglas County would receive payments in lieu of taxes of around one million dollars annually (two-thirds to the city; one-third to the county) from the State of Wisconsin for hosting a generation facility. The City of Superior would also receive considerable fees from the facility for increased use of the City's wastewater treatment system. County sales tax revenues are likely to increase over time, especially during the intense construction phase. Increased use of 31st Avenue East, which is currently a short-paved road with an extended gravel portion may require additional maintenance due to increased construction traffic.

Census Tract 210 is considered to be in an environmental justice low-income area, based on the environmental justice analysis described in Section 3.8.1.4. Census Tract 210 within the Study Area contains 52 residences. The nearest residence is located approximately 230 feet west of the proposed transmission line route on 42nd Avenue East. This portion of transmission line is within an existing transmission line corridor. The ROW is surrounded by trees in this area, which provide a partial visual buffer. The Project would not directly impact any residences, public facilities, farming structures, cemeteries, religious facilities, or other structures. Temporary disruptions to normal traffic may occur

during construction. The minimal impacts within Census Tract 210 do not constitute disproportionately high and adverse impacts to this environmental justice area.

Regional economic benefits are estimated at around one billion dollars over 20 years. The facility owners are both active in their other host communities and intend to continue that commitment to the City of Superior and Douglas County. For example, the Owners have co-sponsored a bike sharing program in the City for the next two years. The Project is in discussions with local partners to create a trail near the facility and to upgrade the canoe launch near the facility.

Due to the 25 jobs generated, the temporary nature of construction-related economic benefits, and the economic benefits of the Project, it is anticipated that the Project would not contribute cumulatively to adverse socioeconomic impacts. Due to the lack of residences in the area and the distances from residences in the census tract, it is anticipated that the Project would not have disproportionately high and adverse impact on environmental justice communities in this area. As such, the Project is not anticipated to contribute to environmental justice cumulative impacts.

4.1.9 Visual Resources

The landscape of Douglas County has been altered by industrial, residential and business development, timber harvesting, and forest management. Construction of the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed) will require vegetation clearing.

The aesthetics of the surrounding area would be altered by the Project. Vegetation would need to be cleared and light emissions at the Project Site would increase compared to current levels of light emissions as a result of facility lighting. The stack at the facility, other facility equipment, transmission line structures, and switching station would introduce new features to the landscape.

The Nemadji River Site is located adjacent to existing industrial areas. The trees on the eastern boundary of the Nemadji River Site would provide a buffer and help mitigate additional lighting impacts. The Hill Avenue Site is undeveloped lowland scrub/shrub surrounded by wooded areas and Hill Avenue on the west side. Wooded areas located offsite of the Hill Avenue Site would provide a buffer to help mitigate light impacts to surrounding development. The transmission line routes parallel existing transmission for the majority of its length. The switching stations are surrounded by wooded, undeveloped areas. None of

the Project facilities are out of character with features already present across the visual landscape and the Project does not generally introduce new visual elements into the viewshed, keeping new facilities in proximity to already developed locations. Due to these factors and the distance from these scenic byways, it is anticipated that the Project would not significantly impact visual resources in the area. As such, no considerable contribution to cumulative impacts on visual resources is anticipated due to the Project.

4.1.10 Water Resources

Past and present actions in the watershed may have impacted water resources, including residential and business development, the Husky Energy Superior Refinery, and forest management and timber harvesting. The construction of the planned 16-inch natural gas line; the relocation of the 10-inch natural gas line at the Nemadji River Site; the relocation of the fiberoptic cable between the Nemadji River Site and the Hill Avenue Site; the relocation of the existing electric transmission lines at the Nemadji River Site; and construction of two parallel single circuit electric transmission lines from the Superior Switching Station to a tap point on the existing Arrowhead to Stone Lake transmission line (if the Superior Switching Station is constructed) has the potential to impact water resources.

Surface Water: The RFFAs have the potential to impact surface water resources in the area. The 16-inch natural gas pipeline will likely require surface water crossings between the Project site and the tap location on the Great Lakes Limited natural gas pipeline.

Waterways would be crossed by the transmission line route. With the implementation of mitigation measures proposed in Section 3.10.3, impacts to these streams would be minimized.

Considering the distance of the Project from Outstanding or Exceptional Resource Waters; trout streams; and wild and scenic rivers, it is anticipated that construction and operation of the Project would not result in any impacts to these features.

Groundwater: No domestic or high capacity wells are located within a 0.5-mile radius of the Nemadji River Site. The nearest high capacity groundwater user is located over 3 miles west of the Nemadji River Site (Precision Foods). The nearest high capacity municipal groundwater user is the Village of Oliver, which is located 7.3 miles west of the Nemadji River Site.

Only two municipal water users are located within 10 miles of the Nemadji River Site: the City of Superior and the Village of Oliver. The City of Superior obtains its water supply from a surface water source (Lake Superior) and would not be impacted by new groundwater withdrawals for the Project. As no domestic or high capacity pumping wells are located within a 0.5-mile radius of the Nemadji River

Site, no impacts to domestic or high capacity pumping wells are anticipated. No high capacity wells would be installed as part of this project. No additional impacts to groundwater would occur.

Floodplain: Construction of the 16-inch natural gas pipeline is anticipated to cross areas of floodplain in the Study Area. Construction and installation of pipelines in floodplains would require clearing of right-of-way and excavation. No surface facilities to reduce flood storage or obstruct flood waters are anticipated to be placed in floodplains due to the aforementioned RFFAs.

The Nemadji River Site is located adjacent to the Nemadji River floodplain and a small portion of the property boundary extends into the 100-year and 500-year floodplain. All equipment for the facility is located outside the 100-year and 500-year floodplain, however. The Hill Avenue Site is not within 100-year floodplain. The switching stations and all laydown yards are not within 100-year floodplain. Both transmission line alternatives would require crossing floodplain associated with the Nemadji River, Bear Creek, and Bluff Creek. The macro-corridors contain both 100-year and 500-year floodplain. All rivers would be spanned by the transmission line. Two transmission line structures would potentially need to be placed within the Nemadji River floodplain due to the floodplain width.

Wetlands/riparian areas: The aforementioned RFFAs have the potential to impact wetlands and riparian areas in the Study Area due to the abundance of wetland areas in the region. Impacts may include placing transmission line structures in wetlands, trenching or drilling in or under wetlands, and moving construction equipment through or near wetlands.

The Nemadji River Site contains six wetlands (7.4 acres). One wetland (totaling 75.6 acres) was delineated within the Hill Avenue Site. A total of 30 wetlands (49.5 acres) were delineated within the Eastern Transmission Line Wetland Survey Area. A total of 42 wetlands (totaling 86.4 acres) were delineated within the Western Transmission Route Wetland Survey Area. A total of 16 wetlands (totaling 18.7 acres) were delineated within the Hill Avenue Site Route Wetland Survey Area. A total of 13 transmission poles would likely be placed in wetlands within the Eastern Transmission Route Wetland Survey Area. A total of 40 transmission poles would be permanently placed in wetlands within the Western Transmission Route Wetland Survey Area. A total of 10 transmission poles would be permanently placed in wetlands within the Hill Avenue Site Route Wetland Survey Area. Additionally, the switching station would be placed entirely within wetland areas. Forested and shrub/scrub wetland areas would be cleared of vegetation at the switching station sites.

Wastewater: The aforementioned RFFAs are not anticipated to generate wastewater. The Project would be responsible for installation of the sewer extension and tie-in to connect to the City's wastewater system. The Owners would work with the City of Superior to install the wastewater discharge interconnection facilities to the City's wastewater treatment plant.

Stormwater: The aforementioned RFFAs have the potential to contribute to erosion and increased suspended solids in stormwater runoff. The RFFAs would need to implement and adhere to the mitigation measures in their respective SWPPPs and erosion control plans to minimize impacts related to stormwater.

The Erosion Control and Storm Water Management Plan addresses both the control of sediment and pollutants during construction until site stabilization is complete and the storm water management practices that would be installed during the construction phase to address the discharge of total suspended solids, to control peak flow, to provide for infiltration, and to maintain protective areas during Facility operation. Site-specific plans would be developed during the final design phase of the Project and provided to the WDNR and the City of Superior for review and approval prior to commencement of construction.

Non-contaminated storm water runoff on the Nemadji River Site would be collected and directed to an onsite storm water detention pond. The existing pond discharges via underground pipe to the Nemadji River and would be expanded to attenuate the increase in runoff volume from Project construction. Storm water runoff on the Hill Avenue Site would be collected and routed to a new storm water detention pond located in the northeast corner of the site. The new pond would be pumped, and storm water would be discharged at existing surface grade to the east/northeast to a stream that discharges to Superior Bay. The post-construction storm water management facilities would be designed to meet the performance standards addressed in NR 151. Drains for areas around equipment that could be contaminated with oil would be gravity drained and directed through an oil/water separator prior to discharge to the municipal sewer system. The wet detention pond would be used as a sediment basin during Project construction to remove sediment loads from storm water runoff. Following site stabilization, the sediment basin would be cleaned out and converted to a wet detention basin. The detention basin is designed to reduce the total suspended solids load by at least 80 percent, based on an average annual rainfall.

Summary: The Project would require crossing multiple waterways. Also, transmission line structure may need to be placed within the Nemadji River floodplain due to the floodplain width at the river crossing location. The Project would require clearing of forested and shrub/scrub wetland areas.

The Owners would implement the mitigation measures detailed in Section 3.10.3 to minimize impacts to wetlands, waterways, and floodplain. With the implementation and maintenance of these measures, the cumulative impact of the Project, when added to other past, present, and RFFAs affecting water resources in the area, would be minimal. No adverse impacts are anticipated related to groundwater, wastewater, or stormwater.

5.0 SUMMARY OF MITIGATION

The following is a summary of mitigation proposed for the Project by resource.

5.1 Air Quality

During construction, steps will be taken to prevent excessive emissions of particulate matter resulting from construction activities and vehicular traffic. These steps may include compacting, seeding, covering, paving, wetting, sweeping, or otherwise controlling particulate matter emissions.

Post-construction, the areas disturbed during construction will receive final cover to eliminate dust. All exposed soil areas will be seeded to grow grass, lesser-traveled road surfaces will be graveled and compacted, and the new main roads on-site will be surfaced with asphalt. The roads will be monitored and either wetted or swept to clean any fugitive dust that may occur due to on-site wheeled traffic.

The SCR and oxidation catalyst will be integrated into the HRSG design by the supplier of the HRSG. The HRSG supplier will also provide ports in the stack to monitor HRSG stack emissions. The CEMS will monitor the HRSG NO_x stack emissions through these ports.

The Project will require a PSD major source construction air permit pursuant to the requirements specified in the WAC Chapter Natural Resources (NR) 405. The PSD permit application contains the following analyses/assessments regarding emissions of regulated pollutants associated with the construction and operation of the Project:

- Evaluation of ambient air quality in the area for each regulated pollutant for which the Project will result in a significant net emissions increase
- Demonstration that emissions increases resulting from the Project will not cause or contribute to an increase in ambient concentrations of pollutants exceeding the remaining available PSD increment and the NAAQS
- Assessment of any adverse impacts on soils, vegetation, visibility, and growth in the area
- A BACT analysis for each regulated pollutant for which the Project will result in a significant net emissions increase

The Owners submitted the PSD permit application for the Project to WDNR and will adhere to conditions and requirements of the application during operation of the Project. The WDNR provided notification of the air permit approval on September 1, 2020 (Appendix A).

5.2 Biological Resources

The following sections describe the avoidance, minimization measures, and WDNR-identified actions for the Project to help conserve federally protected species, Wisconsin's rare species, and high-quality natural communities.

5.2.1.1 Northern Long-eared Bat

Reproductive females and their young are highly vulnerable to mass mortality during their maternity period (June 1 – July 31) because they aggregate in maternity colonies. Young northern long-eared bats start flying by 18 to 21 days after birth and therefore cannot leave the roost for several weeks after birth (USFWS 2015; Federal Register 2016). To follow the USFWS 4(d) rule for the Northern Long-Eared Bat, one of the following options should be implemented to avoid take of the NLEB:

1. Assume the bats are present within suitable habitat and avoid removal of known occupied maternity roost trees or any trees within 150 feet of a known occupied maternity roost tree from June 1 – July 31. For suitable habitat that occurs outside of 150 feet of a known occupied maternity roost tree or outside of 0.25 miles of a NLEB hibernaculum, implement the avoidance measures outlined in the Cave Bat Broad Incidental Take Permit and Authorization. According to the WDNR, if the Project can implement these avoidance measures, there will not be any further Project restrictions related to the NLEB. If the Project cannot completely avoid take of the NLEB, WDNR recommends that the BNHC Incidental Take Coordinator be contacted to determine possible Project-specific avoidance measures. If take cannot be avoided, consultation with the USFWS will be necessary.

2. Not assume the NLEB is present within suitable habitat along the alternative routes and have a qualified biologist conduct surveys to determine if the NLEB is present (a copy of the survey biologist's credentials and a copy of the survey protocols must be sent to the WDNR Endangered Resources Review Program for approval prior to the initiation of surveys). According to the WDNR, if the NLEB is not found within the Study Area as a result of the surveys, there will be no Project restrictions related to these species. If surveys are conducted and the NLEB or maternity colonies are detected, option 1 must be followed. Survey results should be submitted to the Endangered Resources Utility Liaison.

5.2.1.2 Eagles

While the bald eagle was removed from the Federal Endangered Species list in August 2007, it is still federally protected by the BGEPA and the MBTA. Golden eagles are considered a nonbreeding, infrequent inhabitant in Wisconsin. Eagles can be sensitive to human disturbance, especially during the breeding and nesting seasons. Per the USFWS National Bald Eagle Management Guidelines (2007),

human activity within 660 feet of an active nest should be avoided from January 15 – July 30. No bald eagle nests were observed during field surveys that occurred within the Study Area; however, if a bald eagle nest should be identified within the Survey Area, the USFWS National Bald Eagle Management Guidelines (2007) would be followed.

5.2.1.3 Invasive Species

In compliance with WAC Chapter NR 40 Invasive Species Identification, Classification and Control Rule, the Owners will mitigate the potential to spread invasive plant species during Project activities. Invasive plant species locations will be shown on the construction plans and flagged on-site to avoid during construction, where feasible. In areas where impacts to the invasive plant species are unavoidable, equipment will be cleaned prior to moving from an infested area to a non-infested area.

Equipment cleaning will primarily be conducted by brush, broom, or other hand tools along the Project. The Owners may periodically require equipment to be cleaned by compressed air. Equipment used during ground disturbing activities will be cleaned prior to leaving the Project ROW to reduce the risk of spreading invasive plant species beyond the Project ROW.

Construction equipment brought on-site will be required to be free of muck and invasive species. In accordance with Wisconsin DATCP Chapter 20, WAC, seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities will be avoided.

5.2.1.4 Revegetation

Construction activities will include clearing, grubbing, grading, excavation, infrastructure construction, and re-vegetation. In areas were restoration is required, seeding and mulching will be completed in accordance with WDNR Technical Standard 1059 – Seeding for Construction Site Erosion Control. The seed mix used will be appropriate to the surrounding area and similar to pre-construction conditions. The seedbed will be adequately prepared to promote successful germination. Seed mixes will not contain invasive species. Permanent seed mixtures will be selected to produce dense vegetation based on soil and site conditions, along with intended final use. Temporary seeding will be applied to areas of exposed soil where the establishment of vegetation is desired, but the areas have not been brought to final grade or on which land-disturbing activities will not be performed for a period greater than 30 days, but vegetative cover is required for less than 1 year. Areas needing protection during periods when permanent seeding is not applied, will be seeded with annual species.

Upon completion of restoration, each work location will be monitored to document stabilization and re-vegetation. Monitoring will continue until vegetative cover reaches 70 percent of previous cover.

5.2.1.5 Migratory Birds

The MBTA prohibits the take of migratory birds and their eggs, young, or active nests. The loss of plant and animal habitat within the footprint of the proposed Project, would primarily occur adjacent to existing areas that have already been developed or are associated with existing utility and public road ROWs. The Nemadji River Site is adjacent to an existing tank farm and utility corridors and this area has experienced some level of habitat fragmentation associated with development in and around the City of Superior. The Eastern Transmission Route for the transmission line would be constructed within an existing utility corridor that contains a natural gas pipeline and overhead electrical transmission lines or the Western Transmission Route would be constructed parallel to existing linear infrastructure; however, woody vegetation would be cleared from forested lands and shrubland habitats along the edges of the existing utility corridor to widen the corridor and accommodate the additional line. During the extent of the Project, trees that would be removed would be done so outside of the migratory bird nesting period for Wisconsin (May 15 to August 1) to avoid impacts to nesting migratory birds (U.S. Department of Agriculture, 2018).

5.3 Cultural Resources

If the Archaeological Study Area configuration is changed, additional archaeological investigations; documentation of historic-age, non-archaeological resources; and NRHP evaluations may be necessary.

If buried cultural resources are encountered during Project construction, land-disturbing activities in the immediate area must be halted, and the investigators and WHS/SHPO archaeologists must be notified. Any exposed cultural resources will be evaluated for their significance and appropriate actions to address these finds coordinated with WHS/SHPO.

5.4 Geology and Soils

Best management practice (BMP) erosion control techniques will be used to mitigate soil impacts. Topsoil will be kept separate from subsoils and will be stockpiled in a different location than subsoils. This topsoil will be used after construction to resurface areas disturbed by construction activities. Compacted soils will be disked prior to final stabilization. It is not anticipated that any subsoil removed for excavations will be spread in upland cropland or pasture. The Storm Water Management Technical Standards from WDNR will be used during construction and operation.

A Storm Water Pollution Prevention Plan (SWPPP) will be submitted to WDNR as part of Project permitting activities. The Owners will implement, monitor, and maintain BMPs, described in the SWPPP to minimize erosion and sedimentation. The Owners will comply with the construction site storm water

discharge permit (Wis. Admin. Code NR 216) that was submitted to WDNR for the Project in December 2018.

5.5 Infrastructure, Transportation, Public Health, and Waste Management

The following presents mitigation measures for transportation, public health, and waste management resources for the Project. No mitigation measures related to utility infrastructure are proposed.

Transportation

The Owners do not anticipate permanent damage to roads. As a precautionary measure, the Owners will video-document the condition of all roads on the construction vehicle routes to document the road condition prior to the start of construction. Any documented adverse impacts to the roads incurred due to the construction of the Project will be addressed through consultation with applicable road authorities regarding the Owners' responsibility for repairing the adversely impacted roads.

The Owners will coordinate the proper construction signage on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

Public Health and Safety

The Owners will develop a Health and Safety Plan to address public and worker safety during the construction and operation of the Project. The Health and Safety Plan would identify any requirements for temporary fencing around staging, excavation, and laydown areas during construction, as well as protocols for emergency responses. The Owners would work with local first responders to develop emergency response procedures in the plan. The plan would also include provisions for worker protection as is required under Occupational Safety and Health Administration (OSHA) CFR1926. During construction, all employees, contractors, and sub-contractors would be required to adhere to OSHA safety procedures, which will be taught in a mandatory training for all construction works on site. All heavy equipment would be up to OHSA safety standards and personal safety equipment would be required for all workers on site. Any accidents or incidents would be reported to the designated safety officer. During construction there is a risk of accidental fires being started by human activities such as refueling heavy equipment or the use of vehicles in dry vegetated areas. The Health and Safety Plan will have procedures in place to address and restrict the various activities that have a fire-related risk. A fire-suppression system will be incorporated into Project design. The Project will implement industry-approved design measures to reduce fire-related risks.

Waste Management

A Spill Prevention, Control and Countermeasures (SPCC) plan[16] has been created for the Project (SSE, Dairyland, Burns & McDonnell, 2019). This plan establishes procedures, methods and equipment, and other requirements for equipment to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines.

The oil/water separator will be designed to remove 20 micron and larger oil droplets to concentrations of less than 10 ppm. It will be designed to store 1,000 gallons of oil. The oil/water separator will be constructed as a double walled buried tank and will have a leak monitor to detect a breech in the inner tank wall. The tank will be cathodically protected. Any oil collected will be pumped out as required for disposal.

The Project will have a construction superintendent responsible for oil spill containment and cleanup. The construction superintendent will report spills and supervise cleanup and disposal of any contaminated soil and spill cleanup materials for any significant volume (defined as 55 gallons or more) of chemicals such as lubricants, fuel, grease, or other oil. Diesel and gasoline fuel will be temporarily stored at the Project site during construction in aboveground tanks. Preventative measures will be implemented during re-fueling or transfer of these fuels to reduce the risk of spills. Lubricating oils and certain other industrial chemicals required for the project will be stored in specially designed and covered containment areas. Also, equipment will be kept in good working condition through routinely inspections and service to reduce the risk of leaks of transmission, hydraulic, or brake fluid. Chemical storage areas will be well marked and include eye wash stations, first aid kits, safety showers, hose stations, and spill kits with absorbent pads and/or material.

Larger spills will be removed from the containment area using a vacuum tank truck or will be pumped into a suitable container for cleanup. Contaminated soil and/or absorbent pads or products used to cleanup a spill will be immediately removed, stored, and disposed of in accordance with Wisconsin state regulations. Absorbent pads or other manufactured absorbent products will be used to cleanup minor spills. These pads and absorbent products will be stored on maintenance trucks and/or in a dedicated cabinet that is readily accessible.

[16] The SPCC Plan is available on the PSCW website at: http://apps.psc.wi.gov/vs2015/ERF_search/content/searchResult.aspx?UTIL=9698&CASE=CE&SEQ=100&START=none&END=none&TYPE=none&SERVICE=none&KEY=none&NON=N. PSC Reference No. 357005.

The oil contaminated gravity drain system collects waste liquid which has the potential of containing quantities of oil and conveys the waste through an oil/water separator. Permanent combination safety shower/emergency eyewash stations with tepid water conditioning skid will be installed at all battery rooms and chemical storage areas including near the aqueous ammonia storage tank and SCR vaporization skids.

The Project site will be maintained to contain debris and waste in approved containers and locations. Regular trash and waste removal from the site will occur and a recycling program implemented for the site. Wastes are anticipated to be removed and disposed of at a local landfill by a local service provider. Recycling pickup services are anticipated to be provided by a local disposal company.

5.6 Land Use

During construction, portions of the Project site will be cleared, grubbed, graded, excavated, and revegetated. In areas not impacted by these activities, such as riparian vegetation along the Nemadji River outside the ROW and areas of the transmission line ROW that do not require clearing, existing vegetation will be preserved where practicable. The amount of soil exposed during construction will be minimized. Seed mixtures will be selected to produce dense vegetation based on soil and site conditions, along with intended final use. In areas were restoration is required, seeding and mulching will be completed in accordance with WDNR Technical Standard 1059 – Seeding for Construction Site Erosion Control, Chapter DATCP 20, WAC regarding noxious weed seed content and labeling, and Wisconsin Department of Transportation (WisDOT) Mix 75 – Erosion Control Native Mix.

Temporary seeding will be applied to areas of exposed soil where the establishment of vegetation is desired, but the areas have not been brought to final grade or on which land-disturbing activities will not be performed for a period greater than 30 days, but vegetative cover is required for less than 1 year. Areas needing protection during periods when permanent seeding is not applied, must be seeded with annual species.

Final stabilization is achieved when all soil-disturbing activities at the site have been completed and a uniform (i.e., evenly distributed, without large bare areas) perennial vegetation cover with a density of 70 percent of the native background vegetative cover has been established on all unpaved areas or areas not covered by permanent structures or with alternative surfacing, such as riprap or crushed rock.

During construction, areas that have been seeded will be inspected by a qualified person at least once every 7 days and within 24 hours after every precipitation event that produces 0.5 inch of rain or more during a 24-hour period. Where areas of concern are identified, the area will be re-seeded and watered,

and fertilizer will be applied, if applicable. The Project site will be inspected at least once per month to monitor vegetative growth until final stabilization is achieved after construction and stabilization activities are complete.

The Owners will comply with WAC, Chapter Natural Resources (NR) 40, WAC – Invasive Species Identification, Classification and Control during monitoring and management of invasive plant species. The Owners will control any prohibited plant species identified onsite during inspection and monitoring activities and will minimize the spread of restricted plant species beyond their known boundaries throughout the duration of the Project.

In accordance with the Wisconsin DATCP Chapter 20, WAC, seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities will be avoided. Seed will be tested for purity, germination, and noxious weed seed content, and will meet the minimum requirements prescribed in the current edition of Rules for Testing Seed, published by the Association of Official Seed Analysts.

To minimize impacts to agricultural areas, construction of the transmission line will occur after harvest and/or before spring planting and be contained within the existing ROW to the greatest extent practicable, to reduce the potential for loss of crop production. Outside of winter months, matting will be used in wet areas to spread out heavy vehicle loads and minimize soil disturbance.

The Owners will coordinate the proper construction signage near recreation area access points on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

5.7 Noise

Within twelve months of the date when the project is fully operational, and within two weeks of the anniversary date of the pre-construction ambient noise measurements, sound level measurements will be repeated both with and without the Project in operation to verify noise levels do not exceed contractually guaranteed levels, as well as EPA guideline levels. Sound measurements will be taken at the same measurement points that were analyzed for the ambient measurements. The Owners will provide notice to nearby residents of expected timeframes for steam blow operation.

5.8 Socioeconomics and Environmental Justice

Construction activities will primarily be scheduled between the hours of 7:00 a.m. and 10:00 p.m. to minimize noise impacts to nearby residences. The Owners will provide notice to nearby residents of expected timeframes for steam blow operation.

The Owners do not anticipate permanent damage to roads. As a precautionary measure, the Owners will video-document the condition of all roads on the construction vehicle routes to document the road condition prior to the start of construction. Any documented adverse impacts to the roads incurred due to the construction of the Project will be addressed through consultation with applicable road authorities regarding the Owners' responsibility for repairing the adversely impacted roads.

The Owners will coordinate the proper construction signage on the roads used by construction vehicles for the Project to make drivers aware of the increased hazards associated with the construction vehicle(s) presence.

Contractors will be chosen from a competitive bid process and will be local whenever practical. Local materials such as concrete, lumber, and general hardware may be purchased from local businesses.

5.9 Visual Resources

Building entrances will be illuminated with fixtures mounted directly above doors. Outdoor light fixtures will be fully shielded and directed downward to minimize light visible from adjacent properties and to reduce glare in the area. Any floodlights required for the operation of the Project will be directed inward towards the facility and will have top and side shields.

Cleared ROW would be revegetated as soon as practicable as described in Section 3.2.3.5. Existing vegetation outside the plant footprint, ROW, switching station areas, and laydown yards will be left intact to reduce visibility of the Project and provide screening. During construction, work areas would be maintained in an orderly manner and trash and construction debris removed to help avoid unsightly areas. All disturbed areas would be restored as soon as practicable. Disturbance would be limited to those areas necessary for construction, limiting clearing and ground disturbance.

5.10 Water Resources

Minimization efforts will be utilized to the extent practical where wetland impacts are unavoidable. Construction activities will be prioritized during winter months to take advantage of ground freeze and

use of ice roads to limit ground disturbance. Outside of winter months, matting will be used in wetland areas to spread out heavy vehicle loads and minimize soil disturbance. Additionally, tracked vehicles will be used to the extent practical to further spread out vehicle loads throughout wetland area with matting.

Existing site entrances will be used to the extent practical to reduce the number of new roadside and wetland crossings required for construction vehicles to access the site. BMPs outlined in the SWPPP will be used to avoid and minimize stormwater sedimentation and disturbance within wetland areas.

The Sites will be designed to avoid and minimize temporary and permanent impacts to waterways. The post-construction storm water management facilities would be designed to meet the performance standards addressed in NR 151.

To the extent practicable, off-ROW access roads eliminate the need to cross wide waterways during construction. For smaller intermittent and ephemeral waterways within the ROW, temporary prefabricated span bridges will be used to span waterways. Following the removal of all temporary bridges, contours will be regraded to pre-construction conditions as needed.

A Spill Prevention, Control and Countermeasures (SPCC) plan has been created for the Project. This plan establishes procedures, methods and equipment, and other requirements for equipment to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines. The equipment at the site is outside the 100-year and 500-year floodplain.

The wetlands and waterways WDNR permit application materials were submitted on December 18, 2018. The USACE Section 401 and 404 permit application is anticipated to be submitted in Spring 2020. The Owners will provide the USACE with wetland permit information throughout the CPCN application process. The Owners will comply with permit application requirements for wetlands and waterways.

6.0 COORDINATION, CONSULTATION, AND CORRESPONDENCE

This chapter describes the public outreach for the Project as well as the coordination, consultation, and correspondence with Federal, tribal, state, and local agencies.

6.1 Public Involvement

The Owners developed a communication plan to inform the public about the Project and to request feedback from stakeholders. The ongoing communication efforts include:

- Establishing and updating a website (http://www.nemadjitrailenergycenter.com/)
- Issuing news information to media outlets
- Holding public meetings related to the Project
- Providing regular updates to public officials and area legislators

The RUS formal scoping meeting was held on September 21, 2017, at the Elks Lodge in Superior in Douglas County, WI. A legal notice and a paid advertisement were placed in the Superior Telegram with distribution in the Study Area announcing the Public Scoping Meeting. The legal notice and paid advertisement ran three times prior to the meeting (September 12, 15, and 19). Mailing information was obtained from current county tax parcel records. Landowners who own parcels within one mile of the Project were identified and mailed a postcard on September 14, 2017, inviting them to the meeting. It also included anyone that attended a previous stakeholder workshop or open house. A total of 13 people attended the scoping meeting.

In addition to the RUS formal scoping meeting, a stakeholder meeting was held in Superior, Wisconsin, on July 13, 2017, providing an opportunity for various leaders in the community to learn more about the Project. The meeting consisted of open house style presentations by SSE and Dairyland Power Cooperative staff about the NTEC Project, a mapping exercise, and a question and answer portion. Also, three open houses were held for the Project. On September 7, 2017, two open houses were held at the Elks Lodge in the City of Superior and on November 12, 2018, an additional open house was held at the Belgian Club in the City of Superior. The meetings were a similar format to the RUS formal scoping meeting held for the Project.

A total of 109 people attended the three open houses. Table 6-1 provides a breakout of attendance by open house day and time along with the number of comment forms submitted during each open house.

Table 6-1: Open House and RUS Formal Scoping Meeting Attendance

Meeting Type	Date	Time	Attendees (no.)	Comment Forms (no.)
Open House	Thursday, September 7, 2017	11:00 am – 1:00 pm	44	9
Open House	Thursday, September 7, 2017	5:00 pm – 7:00 pm	19	5
Open House	November 12, 2018	4:00 pm – 7:00 pm	46	7
		Total	109	21
RUS Formal Scoping Meeting	Thursday, September 21, 2017	4:00 pm – 7:00 pm	13	2

The following table provides a summary of comments received during public open houses and meetings. A summary of public involvement and stakeholder materials is provided in Appendix H.

Table 6-2: Summary of Comments by Topic

Topic	Number of Comments
Air quality	3
Geology	1
Land Value Impacts	2
Noise	1
Public health and safety	1
Public involvement	5
Socioeconomics and job opportunities	9
Transportation	3
Vegetation	1
Water resources	3

6.2 Agency Consultation

Letters or postcards were sent to agencies to inform agency contacts of the stakeholder meeting, three open house meetings, and the RUS formal scoping meeting. The meetings provided agencies and the general public with information on the Project as well as an opportunity to ask questions and provide initial feedback. Agency correspondence is provided in Appendix A. Table 6-3 provides a list of agencies invited to each meeting.

Table 6-3: Open House and RUS Formal Scoping Meeting Attendance

Meeting	Date(s)	Agencies Invited Federal	Agencies Invited State	Agencies Invited Local
Stakeholder Meeting	7/13/17	• U.S. Army Corps of Engineers • Office of Congressman Sean Duffy • Office of U.S. Senator Ron Johnson • Office of U.S. Senator Tammy Baldwin	• Wisconsin Department of Natural Resources • Wisconsin Department of Administration • Wisconsin Indianhead Technical College (WITC) – Superior • Wisconsin State Assembly • Wisconsin State Senate	• City of Superior • Douglas County • Richard I. Bong Airport • Superior School District • Sky Harbor Regional Airport • Superior Chamber of Commerce • University of Wisconsin – Superior
Open Houses and RUS Scoping Meeting	Open Houses: 7/7/17 11/12/18 RUS Meeting: 7/21/17	• Federal Aviation Administration • Office of Congressman Sean Duffy • Office of U.S. Senator Ron Johnson • Office of U.S. Senator Tammy Baldwin • Rural Utilities Service • U.S. Army Corps of Engineers • U.S. Fish and Wildlife Service	• Public Service Commission of Wisconsin • State of Wisconsin Armory • Wisconsin Department of Administration • Wisconsin Department of Natural Resources • Wisconsin Department of Transportation • Wisconsin State Assembly • Wisconsin State Senate	• Douglas County Highway Department • Housing Development Corp of Superior, Wisconsin • City of Superior • Douglas County • Parkland Sanitary District No. 1 • Richard I. Bong Airport • School District of Superior • Sky Harbor Regional Airport • Superior Chamber of Commerce • Superior Housing Authority • Superior School District • Town of Parkland • University of Wisconsin – Superior • WITC – Superior

6.2.1 Federal Agency Coordination

The following sections provide details about specific Federal agency coordination and correspondence, as well as a list of Federal permits required for the Project.

6.2.1.1 FAA

The Owners initially consulted with the WisDOT Bureau of Aeronautics and the City of Superior regarding Project structure heights. The WisDOT Bureau of Aeronautics indicated that Project structures were under the authority of the City of Superior since the Project was located within City limits. The City of Superior stated that the FAA determinations were sufficient for their purposes and the City would not require additional tall structure permits.

Any structure (including permanent structures and temporary construction equipment) on the Project site that exceeds 200 feet above ground level in height would be considered an obstruction to navigable airspace and could impact aircraft safety unless it is marked and lighted in accordance with criteria set forth by the FAA. A Determination of No Hazard to Air Navigation was issued by the FAA on October 3, 2017, after stack height limitations were agreed to by the Owners. The general contractor would be responsible for filing pre-construction notification for the temporary cranes.

6.2.1.2 USFWS

The USFWS Information for Planning and Consultation (IPaC) on-line tool was reviewed for information on potential threatened and endangered species and other sensitive resources to be included and discussed in the previous sections on Project- related impacts (IPaC results are included in Appendix B). Additionally, the Owners and their contractors (on behalf of the Owners) have had telephone meetings with the USFWS (as well as WDNR and PSCW) where potential impacts to state- and federally listed species were discussed. USFWS was also invited to the three open houses for the Project as well as the RUS formal scoping meeting. RUS initiated consultation with USFWS under Section 7 of the Endangered Species Act and prepared a Biological Assessment. The Biological Assessment was submitted for USFWS review and concurrence on June 24, 2020. The USFWS concurred with the Biological Assessment on September 2, 2020, indicating potential impacts to the northern long-eared bat would be covered under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern long-eared Bat and Activities Excepted from Take Prohibitions. USFWS determined the project would have no impacts to other identified species (Appendix B).

6.2.1.3 USACE

USACE was sent a wetland delineation report to review in preparation for PSCW decision. The Owners will provide the USACE with wetland permit information throughout the CPCN application process. An Individual Permit application was sent to the USACE on March 31 for the NTEC 625-megawatt (MW) gas turbine generation facility, natural gas supply pipeline, and 345-kilovolt transmission line, new switching station, staging areas, and laydown yards. Pre-construction notification was sent to the USACE on March 31 for the 10-inch natural gas pipeline relocation for Section 404 permit coverage under the Utility Regional General Permit. Pre-construction notification was sent to the USACE on March 31 for the transmission line relocation for Section 404 permit coverage under the Utility Regional General Permit and authorization under Section 10 of the Rivers and harbors Act. The USACE published these applications for 30-day public review and comment on September 14, 2020 (Appendix G). The Owners will comply with permit application requirements for wetlands and waterways.

6.2.1.4 Federal Permitting

Table 6-4 provides the Federal permits and approvals required for the Project.

Table 6-4: Federal Permits and Approvals

Agency	Planned Activity	Type of Approval	Status
FAA[1]	Construction or alteration of structures more than 200 feet above ground level.	7460 Notice of Proposed Construction or Alteration (14 Code of Federal Regulations S77.13)	Submitted 2018. Extension request letters submitted in April 2019.
USFWS[2]	Various land disturbance construction activities	Endangered Species Act and National Bald Eagle Management Guidelines	Guidelines to be followed
USACE[3]	Discharge of dredged or fill material into waters of the U.S.	Clean Water Act - Section 404 Permit	USACE reviewing wetland delineation reports and processing Permit Applications
USEPA[4]	Storage of petroleum products	Spill Prevention, Control and Countermeasures Plan and Facility Response Plan (40 CFR 112)	To be implemented and kept on site.

[1]FAA – Federal Aviation Administration
[2]USFWS – U.S. Fish and Wildlife Service
[3]USACE – U.S. Army Corps of Engineers
[4]USEPA – U.S. Environmental Protection Agency

6.2.2 Tribal Coordination

On August 11, 2017, letters that provided preliminary Project details were mailed by the Owners to the Red Cliff Band of Chippewa, Bad River Bands of Chippewa, and the Fond du Lac Band of Lake Superior Chippewa (Appendix C). In addition to providing preliminary Project details, the letters invited the tribes to participate with the Owners in the pre-filing process and requested feedback regarding cultural resources in the APE. The letters included an invitation to a public meeting held on September 7, 2017. Advertisements were run in the paper for the open house on September 1 and 5, 2017. On August 16, 2017, the Owners met with the Fond du Lac Band of Lake Superior Chippewa to discuss the Project. On August 21, 2017, the Owners met with Red Cliff and Bad River Bands of Chippewa (separately) to discuss the Project. The Owners met with the Lac Courte Oreilles Band on January 8, 2019. The Owners also reached out to the St. Croix and Forest County Potawatomi Bands, but have not yet received a reply. Jill Hoppe, Tribal Historic Preservation Officer for the Fond du Lac Band of Lake Superior Chippewa, sent the Owners an image of approximate locations of some cultural sites from their cultural database. Three of the locations fall within the Project Study Area and two are adjacent to the APE but outside of it.

A letter was sent to tribal contacts on June 11, 2019, in regard to the SHPO concurrence that the Project would have no impact on historic properties. This letter was sent to the St. Croix Chippewa Community, Lac Courte Oreilles Band of Lake Superior Chippewa, Bad River Bands of Lake Superior Chippewa, Forest County Potawatomi Community, and Red Cliff Band of Chippewa. A letter was given to the Fond du Lac Band of Lake Superior Chippewa during a meeting on August 5, 2019. The letter requested responses be sent within 30 days. No responses were received. The Fond du Lac Band of Lake Superior Chippewa discussed potential monitoring options during construction at the August 5, 2019, meeting. The group planned to send SSE a proposal by September 9, 2019.

By letter dated March 16, 2020, the following additional Tribes were contacted in regard to the SHPO concurrence that the Project would have no impact on historic properties:

- Fort Belknap Indian Community – Fort Belknap Reservation of Montana
- White Earth Band of the Minnesota Chippewa Tribe
- Lac Vieux Desert Band of Lake Superior Chippewa Indians of Michigan
- Lac du Flambeau Band of Lake Superior Chippewa Indians – Lac du Flambeau Reservation of Wisconsin
- Lac Courte Oreilles Band of Lake Superior Chippewa Indians – Wisconsin
- Menominee Indian Tribe of Wisconsin
- Grand Portage Band of the Minnesota Chippewa Tribe

- Keweenaw Bay Indian Community – Michigan
- St. Croix Chippewa Indians of Wisconsin
- Minnesota Chippewa Tribe
- Sokaogon Chippewa Community – Wisconsin
- Mille Lacs Band of Ojibwe (Mille Lacs Band of the Minnesota Chippewa Tribe Mille Lacs Band of Ojibwe)
- Leech Lake Band of the Minnesota Chippewa Tribe
- Miami Tribe of Oklahoma
- Ho-chunk Nation
- Stockbridge-Munsee Community Band of Mohican Indians
- Oneida Nation of Wisconsin

No responses have yet been received.

6.2.3 State Agency Coordination

The following sections provide details about specific State agency coordination and correspondence, as well as a list of state permits required for the Project.

6.2.3.1 DATCP

An agricultural impact notice was sent to the Wisconsin DATCP on December 18, 2018. The DATCP determined that an Agricultural Impact Statement is not required as the Project does not cross private agricultural land. The agricultural land crossed by the Project transmission line is owned by Douglas County, Parkland Sanitary District No. 1, and the City of Superior. No impacts are anticipated to agricultural lands due to the Project. See Appendix D for correspondence with the Wisconsin DATCP.

6.2.3.2 Wisconsin Legislative Black Caucus

On March 12, 2019, representatives of Dairyland met with representatives of the Wisconsin Legislative Black Caucus (Caucus). The Caucus is interested in working with Dairyland and SSE to provide opportunities for employment to a diverse workforce, including minorities, women and veterans. Dairyland explained the process for Project approval and future actions related to hiring contractors for the project. As construction is still some time off, assuming the Project is approved, Dairyland and SSE will continue to coordinate with the Caucus to understand their concerns and identify opportunities to address them.

6.2.3.3 PSCW

Under Wisconsin Statutes (Wis. Stat.) § 196.491(3) and Wisconsin Administrative (Wis. Admin. Code) Code Chapter PSC 111, the Owners submitted two separate CPCN applications to the PSCW for the construction of a natural gas electric generation facility and a new 345-kV electric transmission line on January 8, 2019. The PSCW provided completeness determinations for both CPCNs on February 15, 2019. In addition to these CPCN application, two Certificate of Authority (CA) applications were submitted by one of the interconnecting utilities to the PSCW on January 8, 2019, under Wisconsin Statutes (Wis. Stat.) § 196.49 and Wisconsin Administration (Wis. Admin.) Code § PSC 133.03 to construct a new lateral natural gas line from the location of the generation facility to a tap point on the Great Lakes Gas Transmission pipeline and to relocate an existing 10-inch SWL&P natural gas line at the Nemadji River Site.

On January 31, 2020, the Public Service Commission of Wisconsin (PSCW) issued its final decision on the generation facility (Docket Number 9698-CE-100). The Certificate of Public Convenience and Necessity (CPCN) application was approved and the PSCW authorized the Nemadji River Site as the location for NTEC. On January 30, 2020, the PSCW issued its final decision on the electric transmission line for the Project (Docket Number 9698-CE-101). The transmission line CPCN was approved and the PSCW authorized the eastern route.

6.2.3.4 WDNR

Multiple permits from the WDNR are required for the Project. The following sections describe coordination correspondence with WDNR related to these permits.

6.2.3.4.1 Air Permitting

The Owners and their contractor held two Project pre-application meetings concerning air permitting with WDNR on October 18, 2017, and June 7, 2018. Pursuant to the requirements specified in the Wisconsin Administrative Code Chapter NR 405, the Owners submitted a PSD construction air permit application on December 18, 2018.

A public hearing meeting was held on January 23, 2020, for the air pollution control permit application review at the Douglas County Government Center in Superior, Wisconsin. The hearing was coordinated by WDNR Air Quality Division responsible for permitting the Project. WDNR presided over the meeting, which had approximately 50 to 60 attendees. WDNR outlined the Wisconsin air permitting and comment process, described protocol for the public hearing, and provided a brief overview of the Project and the draft permits. Sixteen attendees provided oral comments. The 30-day public comment period for the

permit ended January 23, 2020 at close of business. In addition to the sixteen oral comments received at the public hearing, written and emailed comments were received during the 30-day public comment period. The WDNR provided notification of the air permit approval on September 1, 2020 (Appendix A).

6.2.3.4.2 Pretreatment Program

The WDNR's Pretreatment Program is a requirement of the Federal Clean Water Act and is administered according to the regulations contained in WAC NR 211 and NR 220-297. The City of Superior has operated a State-approved Pretreatment Program since 1994 and is a designated "control authority". Therefore, the City of Superior is authorized to issue pretreatment permits to industrial dischargers in accordance with Chapter 114, Article II of the City of Superior, Wisconsin Code of Ordinances. Because the Project would discharge industrial wastewater to the City's sewer system and would discharge more than 25,000 gallons per day, the Facility is required to obtain an Individual Wastewater Discharge Permit from the City of Superior. The Pretreatment Program application materials were submitted to the City of Superior on December 18, 2018.

6.2.3.4.3 Protected Species

The Owners and their contractors (on behalf of the Owners) have had telephone meetings with the WDNR (as well as the PSCW and USFWS) where potential impacts to state- and federally listed species were discussed. In addition, contractors (on behalf of the Owners) discussed potential species issues with the WDNR via email and telephone conversations. An Environmental Resource Review (ER Review) was completed for each Project component and submitted to the WDNR for review and approval. The final ER Review was submitted with the CPCN applications.

6.2.3.4.4 Wetlands and Waterways

The wetlands and waterways WDNR permit application materials were submitted on December 18, 2018. The Owners provided the USACE with wetland permit information throughout the CPCN application process. USACE was sent a wetland delineation report to review in preparation for PSCW decision. An Individual Permit application was sent to the USACE on March 31 for the NTEC 625-megawatt (MW) gas turbine generation facility, natural gas supply pipeline, and 345-kilovolt transmission line, new switching station, staging areas, and laydown yards. Pre-construction notification was sent to the USACE on March 31 for the 10-inch natural gas pipeline relocation for Section 404 permit coverage under the Utility Regional General Permit. Pre-construction notification was sent to the USACE on March 31 for the transmission line relocation for Section 404 permit coverage under the Utility Regional General Permit and authorization under Section 10 of the Rivers and harbors Act. The USACE published these

applications for 30-day public review and comment on September 14, 2020 (Appendix G). The Owners will comply with permit application requirements for wetlands and waterways.

6.2.3.4.5 WPDES

In the State of Wisconsin, projects that will disturb one or more acres of land must obtain coverage under the WPDES General Permit No. WI-S067831-5 (WPDES General Permit), which authorizes the discharge of storm water associated with land-disturbing construction activities into State waters. Coverage under the WPDES General Permit is obtained by developing Erosion Control and Storm Water Management Plan (SWMP) and submitting a Water Resources Application for Project Permits (WRAPP)[17] to the WDNR for approval prior to the start of Project construction. For this Project, the Erosion Control Plan and SWMP were written as a single document. The WRAPP documents were submitted to WDNR on January 8, 2019. Once final Project design is complete, the Erosion Control Plan and SWMP will be submitted to WDNR.

6.2.3.5 WisDOT

See Section 6.2.1.1 for a discussion of coordination with the WisDOT Bureau of Aeronautics.

6.2.3.6 Wisconsin Historical Society

The WHS provides several functions in support of cultural resources studies for Projects in Wisconsin. The WHS curates and distributes previously reported cultural resources archaeological sites, architectural resources, and studies. It also issues the Wisconsin Public Lands Field Archaeological Permit for cultural resource studies on state-owned lands, reviews and processes newly recorded site data, and reviews Projects for section 106 compliance. The Owners have consulted with WHS on each of these four aspects of the Project: (1) record retrieval; (2) state permit acquisition, (3) new site recordation, and (4) section 106 report review. The Owners requested and received cultural datasets from WHS on three separate occasions: September 12, 2016; October 10, 2017; and December 8, 2018. WHS signed the state permit (Number 17-130) for this Project in October 2017. The Owner filed five new sites with the WHS in October 2017 and WHS accepted the sites in November 2017. RUS filed the cultural resources report for Section 106 review on February 4, 2019. On March 14, 2019, DPC received SHPO concurrence that no historic properties will be affected by the Project.

[17] A WRAPP is also referred to as a Notice of Intent.

6.2.3.7 State Permitting

Table 6-5 provides the state permits and approvals required for the Project. The table includes permits that are related to the overall NTEC Project, including permits that are the responsibility of entities other than the Owners.

Table 6-5: State Permits and Approvals

Agency	Planned Activity	Type of Approval	Status
PSCW[1,2]	Building and operating generating units and 345-kV transmission line	Certificate of Public Convenience and Necessity (Wis. Stat. §196.491(3))	Submitted January 8, 2019 Completeness determination February 15, 2018 Approved January 30, 2020
PSCW[1,2]	Relocation of the existing 10-inch gas pipeline currently located on the Nemadji River Site	Certificate of Authority (Wis. Stat. § 196.49)	Submitted January 8, 2019. Approved March 3, 2020.
PSCW[1,2]	Construction of 16-inch pipeline to serve Project	Certificate of Authority (Wis. Stat. § 196.49)	Submitted January 8, 2019. Approved March 3, 2020.
PSCW[1,2]	Relocation of existing transmission assets currently located on the Nemadji River Site	Affiliated Interest Agreement approval of agreement between SWL&P and its affiliate SSE (Wis. Stat. § 196.52)	Filing date TBD
PSCW[1,2]	Relocation of existing 10-inch gas pipeline currently located on Nemadji River Site	Affiliated Interest Agreement approval of agreement between SWL&P and its affiliate SSE (Wis. Stat. § 196.52)	Filing date TBD
PSCW[1,2]	Construction of 16-inch pipeline to serve Project	Affiliated Interest Agreement approval of Development Agreement between SWL&P and its affiliate SSE (Wis. Stat. § 196.52)	Approved in Docket No. 5820-AG-100 on May 7, 2018
PSCW[1,2]	Construction of 16-inch pipeline to serve Project	Affiliated Interest Agreement approval of Construction and Service Agreement between SWL&P and its affiliate SSE (Wis. Stat. § 196.52)	Filing date TBD

Agency	Planned Activity	Type of Approval	Status
WDNR[3]	Construction and operation of new source of air emissions	Construction and operating permits: (Wis. Admin. Code NR 405 through 407, 40, CFR Part 52.21), and acid rain permit (40 CFR Part 75 and NR 409)	PSD (NR 405 and 40 CFR Part 52.21) submitted December 18, 2018 NR 406 (Construction Permits), NR 407 (Operation Permits), and acid rain permit (40 CFR Part 75 and NR 409) TBD Public hearing for air pollution control permit January 23, 2020 Approved September 1, 2020
WDNR[3]	Erosion control and storm water management for land disturbance during construction	Construction site storm water discharge permit (Wis. Admin. Code NR 216)	Submitted December 18, 2018
WDNR[3]	Hydrostatic test water for water supply system water	Wis. Stat. § 283	Submitted December 18, 2018; Approved
WDNR[3]	Nontransient Noncommunity Public Water System	Public Water Supply (NR 809 and NR 810)	TBD
WDNR[3]	Operational storm water pollution prevention plan	Industrial storm water discharge permit (Wis. Admin. Code NR 216)	Submitted December 18, 2018
WDNR[3]	Various land disturbance construction activities	Potential impact to Federal and state threatened and endangered species	Guidelines to be followed
WDNR[3]	Placement of structure within a waterway; placing [temporary] bridges over navigable waterway	Wis. Stat. Chapter 30 (Navigable Waters, Harbors and Navigation) Permit: Wis. Stat. §§ 30.12 and 30.123 and Wis. Admin. Code NR 320	USACE reviewing wetland delineation reports and processing Permit Applications
WDNR[3]	Required for issuance of USACE Section 404/10 permits unless waived by WDNR	Section 401 Water Quality Certification (Application for Wetland Water Quality Certification, Form 3500-53N)	USACE reviewing wetland delineation reports and processing Permit Applications

Agency	Planned Activity	Type of Approval	Status
WDNR[3]	Invasive Species management for land disturbance during construction	Chapter NR 40 Invasive Species Identification, Classification and Control (Ch. NR 40, Wis. Adm. Code)	Guidelines to be followed
Wisconsin Department of Safety And Professional Services	Construction of all buildings and structures	Approval of plans and specifications (Wis. Stat. § 101.02)	To be filed
Wisconsin Department of Safety And Professional Services	Installation of fuel or lubricating oil storage tanks	Approval of plans and specifications (Wis. Stat. § 101.09)	To be filed
Wisconsin Department of Safety And Professional Services	Installation of dust filtering and HVAC equipment	Approval of plans and specifications (Wis. Stat. § 101.12)	To be filed
Wisconsin Department of Safety And Professional Services	Installation and registration of boilers, pressure vessels, and power piping	Machines and boilers, safety requirements (Wis. Stat. 101.17)	To be filed
WisDOT[4]	Delivery of equipment to the construction site	Oversized Equipment Delivery Permit	To be filed
Wisconsin Historical Society	Site preparation and grading	Approval of archaeological surveys (Wis. Stat. § 44.40) and Section 106 Cultural Resources Clearance	Filed with CPCN Application

[1]PSCW – Public Service Commission of Wisconsin
[2]Other PSCW Dockets filed for the NTEC Project: Docket Number 9698-CE-101, Docket Number 5820-CG-105, and Docket Number 5820-CF-106
[3]WDNR – Wisconsin Department of Natural Resources
[4]WisDOT – Wisconsin Department of Transportation

6.2.4 Local Coordination

The City of Superior, Douglas County, local airport officials, the Superior School District, Superior Chamber of Commerce, and University of Wisconsin – Superior were invited to the stakeholder meeting on July 13, 2017. These agencies and organizations were also invited to the open houses and RUS formal

scoping meeting, as well as the Douglas County Highway Department, the Housing Development Corp of Superior, Parkland Sanitary District No. 1, Superior Housing Authority, Town of Parkland, and WITC – Superior (see Section 6.2). The City of Superior provided GIS data to the Project team, including elevation, imagery, recreational areas, transportation data, and utility locations.

Table 6-6 below provides a preliminary list of the local permits and regulatory approvals anticipated for the Project.

Table 6-6: Anticipated Local Permits and Approvals

Agency	Planned Activity	Type of Approval	Status
Douglas County	Delivery of large/heavy components over county-controlled roads	Heavy Haul/Oversized Load permits, as authorized by Wis. Stats. §§ 348.25-348.28; Douglas County Highway Department 2018 Weight Limits	TBD
City of Superior	Construction of facilities	Building, electrical, and plumbing permits, Superior Code of Ordinances Chapter 34 (Construction Code)	TBD
City of Superior	Delivery of large/heavy components over City-controlled roads	Heavy Haul/Oversized Load permits, as authorized by Wis. Stats. §§ 348.25-348.28, Superior Code Chapter 112 Section 112-33 (Heavy traffic [truck] route)	TBD
City of Superior	Pretreatment permit for discharge of wastewater to a municipal treatment facility	WPDES[1] permit (City of Superior is an authorized control authority for permit; Wis. Admin Code NR 108, 211 and 220-297)	TBD

[1]WPDES – Wisconsin Pollutant Discharge Elimination System

6.3 Locations for Public Review of EA

A Notice of Availability was published in the Superior Telegram which informed the public of the availability of this EA and the 30-day public comment period from October 30th to November 30th, 2020. Table 6-7 provides a list of libraries that received the EA for public review.[18] These libraries also received copies of the PSCW CPCN applications. The EA was also made available online.[19]

[18] Due to the COVID-19 pandemic, it is advised that anyone wishing to view the EA at a public library contact library staff prior to arrival to confirm hours, availability of the EA materials, and schedule an appointment, if necessary.

[19] A copy of the EA may be viewed online at the following websites: Rural Utilities Service at http://www.rd.usda.gov/resources/environmental-studies/assessments/ project name, on the Dairyland Power Cooperative website at https://www.dairylandpower.com/NTEC/EA, and the project website at http://www.nemadjitrailenergycenter.com/resources.html.

Table 6-7: List of Library Locations

Library	Address and Phone Number
Superior Public Library	1530 Tower Avenue Superior, WI 54880 (715) 394-8860
Jim Dan Hill Library University of Wisconsin – Superior	907 N. 19th Street Superior, WI 54880 (715) 394-8343
La Crosse Public Library	800 Main Street La Crosse, WI 54601 (608) 789-7100
Murphy Library Resource Center University of Wisconsin – La Crosse	1631 Pine Street La Crosse, WI 54601 (608) 785-8505

7.0 REFERENCES

CEQ (Council on Environmental Quality) 1997. Considering Cumulative Effects Under the National Environmental Policy Act. January. Accessed January 2019 at: https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-ConsidCumulEffects.pdf.

EPA. (2018b). *EJSCREEN: Environmental Justice Screening and Mapping Tool.* Retrieved 19 December 2018 from https://www.epa.gov/ejscreen.

EPA. 2019. Geospatial Data Download Service – FRS KMZ. Retrieved 2-4-19 from: https://www.epa.gov/enviro/geospatial-data-download-service

Federal Register. 2013. General Provisions; Revised List of Migratory Birds, Federal Register Vol.78 No.212, 65844-65864 [pdf] Washington D.C.: Department of the Interior, Fish and Wildlife Service Available at: https://www.fws.gov/migratorybirds/pdf/policies-and-regulations/MBTAListofBirdsFinalRule.pdf [Accessed 2 December 2018]

Federal Register. 2016. Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat, Federal Register Vol.81 No.9, 1900-1922 [pdf] Washington D.C.: Department of the Interior, Fish and Wildlife Service. Available at: https://www.fws.gov/midwest/endangered/mammals/nleb/pdf/FRnlebFinal4dRule14Jan2016.pdf [Accessed 2 December 2018]

Gottsfield et al. 2019. Phase I Cultural Resources Survey Report for the Nemadji Trail Energy Center Project, Douglas County, Wisconsin. Burns & McDonnell Engineering Company, Inc.

International Commission on Non-Ionizing Radiation Protection. (2010). ICNIRP Guidelines for limiting exposure to time-varying Electric and Magnetic Fields (1 Hz – 100 kHz). Retrieved 19 November 2018 from https://www.icnirp.org/cms/upload/publications/ICNIRPLFgdl.pdf

National Institute of Environmental Health. (2002). Electric and Magnetic Fields Associated with the Use of Electric Power. Downloaded 19 November 2018 from https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

PSCW. 2017. *EMF – Electric & Magnetic Fields.* Downloaded March 2019 from https://psc.wi.gov/Pages/ForConsumers/EMF.aspx.

South Shore Energy, LLC, Dairyland Power Cooperative, Burns & McDonnell Engineering Company, Inc. 2019a. Application for Certificate of Public Convenience and Necessity for the Nemadji Trail Energy Center Combined Cycle Project. Submitted to the PSCW January 2019. Available at: http://apps.psc.wi.gov/vs2015/ERF_search/content/searchResult.aspx?UTIL=9698&CASE=CE&SEQ=100&START=none&END=none&TYPE=none&SERVICE=none&KEY=none&NON=N.

South Shore Energy, LLC, Dairyland Power Cooperative, Burns & McDonnell Engineering Company, Inc. 2019b. Application for Certificate of Public Convenience and Necessity for the Nemadji Trail Energy Center. Submitted to the PSCW January 2019. Available at:

http://apps.psc.wi.gov/vs2015/ERF_search/content/searchResult.aspx?UTIL=9698&CASE=CE&SEQ=101&START=none&END=none&TYPE=none&SERVICE=none&KEY=none&NON=N

U.S. Census Bureau (USCB). (2017). *2013-2017 American Community Survey 5-Year Estimates.* Retrieved 19 December 2018 from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

U.S. Census Bureau (USCB). (2010). 2010 D*ecennial Census.* Retrieved 19 December 2018 from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

U.S. Census Bureau (USCB). (2000). 2000 D*ecennial Census.* Retrieved 19 December 2018 from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml.

U.S. Department of Agriculture (USDA). (2012). NSSH Part 622. Retrieved 5 December 2017 from https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/tools/?cid=nrcs142p2_054226

U.S. Department of Agriculture (2018) Primary Nesting Season Dates and Durations. [pdf] U.S. Department of Agriculture, Farm Service Agency. Available at: https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/Conservation/PDF/MAP-Primary%20Nesting%20Season_5_10_2018.pdf [Accessed 11 March 2019]

U.S. Fish and Wildlife Service. 2015. Northern Long-Eared Bat *Myotis septentrionalis*. [pdf] U.S. Fish and Wildlife Service. Available at: https://www.fws.gov/Midwest/endangered/mammals/nleb/pdf/NLEBFactSheet01April2015.pdf [Accessed 2 December 2018]

USFWS. (2018). Information for Planning and Consultation. Accessed 26 September 2018 from https://ecos.fws.gov/ipac/.

WDNR. 2019a. Wildlife and Your Land. Available at https://dnr.wi.gov/files/PDF/pubs/wm/WM0244.pdf. Accessed January 7, 2019.

WDNR. 2019b. Water Condition Viewer. Retrieved February 2019 from https://dnrgis.wi.gov/H5/?viewer=Water_Condition_Viewer.

WDNR 2010. Wisconsin's Statewide Forest Action Plan 2010, Part 1: Statewide Forest Assessment, Appendix B: Cultural History of Wisconsin’s Forests. Available at https://dnr.wi.gov/topic/ForestPlanning/documents/AppendixB_100721.pdf. Accessed January 7, 2019.

Weidman, S. and A. Schultz. (1913). The Underground and Surface Water Supplies of Wisconsin. Wisconsin Geological and Natural History Survey.

World Health Organization. 2018. What are electromagnetic fields? Accessed January 2018 from https://www.who.int/peh-emf/about/WhatisEMF/en/.

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