JOINT SITE PERMITS APPLICATION TO THE MINNESOTA PUBLIC UTILITIES COMMISSION FOR

Crane and Sandhill Energy Storage Projects

Olmsted County, Minnesota

Docket Nos.
IP-7148/ESS-24-406
IP-7149/ESS-24-407

Crane Energy Storage LLC
and Sandhill Energy Storage LLC

Prepared by:

merjent®

March 2025

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ACRONYM LIST

AADT	Annual Average Daily Traffic
AC	alternating current
Applicants	Crane Energy Storage LLC and Sandhill Energy Storage LLC
AQI	Air Quality Index
ARMER	Allied Radio Matrix for Emergency Response
ASIS	Aggregate Source Information System
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BESS	Battery Energy Storage System
BGEPA	Bald and Golden Eagle Protection Act
BMPs	best management practices
BWSR	Minnesota Board of Water and Soil Resources
CH_4	methane
CIP	Copenhagen Infrastructure Partners
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Commission	Minnesota Public Utilities Commission
Crane Land Control Area	Approximately 36.3 acres for which Crane Energy Storage LLC has site control as shown on Image 2.1-1 and described in Section 2.1.
Crane Preliminary Development Area	Approximately 35.6 acres required to construct the Crane Project as shown on Image 2.1-1 and described in Section 2.1.1.
Crane Project	Crane Energy Storage Project
Crane Storage	Crane Energy Storage LLC
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWA	Clean Water Act
CWI	County Well Index
dB	decibels
dBA	A-weighted decibels
DC	direct current
DKey	Determination Key
DOC	Department of Commerce
DWSMA	Drinking Water Supply Management Area
ECS	Ecological Classification System
EERA	Energy Environmental Review and Analysis
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
EPC	Engineering, Procurement, and Construction
ERP	Emergency Response Plan

ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
Gen-tie Development Area	The area needed for construction and operation of the gen-tie line that will connect the shared collector substation for the Crane and Sandhill Projects to the Byron Substation.
gen-tie line	generation tie line
GHG	greenhouse gas
GIS	geographic information system
GLUP	General Land Use Plan
GPS	Global Positioning System
HMA	Hazard Mitigation Analysis
IAA	Impact Assessment Area
IBA	Important Bird Area
IPaC	Information for Planning and Conservation
Joint Application	Joint Site Permits Application
kV	kilovolt
kV/m	kilovolt per meter
L_{10}	noise levels experienced for more than ten percent of any hour
L_{50}	noise levels experienced for more than fifty percent of any hour
LGU	local government unit
Mbps	megabytes per second
MBS	Minnesota Biological Survey
MBTA	Migratory Bird Treaty Act
MCE	Minnesota Conservation Explorer
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MDNR	Minnesota Department of Natural Resources
mG	milliGauss
Minn. R.	Minnesota Rules
Minn. Stat. §	Minnesota Statutes section
MISO	Midcontinent Independent System Operator
MN DEED	Minnesota Department of Employment and Economic Development
MnDOT	Minnesota Department of Transportation
MNSHIP	Minnesota Statewide Historic Inventory Portal
MPCA	Minnesota Pollution Control Agency
MPUC	Minnesota Public Utilities Commission
MW	megawatt
MWh	megawatt hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards

NABCI	U.S. North American Bird Conservation Initiative
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NHD	National Hydrography Dataset
NHIS	Natural Heritage Information System
NIEHS	National Institute of Environmental Health Sciences
NLCD	National Land Cover Database
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NPC	native plant community
NPDES	National Pollutant Discharge Elimination System
NPMS	National Pipeline Mapping System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&M	operations and maintenance
O_3	ozone
OSA	Office of the State Archeologist
OSA Viewer	Minnesota Office of the State Archaeologist's online database
Pb	lead
PEM	palustrine emergent wetland
PFO	palustrine forested wetland
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
POI	Point of Interconnection
Projects	Crane Project and Sandhill Project
PWI	Public Waters Inventory
RIM	Reinvest in Minnesota
Sandhill Land Control Area	Approximately 42.7 acres for which Sandhill Energy Storage LLC has site control as shown on Image 2.2-1 and described in Section 2.2.
Sandhill Preliminary Development Area	Approximately 39.9 acres required to construct the Sandhill Project as shown on Image 2.2-1 and described in Section 2.2.1.
Sandhill Project	Sandhill Energy Storage Project
Sandhill Storage	Sandhill Energy Storage LLC
SCADA	Supervisory Control and Data Acquisition
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SMMPA	Southern Minnesota Municipal Power Agency
SO_2	sulfur dioxide
SOBS	Sites of Biodiversity Significance
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
SSA	sole source aquifer

SSURGO	Soil Survey Geographic Database
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
TRC	TRC Companies, Inc
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
WAN	Wildlife Action Network
WHP	Wellhead Protection
WHPA	Wellhead Protection Area
WMA	Wildlife Management Area
WPA	Waterfowl Production Area

1.0 INTRODUCTION

Crane Energy Storage LLC (Crane Storage) and Sandhill Energy Storage LLC (Sandhill Storage), collectively the Applicants, respectfully submit this Joint Site Permits Application (Joint Application) to the Minnesota Public Utilities Commission (MPUC or Commission) for individual Site Permits for energy storage systems pursuant to the Minnesota Power Plant Siting Act (Minnesota Statute Section [Minn. Stat. §] 216E and Minnesota Rules [Minn. R.] Chapter 7850).

The Applicants propose to construct the Crane Energy Storage Project (Crane Project) and the Sandhill Energy Storage Project (Sandhill Project), collectively the Projects, adjacent to one another in Township 107N, Range 15W, Sections 30 and 31, in Olmsted County, Minnesota (refer to Figure 1.0-1).

The Point of Interconnection (POI) for both Projects is the Southwest Minnesota Municipal Power Agency's Byron Substation, located about 370 feet south of the sites in Section 31. Each battery energy storage system (BESS) will charge its batteries with energy from the electric transmission grid via the POI, store that energy on site, and later deliver that energy back to the transmission grid through the same POI.

The Crane and Sandhill Projects will aid the region's ongoing transition to renewables, ensure reliable electric service in the area, and provide significant economic benefits to local residents. Each Project will consist of a stand-alone up to 200-megawatt (MW) / 800-megawatt hour (MWh) BESS and ancillary support infrastructure. The Projects are being developed to share the same collector substation, an approximately 700-foot-long 161-kilovolt (kV) generation tie line (gen-tie line), and a primary access road. However, the two Projects are being marketed separately to potential offtakers and may (or may not) be constructed within the same twelve-month period. Accordingly, because the Crane and Sandhill Projects are separate, individual facilities that require separate Site Permits from the Commission, these shared facilities are included in the description and analysis of potential effects for each project throughout this Joint Application.

The Applicants are anticipating construction to begin in the first quarter of 2027, with commercial operation by the second quarter of 2028. Construction of the Projects may be staggered so that one project would begin commercial operation before the other.

The Site Permits are the only site approvals needed for construction of the Projects (Minn. Stat. § 216E.10, subd. 1). The Site Permit Completeness Checklists are provided in Appendix A.

1.1 APPLICANT INFORMATION

The Applicants are wholly owned subsidiaries of Copenhagen Infrastructure Partners (CIP), CIP is an infrastructure investment firm specializing in renewable energy and other essential infrastructure projects. They are known for their expertise in developing, financing, and managing critical infrastructure, particularly in the field of renewable energy. CIP has a strong track record of successfully developing and operating renewable energy projects globally. They have been involved in various phases of renewable energy projects, including project development, financing, construction, and long-term operation. Currently, CIP has approximately $20 billion of assets under management.

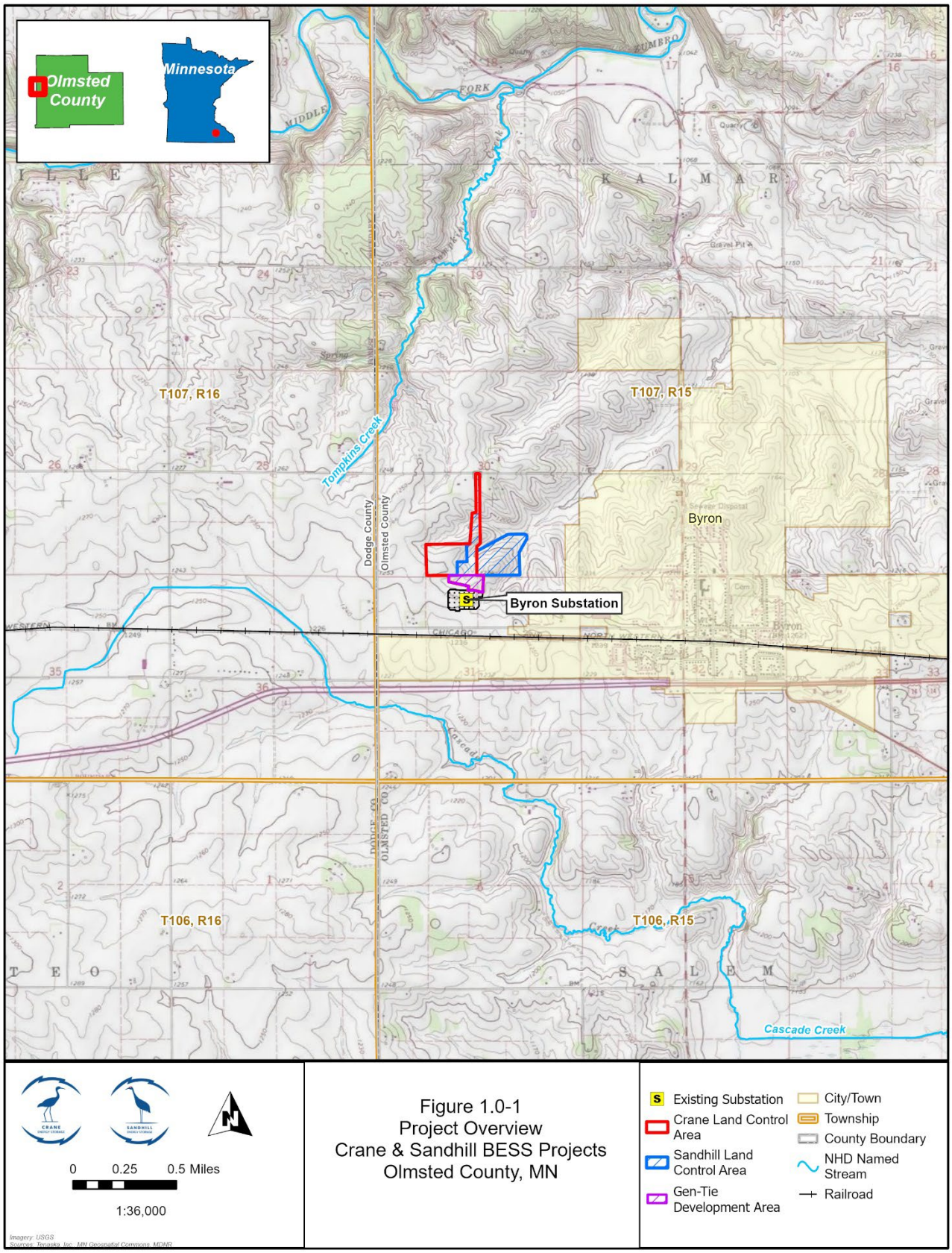

Figure 1.0-1
Project Overview
Crane & Sandhill BESS Projects
Olmsted County, MN

1.1.1 Crane Project

The permittee for the Crane Project Site Permit Application is:

Crane Energy Storage LLC

The contact persons regarding Crane Project Site Permit Application are:

Crane Energy Storage LLC
c/o Copenhagen Infrastructure Service Co.
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1.1.1.1 Ownership at Time of Filing

The Crane Project is owned by Crane Energy Storage LLC, a wholly owned subsidiary of CIP.

As required by Minn. Rules 7850.1900. subp. 1(f), the land in the Crane Land Control Area is currently owned by Angela DeCook, Barbara Brooks-Holtegaard, Joe and Julia Caulfield, Brooks Family of Byron, LLC, and Southern Minnesota Municipal Power Agency (SMMPA).

The area needed for construction and operation of the gen-tie line that will connect the shared collector substation for the Crane and Sandhill Projects to the Byron Substation (i.e., the Gen-tie Development Area) is currently owned by SMMPA. Crane Storage will work with SMMPA, on behalf of itself and on behalf of Sandhill Storage, during the GIA process to determine and allocate the land rights necessary for the temporary workspace and operational right-of-way for the gen-tie line.

1.1.1.2 Proposed Ownership after Commercial Operations

The Crane Project will be owned and operated by Crane Energy Storage LLC. Any sale or assignment of the Site Permit to another entity would require approval from the Commission and the buyer or assignee would be required to comply with the conditions of the Site Permit.

1.1.2 Sandhill Project

The permittee for the Sandhill Project Site Permit Application is:

Sandhill Energy Storage LLC

The contact persons regarding Sandhill Project Site Permit Application are:

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1.1.2.1 Ownership at Time of Filing

Similar to the Crane Project, the Sandhill Project is owned by Sandhill Energy Storage LLC, a wholly owned subsidiary of CIP.

As required by Minn. Rules 7850.1900. subp. 1(f), the land in the Sandhill Land Control Area is currently owned by Angela DeCook, Barbara Brooks-Holtegaard, Joe and Julia Caulfield, Brooks Family of Byron, LLC, and SMMPA.

In the event that the Sandhill Project is constructed before the Crane Project, Sandhill Storage would negotiate an agreement with Crane Storage for permission to construct the primary access road, collector substation, and gen-tie line. As such, the status of Crane Storage's negotiations with SMMPA to determine and allocate the land rights necessary for the temporary workspace and operational right-of-way needed for the gen-tie line would affect site control for the Sandhill Project, as well.

1.1.2.2 Proposed Ownership after Commercial Operations

The Sandhill Project will be owned and operated by Sandhill Energy Storage LLC. Any sale or assignment of the Site Permit to another entity would require approval from the Commission and the buyer or assignee would be required to comply with the conditions of the Site Permit.

1.2 PURPOSE AND NEED

Each of the Crane and Sandhill Projects will be capable of storing up to 800 MWh of electricity, with a maximum injection capacity of up to 200 MW back into the electrical grid during times of increased demand or brief power outages. Up to 200 MW of electricity is enough to power approximately 150,000 households for up to four hours (U.S. Energy Information Administration, 2024). The Applicants are developing the Projects in accordance with industry best practices and to meet or exceed applicable state and local requirements.

According to the American Clean Power Association (2024), the key benefits of energy storage projects are:

- Enhancing grid reliability by minimizing disruptions and providing power during brief outages.
- Fewer interruptions in service and the ability to inject stored power back into the grid during times of peak demand, which reduces costs for consumers.
- Energy storage supports the shift to renewable energy generation by maintaining grid capacity during times when the sun is down and the wind is not blowing.

In 2023, the "100 Percent by 2040" legislation was enacted, establishing a standard for utilities to provide Minnesota customers with energy generated from carbon-free sources (Minnesota Department of Commerce [DOC], 2023). Since then, renewable energy generation project development has increased throughout Minnesota as utilities build or acquire renewable energy generation sources.

The Crane and Sandhill Projects offer a critical benefit to Minnesota consumers and local communities by helping bring emission-free firm energy resources to the electric grid. Further, the Crane and Sandhill Projects will support grid stability and reliability, responding quickly to sharp changes in demand for power. Without energy storage resources, black outs and brown outs are more likely, which cost businesses and families significant losses each year. As more intermittent energy resources are added to the grid, the Projects will help ensure that power is available when it is needed.

1.3 PROJECT SCHEDULES

1.3.1 Crane Project

Crane Storage anticipates receiving Commission approval for the Crane Project in the first quarter of 2026. After Commission approval is received, construction is anticipated to begin in first quarter of 2027 with an anticipated commercial operation date of second quarter of 2028. Table 1.3.1-1 provides a breakdown of key milestones for the Crane Project.

TABLE 1.3.1-1

Anticipated Schedule for the Crane Project

Activity	Timeline
Interconnection Request Submitted	Completed (2021)
Land Acquisition	Completed (2023)
Generator Interconnection Agreement Signed	4th Quarter 2025
Joint Application Filed	March 2025
Site Permit Order Issued	1st Quarter 2026
Equipment and Contractor Acquisition	3rd Quarter 2026
Other Permits	1st Quarter 2027
Construction Start	1st Quarter 2027
Testing and Commissioning	1st Quarter 2028
Operation	2nd Quarter 2028

1.3.2 Sandhill Project

Sandhill Storage anticipates receiving Commission approval for the Sandhill Project in the first quarter of 2026. After Commission approval is received, construction may begin as early as the third quarter of 2027 with a commercial operation date of fourth quarter of 2028. Construction of the Sandhill Project is expected to commence after construction of Crane Project is initiated with timing for each dependent on the offtake arrangements for each Project. Table 1.3.2-1 provides a breakdown of key milestones for the Crane Project.

TABLE 1.3.2-1

Anticipated Schedule for the Sandhill Project

Activity	Timeline
Interconnection Request	Completed (2022)
Generator Interconnection Agreement Signed	4th Quarter 2026
Land Acquisition	Completed (2023)
Joint Application Filed	March 2025
Site Permit Order Issued	1st Quarter 2026
Equipment and Contractor Acquisition	1st Quarter 2027
Other Permits	1st Quarter 2027
Construction Start	3rd Quarter 2027
Testing and Commissioning	3rd Quarter 2028
Operation	4th Quarter 2028

1.4 STATE POLICY AND REQUIRED PERMITS

1.4.1 Certificate of Need

Under Minn. Stat. § 216B.243, subd. 8(9), a certificate of need is not required for energy storage systems. Therefore, a certificate of need is not required for the proposed Projects.

1.4.2 Site Permits

Energy storage systems with a nameplate capacity of 10,000 kilowatts or greater require a Site Permit from the Commission prior to construction (Minn. Stat. § 216E.03, subd. 1). Pursuant to Minn. Stat. § 216E.04, subd. 2(9), Crane Storage and Sandhill Storage seek approval of these Applications under the alternative review process provided under Minn. Stat. § 216E.04 and Minn. R. 7850.2800 to 7850.3900. Crane Storage and Sandhill Storage filed Notices of Intent to Submit a Joint Site Permits Application under the Alternative Permitting Process to the Commission on February 21, 2025.

1.4.3 Request for Joint Proceeding

The Applicants have prepared this Joint Application seeking individual site permits for the Crane and Sandhill Projects, as authorized under Minn. R. 7850.1600. Minn. R. 7849.1600 allows the Commission to hold joint proceedings in circumstances where a joint hearing is feasible, more efficient, and may further the public interest. As such, the Applicants respectfully request that the Commission order joint proceedings for the review of the Applicants' Joint Site Permits Application for the Crane and Sandhill Projects. Holding joint proceedings is in the public interest because it will make it easier for members of the public to participate in applicable meetings and hearings, provide a comprehensive record regarding potential benefits, impacts and minimization measures, and improve administrative efficiency for agency staff reviewing these Applications.

1.4.4 Other Potential Permits and Approvals

The Applicants will obtain all permits, licenses, and approvals that are required following issuance of the Site Permits. Table 1.4.4-1 lists the permits or approvals potentially applicable for the construction and operation of the Projects. Copies of agency correspondence are provided in Appendix B. Additional information about agency outreach as of this Joint Application filing is provided in Section 7.0.

Table 1.4.4-1

Potential Permits or Approvals for the Crane and Sandhill Projects

Agency	Permit	Applicability	Status and Timing	
			Crane Project	Sandhill Project
FEDERAL				
U.S. Army Corps of Engineers (USACE) – St. Paul District	Federal Clean Water Act (CWA) Section 404 Permit(s): Individual, Nationwide Permit, or Regional General Permit	Construction or operation of the project that results in the discharge of dredge or fill to Waters of the United States.	To be obtained prior to construction start, as needed.	To be obtained prior to construction start, as needed.

Table 1.4.4-1

Potential Permits or Approvals for the Crane and Sandhill Projects

Agency	Permit	Applicability	Status and Timing	
			Crane Project	**Sandhill Project**
U.S. Fish and Wildlife Service (USFWS)	Section 7 of the Endangered Species Act – Incidental Take Permit	Section 7 (inter-agency consultation) required if the project has a federal nexus and construction or operation of the project may affect federally listed endangered or threatened species or may adversely modify designated critical habitat. Inter-agency conference is conducted under Section 7 for proposed species.	To be obtained prior to construction start, as needed.	To be obtained prior to construction start, as needed.
U.S. Environmental Protection Agency (EPA)	Spill Prevention Control and Countermeasure (SPCC) Plan (signed by licensed engineer, no agency approval required)	SPCC Plan needed if project construction or operations will require oil storage in excess of 1,320 gallons.	To be developed prior to construction or operation, as required.	To be developed prior to construction or operation, as required.
STATE				
Minnesota Public Utilities Commission (MPUC)	Site Permit	Construction of a proposed energy storage system 10 MW or greater in size.	Submitted March 5, 2025	Submitted March 5, 2025
Minnesota Pollution Control Agency (MPCA)	CWA Section 401 Water Quality Certification	Construction activities requiring a Section 404 permit (see USACE above) also require certification under Section 401 of the CWA.	To be obtained prior to construction start, as needed.	To be obtained prior to construction start, as needed.
	CWA Section 402 National Pollutant Discharge Elimination System (NPDES)/State Disposal System Program Construction Stormwater General Permit	Land disturbance from construction projects that disturb one acre or more of land through clearing, grading, excavating, or stockpiling of fill material.	To be developed prior to construction or operation, as required.	To be developed prior to construction or operation, as required.

Table 1.4.4-1

Potential Permits or Approvals for the Crane and Sandhill Projects

Agency	Permit	Applicability	Status and Timing	
			Crane Project	Sandhill Project
Minnesota Department of Labor and Industry	Electrical inspection of installed equipment	Necessary to comply with state electrical codes	Inspection to be conducted during construction and prior to operation.	Inspection to be conducted during construction and prior to operation.
Minnesota Department of Natural Resources (MDNR)	Public Waters Work Permits Program approvals	Activities occurring below the ordinary high water level in public waters and wetlands. Regulated activities potentially relevant include fill, excavation, bridges, culverts, and dredging.	Not required.	Not required.
	Utility Crossing License	A utility line crosses a public water or state land.	Not required.	Not required.
	Water Appropriation / Dewatering Permit	Required for all users withdrawing more than 10,000 gallons of water per day or 1 million gallons per year (dewatering)	To be obtained prior to construction start, as needed.	To be obtained prior to construction start, as needed.
	Coordination / State-listed species permit (if take is unavoidable)	Activities that cause take (incidental or otherwise pursuing, catching, killing, injuring, transporting, possessing, etc.) of state-listed endangered and threatened species.	MDNR responded on 12/9/2024, stating that the presence of loggerhead shrike in the Land Control Area is unlikely, and as such, impacts to this species are not anticipated (see Section 6.5.8.4).	MDNR responded on 12/9/2024, stating that the presence of loggerhead shrike in the Land Control Area is unlikely, and as such, impacts to this species are not anticipated (see Section 6.5.8.4).
Minnesota Board of Water and Soil Resources (BWSR) and Local Government Unit (LGU)	Wetland Conservation Act Program - Formal "Determination" Required by the LGU (Olmsted County Soil and Water Conservation District)	Draining, filling, and in some cases, excavation of jurisdictional wetlands that are not Public Waters (see MDNR above).	To be obtained prior to construction start, if needed.	To be obtained prior to construction start, if needed.

Table 1.4.4-1

Potential Permits or Approvals for the Crane and Sandhill Projects

Agency	Permit	Applicability	Status and Timing	
			Crane Project	**Sandhill Project**
Minnesota Department of Administration, State Historic Preservation Office (SHPO)	Section 106 Consultation	Required for any project that receives federal funding, permits, or approvals; also required for various state level permitting requirements, including any that require PUC review.	Not required unless a federal nexus is triggered for the Crane Project.	Not required unless a federal nexus is triggered for the Sandhill Project.
	Cultural and Historic Resources Review; State and National Register of Historic Sites Review	Projects that require state permits or affect state register properties or require Section 106 compliance	SHPO commented on February 3, 2025, and agreed with the findings and recommendations in the Phase I field inventory report; no effects on properties listed in the National or State Registers of Historic Places or within the Historic Sites Network would be affected by the Crane Project.	SHPO commented on February 3, 2025, and agreed with the findings and recommendations in the Phase I field inventory report; no effects on properties listed in the National or State Registers of Historic Places or within the Historic Sites Network would be affected by the Sandhill Project.
Minnesota Department of Transportation (MnDOT)	Application for Utility Accommodation on Trunk Highway Right-of-Way	Installing utilities along, across, or within trunk highway right-of-way	Not required; the Crane Project would not affect state highways.	Not required; the Sandhill Project would not affect state highways.
	Access (Driveway) Permit	Required for construction of a driveway/access road utilizing MnDOT rights-of-way	Not required.	Not required.
	Oversize/Overweight Permit	Vehicles delivering equipment, materials, and supplies that exceed applicable MnDOT height/length limits and weight limits	To be obtained prior to construction start.	To be obtained prior to construction start.

Table 1.4.4-1

Potential Permits or Approvals for the Crane and Sandhill Projects

Agency	Permit	Applicability	Status and Timing	
			Crane Project	Sandhill Project
Minnesota Department of Health	Well construction permit	Required for installation of a well.	A well is not currently planned for the Crane Project.	A well is not currently planned for the Sandhill Project.
LOCAL				
Olmsted County	Oversize/Overweight Vehicle Permit	Olmsted County requires permits on all County Highways.	To be obtained prior to construction start.	To be obtained prior to construction start.
	Utility Permit	Utility permits are required for work proposed in the County Highway right of ways.	To be obtained prior to construction start.	To be obtained prior to construction start.
	Well Permit (Construction and Maintenance)	Olmsted County requires a permit to construct or reconstruct a well or seal a well. A maintenance permit is required for a well which has not been properly sealed and is inoperable.	A well is not currently planned for the Crane Project.	A well is not currently planned for the Sandhill Project.
Kalmart Township	Access Permit	An access permit issued by the Kalmar Town Board of Supervisors shall be required for any construction, reconstruction, relocation, or alteration of an access connection within the right-of-way of any township road, or where a change of use is proposed for a property with an access connection to a township road right-of-way.	To be obtained prior to construction start.	To be obtained prior to construction start.

Table 1.4.4-1

Potential Permits or Approvals for the Crane and Sandhill Projects

Agency	Permit	Applicability	Status and Timing	
			Crane Project	Sandhill Project
Kalmart Township (administered by Township Cooperative Planning Association)	Building Permits	This local building permit is typically pre-empted by the State site permit, but may be required for some portions of the project.	To be obtained prior to construction start, as needed.	To be obtained prior to construction start, as needed.

1.5 APPLICATION STRUCTURE

To facilitate Commission review of the Projects, this Joint Application is structured to provide the required information for both the Crane and Sandhill Projects separately where the details of the Projects' design and potential impacts differ. For example, the overall project descriptions, schedules, costs, and environmental impacts and mitigation measures are provided as separate discussions. However, in some cases, such as in Section 3.0 Engineering and Operational Design, the information provided applies to both Projects equally. As such, the information in this section is provided once and is intended to apply to both Projects versus providing the same information twice.

2.0 DESCRIPTION OF THE CRANE AND SANDHILL PROJECTS

2.1 CRANE PROJECT DESCRIPTION

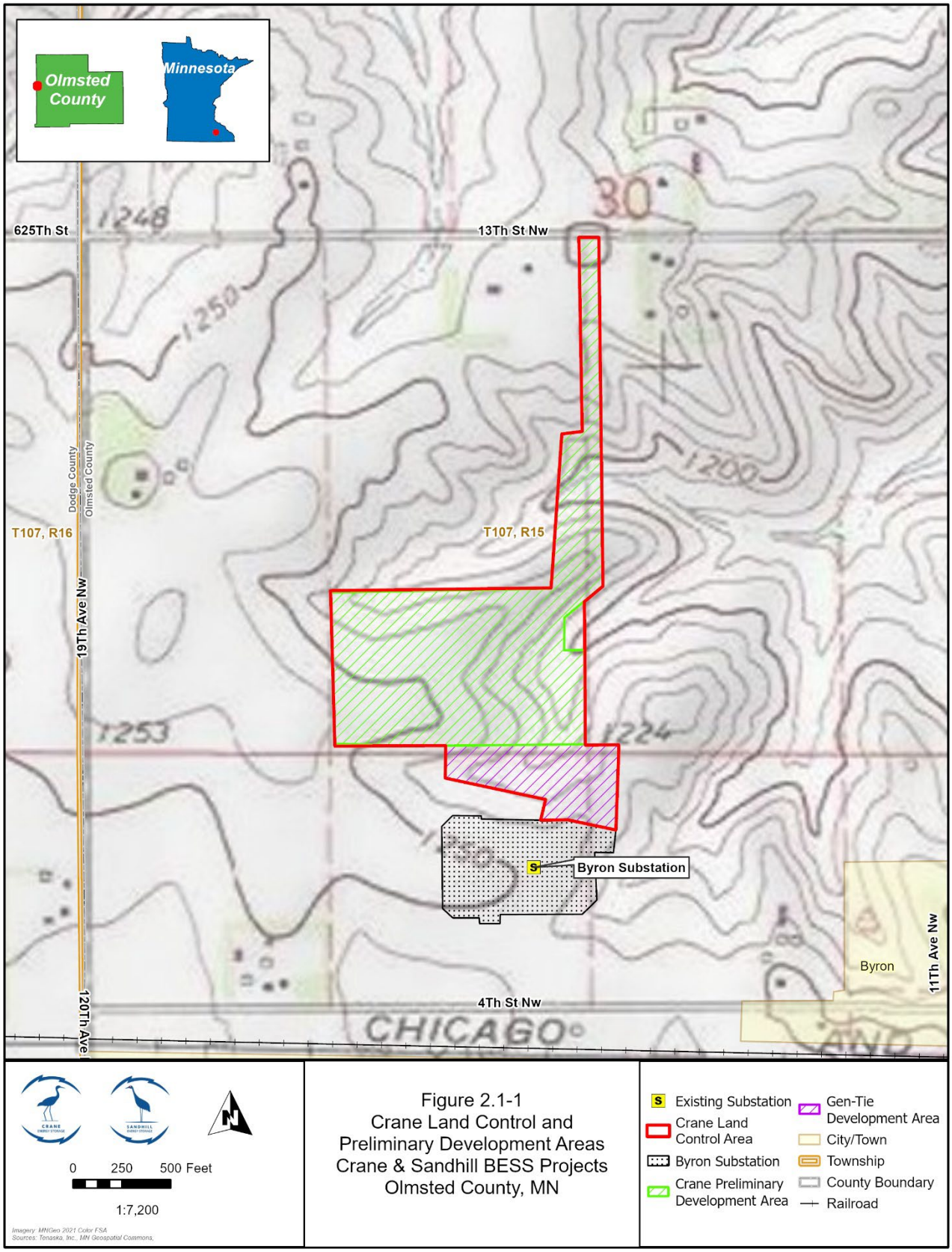
Crane Storage proposes to construct a stand-alone up to 200-MW / 800-MWh BESS and interconnection infrastructure in Township 107N, Range 15W, Sections 30 and 31, in Olmsted County, Minnesota. Crane Storage has entered an Option Agreement to purchase a parcel for development of the BESS portion of the Crane Project and an easement for construction and operation of the primary access road to the BESS facility with the current landowners. As described in Section 1.1.1.1, Crane Storage is also negotiating with SMMPA to determine and allocate the land needed for construction and operation of the gen-tie line that will interconnect the Crane Project and the Sandhill Project to the POI.

Collectively, the purchase parcel and easements will cover about 36.3 acres; which is herein referred to as the Crane Land Control Area. Within the Crane Land Control Area, preliminary design of the Crane Project would affect about 35.6 acres; the area required for construction and operation of the Crane Project is herein referred to as the Crane Preliminary Development Area. Figure 2.1-1 shows the Crane Land Control Area and the Crane Preliminary Development Area.

The Crane Project will not generate electricity but will receive energy (charge) from the electrical grid via the Byron Substation (i.e., the POI for the Crane Project), store that energy on site, and then later deliver energy (discharge) back to the Byron Substation to be delivered to the electrical grid.

The Crane Project is anticipated to include self-contained BESS units that contain batteries installed in purpose-built enclosures, a collector substation, an onsite maintenance area, a parking lot, trash enclosure, stormwater pond, and an approximately 700-foot-long 161-kV gen--tie line that will interconnect the collector substation to the Byron Substation. Crane Storage currently anticipates including approximately 236 BESS units in the Crane Project, but that total number could change depending on the technology chosen and the final design of the Crane Project. Moreover, the final design, and the design contemplated and depicted in this Application, also includes BESS units for future augmentation of the Crane Project (battery upgrades or additions to accommodate degradation over years of operation). Within the BESS facility, underground collection and communication lines will be installed to connect the BESS units to the collector substation. Access roads will be installed between the BESS units to allow access for operations personnel. The access road, collector substation, and gen-tie line will be used and shared by both the Crane Project and the Sandhill Project.

Security fencing will encompass all Crane Project components and warning signs will be installed on the security fencing in accordance with the National Electrical Safety Code (NESC). The collector substation will have its own security fencing. Gates will be installed at the entrance to the facility and between the BESS and the collector substation. A sign will be installed on the entrance gate providing a 24-hour emergency response number. The area within the fencelines of the BESS and the collector substation will be graveled, with the exception of the stormwater pond which will be planted with perennial vegetation. A detailed description of the Crane Project design and layout is presented in Section 3.0.


Olmsted County
Minnesota
625Th St
13Th St Nw
30
1248
1250
1200
1253
1224
Dodge County
Olmsted County
T107, R16
T107, R15
19Th Ave Nw
Byron Substation
Byron
11Th Ave Nw
4Th St Nw
120Th Ave
CHICAGO
0 250 500 Feet
1:7,200
Imagery: MNGeo 2021 Color FSA
Sources: Tonaska, Inc., MN Geospatial Commons,
Figure 2.1-1
Crane Land Control and
Preliminary Development Areas
Crane & Sandhill BESS Projects
Olmsted County, MN
Existing Substation
Crane Land Control Area
Byron Substation
Crane Preliminary Development Area
Gen-Tie Development Area
City/Town
Township
County Boundary
Railroad

2.1.1 Crane Preliminary Development Area

Construction of the Crane Project will require a Preliminary Development Area of approximately 35.6 acres, of which approximately 14.8 acres will host BESS facility components for operation of the facility. Areas outside of the BESS facility and collector substation fencelines, except for the Gen-tie Development Area, will either be planted with perennial vegetation or graveled for the life of the Crane Project. The Crane Preliminary Development Area is depicted on Figure 2.1-1, Map 2, and in the Crane Project Site Plan provided in Appendix C. Table 2.1.1-1 shows a summary of the temporary and permanent impacts of the Crane Project.

Table 2.1.1-1

Summary of the Temporary and Permanent Impacts in the Crane Preliminary Development Area

Facility	Description of Footprint	Crane Project	
		Perm. (acres)	Temp. (acres)
Fenced Area [1]	Area within fenceline that is not occupied by permanent facilities	1.5	--
BESS Units	Four approximately 90-foot by 400-foot areas where BESS units will be installed	3.2	--
Access Roads within Fenceline	Approximately 20-foot-wide areas within fenceline of the BESS facility, between and around the BESS units.	1.7	--
On-site Maintenance Area, Parking Lot, and Trash Enclosure	Collective footprints of these three facilities	0.1	--
Stormwater Basin	Footprint of facility	1.3	--
Laydown Area	Footprint of laydown/staging area	1.9	--
Temporary Construction Workspace [2]	Area outside of the fenceline, plus expanded areas required for access road and gen-tie line construction	--	20.8
Primary Access Road (Shared)	Approximately 20-foot-wide	1.2	--
Collector Substation (Shared)	Footprint of facility	1.7	--
Gen-tie Line (Shared)	Approximately 150-foot-wide right-of-way	2.2	--
	Total	**14.8**	**20.8**

[1] Acreages provided for the fenced area include all portions of the fenced BESS facility, minus the individual facility components including BESS units, access roads within the fenceline, on-site maintenance area, parking lot, trash enclosure, stormwater pond, laydown area, and the collector substation. Acreages for these individual facility components are provided separately in this table.

[2] Temporary construction workspace includes areas along the primary access road, areas outside of the fenceline of each facility, and the area that would be used to install the gen-tie line.

Note: A double dash indicates that no impacts are anticipated for this feature.

2.1.2 Capacity and Interconnection

The Crane Project will be an up to 200-MW, 800-MWh BESS, with a maximum injection capacity of 200 MW into the electric transmission grid.

Crane Storage filed a Generator Interconnection Agreement application with Midcontinent Independent System Operator (MISO) for 200 MW. MISO is an independent, not-for-profit organization that delivers electric power across 15 states. Approval from MISO through a Generator Interconnection Agreement is required to connect the Project to the electrical transmission system. Crane Storage entered the interconnect request into the MISO Definitive Planning Phase study process in 2021. Crane Storage expects to sign a Generator Interconnection Agreement in the first quarter of 2026.

2.1.3 Cost Analysis

The estimated cost for development and construction of the Crane Project is about $340 to $440 million. A breakdown of estimated costs for the Crane Project is provided in Table 2.1.3-1. The estimates provided are engineering estimates and are expected to reflect actual costs within approximately 30 percent. Actual costs for the Crane Project are dependent on a variety of factors including construction labor, equipment and materials, electrical and communication systems, taxes/tariffs, and final design considerations.

TABLE 2.1.3-1

Estimated Project Development and Construction Costs – Crane Project

Facility	Costs ($ millions)
BESS	
Engineering, Procurement, Construction Contractor	$255 - $336
Development Expense	$25 - $30
Interconnection	$30 - $38
Financing	$13 - $16
Project Substation	$17 - $20

Costs are estimated based on preliminary proposals from BESS suppliers, estimates from equipment and construction suppliers, as well as data from the project interconnection results.

The Crane Project is anticipated to operate for 30 years. Operating costs are initially estimated at approximately $2 to $3 million per year and include operations and maintenance (O&M), taxes, insurance, labor, and materials.

2.1.4 Future Expansion

Crane Storage filed a Generator Interconnection Agreement application with MISO for 200 MW in 2021 for the Crane Project. At this time, Crane Storage has no intention of expanding the Crane Project beyond the 200 MW for which it applied for a Generator Interconnection Agreement.

2.2 SANDHILL PROJECT DESCRIPTION

Sandhill Storage proposes to construct a stand-alone up to 200-MW / 800-MWh BESS and interconnection infrastructure in Township 107N, Range 15W, Sections 30 and 31, in Olmsted

County, Minnesota. In order to capture all components that would be required to construct and operate the Sandhill Project, the Sandhill Land Control Area includes the shared facilities that would be within the Crane Land Control Area, including:

- the primary access road;
- the collector substation; and
- the gen-tie line.

As such, the Sandhill Land Control Area presented in this Joint Application totals 42.7 acres. In the event that the Sandhill Project is constructed before the Crane Project, Sandhill Storage would negotiate an agreement with Crane Storage for permission to construct the primary access road, collector substation, and gen-tie line. Accordingly, Sandhill Storage also requests its site permit allow construction of the shared infrastructure. Sandhill Storage has entered an Option Agreement to purchase a parcel for development of the BESS portion of the Sandhill Project.

Within the Sandhill Land Control Area, preliminary design of the Sandhill Project would affect about 39.9 acres; the area required for construction and operation of the Sandhill Project is herein referred to as the Sandhill Preliminary Development Area. Figure 2.2-1 depicts the Sandhill Land Control Area and the Sandhill Preliminary Development Area.

Because the Crane and Sandhill Projects would share the primary access road, collector substation, and gen-tie line, about 19.2 acres of the Sandhill Land Control Area overlaps with and is already accounted for in the Crane Land Control Area. Similarly, about 18.7 acres of the Sandhill Preliminary Development Area overlaps with and is accounted for in the Crane Preliminary Development Area.

The Sandhill Project will not generate electricity but will receive energy (charge) from the electrical grid via the Byron Substation (i.e., the POI for the Sandhill Project), store that energy on site, and then later deliver energy (discharge) back to the Byron Substation to be delivered to the electrical grid.

The Sandhill Project is anticipated to include self-contained BESS units that contain batteries installed in purpose-built enclosures, a collector substation, an onsite maintenance area, a parking lot, trash enclosure, stormwater pond, and an approximately 700-foot-long 161-kV gen-tie line that will interconnect the collector substation to the Byron Substation. Sandhill Storage currently anticipates including approximately 236 BESS units in the Sandhill Project, but that total number could change depending on the technology chosen and the final design of the Sandhill Project. Moreover, the final design, and the design contemplated and depicted in this Application, also includes BESS units for future augmentation of the Sandhill Project (battery upgrades or additions to accommodate degradation over years of operation). Within the BESS facility, underground collection and communication lines will be installed to connect the BESS units to the collector substation. Access roads will be installed between the BESS units to allow access for operations personnel. The access road, collector substation and gen-tie line will be used and shared by both the Sandhill Project and the Crane Project.

Security fencing will encompass all Sandhill Project components and warning signs will be installed on the security fencing in accordance with the NESC. The collector substation will have its own security fencing. Gates will be installed at the entrance to the facility and between the BESS and the collector substation. A sign will be installed on the entrance gate providing a 24-hour emergency response number. The area within the fencelines of the BESS and the collector substation will be graveled, with the exception of the stormwater pond which will be

planted with perennial vegetation. A detailed description of the Sandhill Project design and layout is presented in Section 3.0.

2.2.1 Sandhill Preliminary Development Area

Construction of the Sandhill Project will require approximately 39.9 acres, of which approximately 13.3 acres will host BESS components during operation of the facility. Areas outside of the BESS facility and collector substation fencelines, except for the Gen-tie Development Area, will either be planted with perennial vegetation or graveled for the life of the Sandhill Project. The vegetation and ground cover in the Gen-tie Development Area will continue to be managed by SMMPA. The Sandhill Preliminary Development Area is depicted on Figure 2.2-1, Map 3, and in the Sandhill Project Site Plan provided in Appendix C. Table 2.2.1-1 shows a summary of the temporary and permanent impacts of the Sandhill Project.

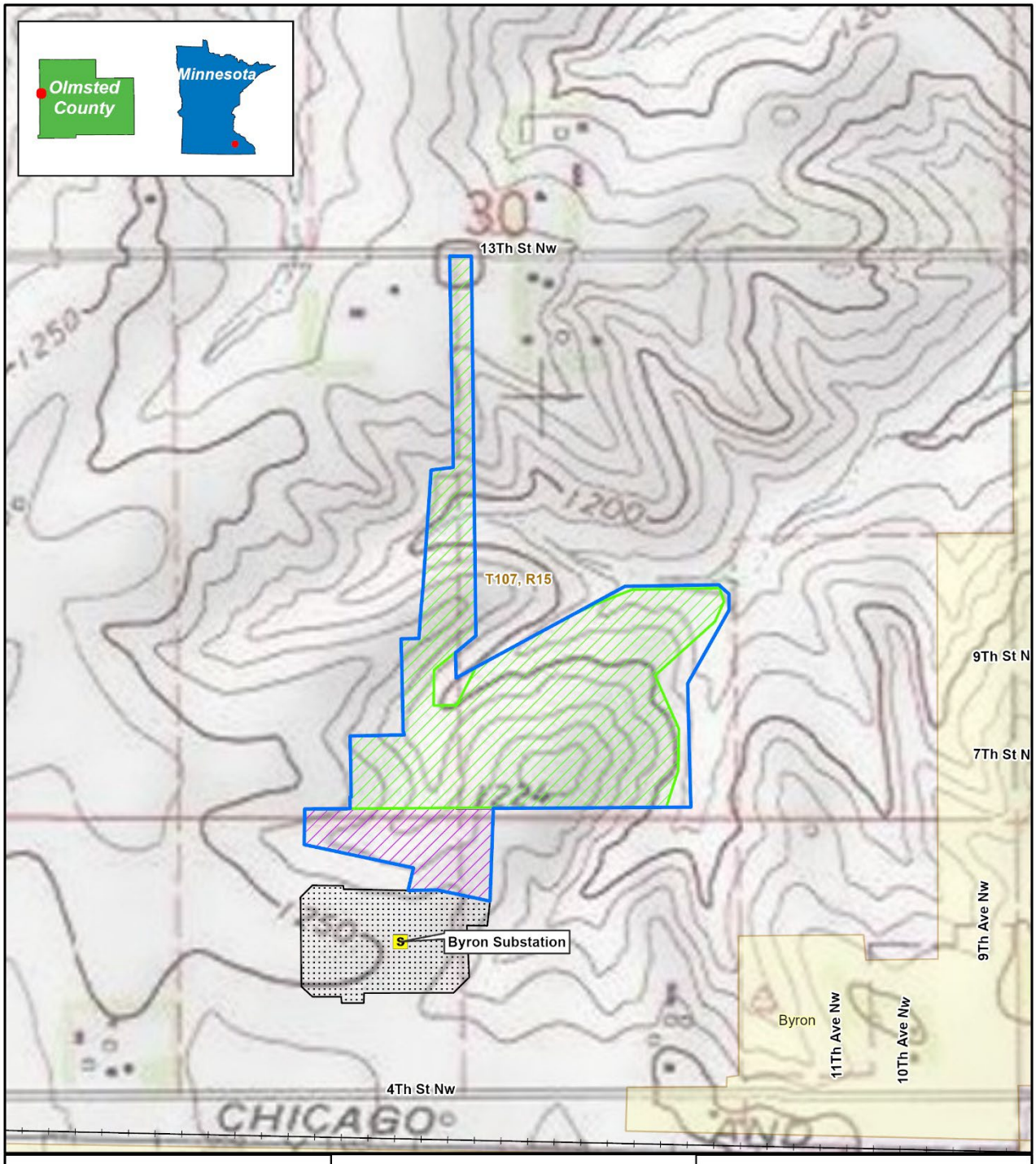


Figure 2.2-1
Sandhill Land Control and Preliminary Development Areas
Crane & Sandhill BESS Projects
Olmsted County, MN

Table 2.2.1-1

Summary of the Temporary and Permanent Impacts in the Sandhill Preliminary Development Area

Facility	Description of Footprint	Sandhill Project	
		Perm. (acres)	**Temp. (acres)**
Fenced Area [1]	Area within fenceline that is not occupied by permanent facilities	0.8	--
BESS Units	Four approximately 90-foot by 400-foot areas where BESS units will be installed	3.2	--
Access Roads within Fenceline	Approximately 20-foot-wide areas within fenceline of the BESS facility, between and around the BESS units.	1.5	--
On-site Maintenance Area, Parking Lot, and Trash Enclosure	Collective footprints of these three facilities	0.1	--
Stormwater Basin	Footprint of facility	1.1	--
Laydown Area	Footprint of laydown/staging area	1.5	--
Temporary Construction Workspace [2]	Area outside of the fenceline, plus expanded areas required for access road and gen-tie line construction	--	26.6
Primary Access Road (Shared)	Approximately 20-foot-wide	1.2	--
Collector Substation (Shared)	Footprint of facility	1.7	--
Gen-tie Line (Shared)	Approximately 150-foot-wide right-of-way	2.2	--
	Total	**13.3**	**26.6**

[1] Acreages provided for the fenced area include all portions of the fenced BESS facility, minus the individual facility components including, BESS units, access roads within the fenceline, on-site maintenance area, parking lot, trash enclosure, stormwater pond, laydown area, and the collector substation. Acreages for these individual facility components are provided separately in this table.

[2] Temporary construction workspace includes areas along the primary access road, areas outside of the fenceline of each facility, and the area that would be used to install the gen-tie line.

Note: A double dash indicates that no impacts are anticipated for this feature.

2.2.2 Capacity and Interconnection

The Sandhill Project will be an up to 200-MW, 800-MWh BESS, with a maximum injection capacity of 200 MW into the electric transmission grid.

Sandhill Storage filed a separate Generator Interconnection Agreement application with MISO for 200 MW. MISO is an independent, not-for-profit organization that delivers electric power across 15 states. Approval from MISO through a Generator Interconnection Agreement is required to connect the Project to the electrical transmission system. Sandhill Storage entered the interconnect request into the MISO Definitive Planning Phase study process in 2022. Sandhill Storage expects to sign a Generator Interconnection Agreement in the first quarter of 2026.

2.2.3 Cost Analysis

The estimated cost for design, construction, and operation of the Sandhill Project is about $340 to $440 million. A breakdown of estimated costs for the Sandhill Project is provided in Table

2.2.3-1. The estimates provided are engineering estimates and are expected to reflect actual costs within approximately 30 percent. Actual costs for the Sandhill Project are dependent on a variety of factors including construction labor, equipment and materials, electrical and communication systems, taxes/tariffs, and final design considerations.

TABLE 2.2.3-1

Estimated Development and Operation Costs – Sandhill Project

Facility	Costs ($ millions)
BESS	
Engineering, Procurement, Construction Contractor	$255 - $336
Development Expense	$25 - $30
Interconnection	$30 - $38
Financing	$13 - $16
Project Substation	$17 - $20

Costs are estimated based on preliminary proposals from BESS suppliers and estimates from equipment and construction suppliers. The Sandhill Project is not far enough in the interconnection queue to have costs assigned, so these costs are estimated to be the same as the Crane Project.

The Sandhill Project is anticipated to operate for 30 years. Operating costs are initially estimated at approximately $2 to $3 million per year and include O&M, taxes, insurance, labor, and materials.

2.2.4 Future Expansion

Sandhill Storage filed a Generator Interconnection Agreement application with MISO for 200 MW in 2022 for the Sandhill Project. At this time, Sandhill Storage has no intention of expanding the Sandhill Project beyond the 200 MW for which it applied for a Generator Interconnection Agreement.

2.3 SETBACK ANALYSIS

The Crane and Sandhill Projects facilities have been sited to avoid or minimize impacts on human settlement, environmental and cultural resources, and existing infrastructure.

As described in Section 1.4, the Crane and Sandhill Projects are considered energy storage systems as defined by Minn. Stat. § 216E.01, subd. 3a. To date, the Commission has not issued a Site Permit for a stand-alone energy storage system and no precedent has been established at the state level relating to setbacks for these facilities.

The Olmsted County and Kalmar Township zoning ordinances were reviewed to identify setback requirements that could be applied to the Projects (Olmsted County, 2023; Kalmar Township, 2018). Neither Olmsted County nor Kalmar Township has zoning requirements specific to energy storage systems. The Crane and Sandhill Projects are sited in the Agricultural Protection District (A-2) according to Olmsted County and Kalmar Township zoning information on the Olmsted County public geographic information system (GIS) site (Olmsted County, 2024). Setback requirements that could be applied to the Crane and Sandhill Projects are presented in Table 2.3-1.

TABLE 2.3-1

Setback Requirements

Feature	Olmsted County Setbacks (feet)	Kalmar Township Setbacks (feet)	Distance to Nearest Crane Project Facilities (feet)	Distance to Nearest Sandhill Project Facilities (feet)
U.S./State Highway Centerline	95	NA	2,332	2,332
County Road Centerline	95	NA	2,941	3,095
Side Street Yard	45	45	275	560
Front Yard	45	45	1,464	1,725
Side Yard	25	25	275	560
Rear Yard	25	25	60	60

As shown in Table 2.3 -1, both Projects have been sited to meet or exceed setback requirements identified in the Olmsted County and Kalmar Township zoning ordinances.

3.0 ENGINEERING AND OPERATIONAL DESIGN

The primary components of a BESS facility include the graded site and access roads, purpose-built battery storage enclosures, inverters, transformers, emergency management system, Battery Management System, a collector substation, underground electrical collection and communication lines, and a gen-tie line that allows bi-directional flow of electricity between the BESS and the POI. A detailed description of each of these components is provided below.

The Crane and Sandhill Projects will be designed and engineered in accordance with the applicable requirements of the NESC, National Fire Protection Association Standards, Institute of Electrical and Electronics Engineers Standards, and the Minnesota state electrical code.

3.1 BATTERY ENERGY STORAGE SYSTEM

Lithium-ion batteries are the most common type of utility-scale BESS technologies. Lithium-ion batteries are a type of rechargeable battery where lithium ions, suspended in an electrolyte, move from negative to positive electrodes and back when recharging. A variety of chemistries fall under the "lithium-ion" term, each with varying performance, cost, and safety characteristics. Lithium--ion batteries have a typical lifespan of thousands of cycles and more than 20 years. The lithium-ion battery technology under consideration for the Crane and Sandhill Projects is Lithium Iron Phosphate and will be designed for the life of the Projects. However, over the life of the Project, the batteries will lose some of their capacity. Under current MISO market rules, a BESS is accredited capacity based, in part, on its ability to provide the energy equivalent of its claimed capacity for a minimum of at least four continuous hours each day for the period in which it is operational. To maintain the facility's rated capacity, the BESS will undergo augmentation either through the addition of battery modules within the existing enclosures or the addition of supplemental battery enclosures. The Preliminary Development Areas for the Crane and Sandhill Projects presented and evaluated herein both fully encompass the area that would be needed for future augmentation and the design presented in this Application also depicts all future potential augmentation and full build-out at the end of the Projects' life.

The augmentation schedule to maintain overall Project functionality will be determined during the design process after final equipment selection and will be based on the projected degradation of the batteries. The Applicants have designed their respective facilities to accommodate future augmentation units within the fenced area. Specific installation timing will vary based on the BESS equipment selected for the Projects and the results of capacity monitoring during operations. An example augmentation schedule over the 30 year life of a generic BESS project would be battery augmentation in years 6, 11, and 16. The Applicants have included the planned augmentation units in the preliminary design of the Projects as displayed on Maps 4 and 5. Accordingly, the initial construction of the BESS will not include all battery enclosures displayed on Maps 4 and 5, with augmentation units added during the life of the Projects. The Applicants respectfully request the Site Permits expressly allow the addition of augmentation units, as depicted in the final site plan, without a need for a Site Permit Amendment or minor alteration approval from the Commission.

Lithium-ion battery systems are modular energy storage systems. Each module contains multiple smaller battery cells, each measuring approximately 3 by 7 by 8 centimeters. The module containing the cells is relatively small, generally about the size of a desktop computer processor. Modules are placed in anchored racks within the enclosures. Six or so modules make up a rack, while each enclosure holds six to eight racks. Enclosures will have their own heating and cooling system to maintain the temperature within the enclosure within operational parameters.

Crane Storage and Sandhill Storage are considering multiple battery technology purpose-built enclosure manufacturers, and thus, seek to permit a range of options to preserve design flexibility. The description of design provided herein represents a typical battery energy storage operation, but details of components may vary depending on the technology selected during final design. Each BESS unit will be contained in an enclosure measuring up to approximately 20 feet in length, 8 feet in width, and 9.5 feet in height. They will be set on either concrete, pier, or other foundation that follows the site-specific geotechnical recommendations. The enclosures will have a Battery Management System for automated monitoring and managing of the batteries to ensure design performance, as well as providing control for the charging/discharging of the batteries along with temperature monitoring and control of the individual battery cell temperature with an integrated cooling system.

Batteries operate with direct current (DC) electricity that must be converted to alternating current (AC) using inverters for compatibility with the existing electrical grid. Depending on the final battery technology and battery container/enclosure design, the inverters may be included within the container/enclosure or outside on skids adjacent to containers/enclosures. In addition, up to approximately 59 medium voltage transformers will be installed for the Crane Project and approximately 59 medium voltage transformers will be installed for the Sandhill Project. Each medium voltage transformer will be approximately 20 feet in length, 8 feet in width, and 9.5 feet in height. They serve to step down the high incoming electricity to a voltage that is safe to use in the BESS. From the transformers, buried medium voltage (34.5-kV) electrical cables will transfer power to and from the collector substation.

The Crane and Sandhill Projects will be run by on-site Energy Management Systems that will control the charging and discharging of the batteries. Both Projects will also be monitored 24 hours a day, 7 days a week by a Battery Management System, as mentioned above. The Battery Management System provides extensive monitoring of the battery's temperature, voltage, amperage, and off-gassing. The Battery Management System ensures that the Crane and Sandhill Projects are operating within normal parameters and immediately halts operation should it detect anomalous operation.

3.2 ELECTRICAL COLLECTION SYSTEM

For both Projects, the BESS will collect power from the collector substation via underground cabling that will be buried in a trench or ploughed into place to a depth of at least three feet and wide enough to ensure proper spacing between each cable run. The depth to cables may be deeper when crossing under existing utilities or other features that require avoidance. The electrical collection technology used will be decided based on geotechnical analysis, constructability, and the availability of materials. The final engineering design and procurement may impact the method used for installation of the electrical collection system.

3.3 COLLECTOR SUBSTATION

A collector substation will be constructed to facilitate bi-directional delivery of power between the Crane and Sandhill BESS and the existing Byron Substation. Because the collector substation will serve both Projects, the acreage needed to construct and operate the substation is included in both the Crane and Sandhill Preliminary Development Areas (refer to Sections 2.1 and 2.2).

The collector substation will include high-voltage electrical pole structures, breakers, a three phase, three winding 161-kV step-up/step-down main power transformer, metering and related equipment, lightning protection, telecommunications equipment, and Supervisory Control and

Data Acquisition (SCADA) equipment. The Projects will each have their own bus to connect to that directly terminates to separate main power transformers and high voltage breakers for each Project within the collector substation.

The Projects will share a high voltage bus and gen-tie line that interconnects the collector substation to the existing Byron Substation. By sharing the gen-tie line, the Applicants avoid needing duplicate parallel transmission lines, as well as reduce interconnection impacts to the Byron Substation.

3.4 BYRON SUBSTATION MODIFICATIONS

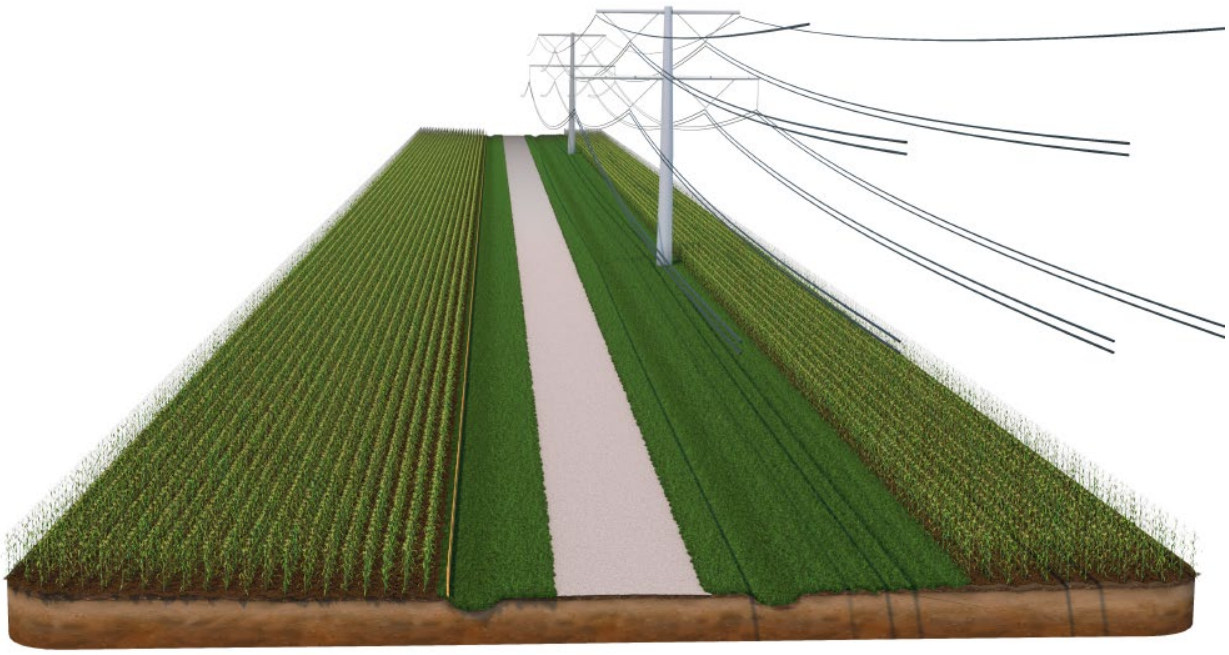
As part of the MISO Generator Interconnection Agreement process, modifications required to the Byron Substation are studied in a Facility Study. At this point, SMMPA and MISO have yet to release this study for the Crane and Sandhill Projects. To get an idea of what modifications would be required ahead of finalization of the study, Crane Storage and Sandhill Storage have conducted preliminary discussions with SMMPA. During the discussions, it was indicated that the Byron Substation had an open position at which the gen-tie line can terminate. The final equipment needs and configuration of the POI will be determined through further study and coordination with MISO and SMMPA and will be fully known and documented in the executed GIA. The Applicants anticipate that the upfront costs for upgrading the Byron Substation would be paid by SMMPA and Crane Storage and Sandhill Storage would reimburse SMMPA for the cost of the upgrades.

3.5 TRANSMISSION SYSTEM

Both the Crane and Sandhill Projects will interconnect to the existing Byron Substation via a 161-kV gen-tie line of approximately 700 feet between the collector substation and the Byron Substation. Per Minn. Stat. 216E.01 subd. 4, the gen-tie line does not meet the high voltage transmission line definition because the overall length is less than 1,500 feet. As such, a separate route permit from the Commission is not required for the gen-tie line. A preliminary design of the gen-tie line is depicted on Maps 4 and 5.

The gen-tie line will be designed to meet or exceed all relevant local and state codes (e.g., NESC and Minnesota state electrical code) and construction and operation of the gen-tie line will comply with all applicable standards and safety procedures. There will be a single dead-end structure within the collector substation and likely two to three additional structures to carry the gen-tie line to the Byron Substation, pending final engineering design. The structures will be made of wood or steel and will be less than 150 feet tall. The type of conductor will be determined following the completion of detailed electrical design. The operational right-of-way for the gen-tie line will be 150 feet, 75 feet on either side of the gen-tie alignment. Figure 3.5-1 provides an example of how the gen-tie line may appear.

Figure 3.5-1 Example of a Generation-tie Transmission Line



3.6 OTHER ASSOCIATED FACILITIES

3.6.1 Access Roads

The Crane and Sandhill Projects will share a primary access road connecting the Projects to 13th Street NW. The primary access road will be approximately 2,500 feet in length to reach the fenceline of the Crane Project and the collector substation and an additional 460 feet of length will be added to reach the fenceline of Sandhill Project (i.e., 2,960 feet total length). During construction of the Projects, the primary access road will be generally 100 feet wide with the southernmost portion of the road expanded to 265 feet wide to provide adequate space for construction vehicles and heavy equipment. The width of the primary access road will be narrowed to about 20 feet wide after construction is complete and the road will be graveled and maintained for operation of the Projects.

Interior access roads will be installed within the Crane and Sandhill facilities between the BESS units that are wide enough to allow standard maintenance vehicles to travel between the enclosures.

3.6.2 Security and Safety Features

For both Projects, the BESS and collector substation will each be enclosed by permanent security fencing in accordance with NESC requirements. Fencing will be secured to posts which will be directly embedded in the soil or set in concrete foundations as required for structural integrity. The Applicants propose to install a 7-foot-high chain-link fence with three strands making up one foot of barbed wire across the top (8-foot total height) around the BESS facility and the collector substation. Security fencing will be designed to prevent the public from gaining access to electrical equipment which could cause injury.

The Projects will also have security cameras and security lighting where appropriate that will be down-lit.

3.6.3 On-site Maintenance and Parking Areas

On-site maintenance and parking areas will be established inside the fencelines of the Crane and Sandhill BESS facilities. In addition, trash enclosures will be installed adjacent to the parking areas. These facilities are shown on the Site Plans for the Crane and Sandhill Projects provided in Appendix C. The location of these facilities is subject to change depending on final engineering design, but on-site maintenance, parking areas, and trash enclosures will remain within the fencelines of the BESS facilities.

3.6.4 Stormwater Basin

The Applicants propose to construct stormwater basins within the fencelines of each BESS facility to manage stormwater collection and filtration on-site. The proposed stormwater basins will be planted with perennial vegetation. Crane Storage and Sandhill Storage will develop project-specific Stormwater Pollution Prevention Plans (SWPPPs) and will comply with all protocols of these plans during construction and operation of the Projects.

3.6.5 Temporary Facilities

Crane Storage proposes to use 20.8 acres of temporary construction workspace and one 1.9-acre laydown yard within the Crane Preliminary Development Area during construction (refer to Map 4). The laydown yard will be located just north of the area where the BESS units will be installed. The laydown yard will be used for equipment storage, temporary job trailers, temporary parking for construction personnel and it may have temporary fencing outside of the main project fence.

Sandhill Storage proposes to use 26.6 acres of temporary construction workspace and one 1.5 -acre laydown yard within the Sandhill Preliminary Development Area during construction (refer to Map 5). The laydown yard will be located just north of the area where the BESS units will be installed and will be used for equipment storage, temporary job trailers, temporary parking for construction personnel and it may have temporary fencing outside of the main project fence.

The laydown yards will be used for the duration of construction (approximately 9 to 15 months). After construction is complete, the laydown yards will be graveled and included in the fenceline of the BESS facilities for the life of the Crane and Sandhill Projects.

Existing road intersections may require temporary widening to accommodate large construction equipment and deliveries during construction. Crane Storage and Sandhill Storage will coordinate with local road authorities regarding any necessary road intersection improvements.

4.0 CONSTRUCTION, RESTORATION, OPERATIONS AND MAINTENANCE, AND DECOMMISSIONING

The process for construction, restoration, O&M, and decommissioning will be the same for the Crane and Sandhill Projects. Construction activities for both Projects will include transport and delivery of equipment and materials, site preparation, equipment installation and revegetation and landscaping. Each of these activities is generally described below and applies to both Projects. Construction of each of the Crane Project and Sandhill Project is estimated to take approximately 9 to 15 months and will occur Monday through Friday, between 7:00 a.m. and 6:00 p.m.

4.1 CONSTRUCTION MANAGEMENT AND PERSONNEL

The Applicants will each solicit bids for an Engineering, Procurement, and Construction (EPC) contractor to construct the Projects and will prioritize EPC contractor bids that utilize local union construction personnel to the greatest extent feasible. The EPC contractor will be required to work with local labor unions, local subcontractors, and other vendors to create a construction staffing model that prioritizes local hiring and economic benefits, while ensuring the Projects are safely built on time and on budget.

An on-site construction manager will be responsible for scheduling and coordinating construction activities including engineering, procurement, and construction contractors. Additional on-site personnel will include laborers, craftspeople, supervisory personnel, civil and construction tradespeople, and administrative and support staff. Up to 75 construction personnel will be required for construction of the Crane Project; the same number of construction personnel will be required for construction of the Sandhill Project. The construction workforce will likely commute to the sites each day from local communities and report to the designated construction maintenance areas prior to the beginning of each workday.

General skilled labor is expected to be available in Olmsted County, neighboring counties, or Minnesota to serve the Projects' basic infrastructure and site development needs; however, specialized labor will be required for certain aspects of construction. The relatively short duration of construction often precludes special training of local or regional labor, and, although currently considered to be unlikely, it may be necessary to hire specialized labor from other areas of Minnesota or neighboring states.

4.2 COORDINATION WITH LOCAL FIRST RESPONDERS

The Applicants are committed to early coordination with local first responders. Representatives from the Projects met with City of Byron Administrator and the Byron Fire Chief on October 23, 2024, to introduce the Projects. Before construction begins, project-, location-, and technology-specific Hazard Mitigation Analyses (HMAs) will be shared with local first responders. The HMAs will include detailed information about the BESS technology and any potential emissions that can be expected if a failure occurs on-site. Using the HMAs as a guide, the Applicants will develop Emergency Response Plans (ERPs). Typical components of an ERP include:

- Contact information (including emergency response coordinator)
- Preparation and planning (including alarm response)
- Hazard / safety precautions
- Emergency procedures
- Firefighting
- Emergency shutdown
- Maintenance (including alarm inspection)
- Decommissioning

The Applicants will review the ERPs with local first responders to ensure that emergency personnel responding to any incident understand and follow the agreed upon ERPs.

Once gates are installed on the BESS facilities, a KnoxBox or similar lock box will be installed on the front gate to allow Fire Department access to the sites in the event of an emergency. Both facilities will be outfitted with fire-suppression equipment to meet or exceed applicable local and state fire safety codes and standards. Two dead-end public fire water mains are present on either end of the Crane and Sandhill Projects sites and fire hydrants will be installed within each BESS facility.

Fire-protection measures for both Projects will include prevention, suppression, and isolation methods and materials. All methods will meet National Fire Protection Association (NFPA) 68 or 69, and NFPA 855. This may include smoke/fire detection sensors, ground fault detectors and alarms, systems for automatic shutdown of all cooling fans and opening of electrical contacts in the battery system, and systems for automatic release of a fire-suppression agent appropriate to the battery technology. These methods will depend on the battery technology selected for each Project. In addition to fire-suppression improvements, the Applicants will use batteries that are Underwriters Laboratories Certified and include built-in fail safes designed specifically to prevent thermal runaway and fire spread both within and outside of the BESS units.

4.3 GEOTECHNICAL STUDY

Geotechnical and pull testing studies will be performed to determine the topsoil and subsoil types and the mechanical properties of the soils within the Crane and Sandhill Preliminary Development Areas. These variables will be used to engineer the BESS foundation system. Typically, the foundation is a steel pile, which is driven into the ground with a hydraulically powered high--frequency hammer mounted on a tracked carrier. The piles are installed at pre-defined locations throughout the array area to an embedment depth of 8 feet to 14 feet below grade, depending on soil properties and other factors. They may also be placed on flat concrete foundations.

4.4 CONSTRUCTION AND RESTORATION PROCEDURES

4.4.1 Transport and Delivery

Construction personnel and heavy vehicles delivering equipment and materials will access the sites from 13th Street NW. During peak construction of each project, construction personnel are estimated to account for a maximum of 75 vehicles per day (roundtrip) and deliveries of equipment and materials are estimated to account for a maximum of five daily roundtrips, for a total of up to 81 daily roundtrips utilizing local public roads during the construction periods. The periods of construction for the Crane and Sandhill Projects would likely be staggered, so the estimated number of trips provided represents what may be needed for each individual Project if they are

constructed at different times. If the Crane Project and Sandhill Project are constructed at the same time, the Applicants may seek to combine equipment deliveries and construction personnel travel to/from the sites, which would reduce construction-related traffic.

Peak traffic numbers will occur over a 3-month period, with the numbers tapering up and down before and after the peak. The primary access road off of 13th Street NW will be constructed to accommodate use by overweight vehicles delivering equipment and materials to the site. No new roads, other than internal access roads within the fencelines of the BESS facilities, will be required to provide access to the Crane and Sandhill Projects. The Applicants will work with Olmsted County and Kalmar Township to discuss haul roads and the care and maintenance of roads during construction.

4.4.2 Site Preparation

After all necessary permits are obtained, site preparation work will begin. The Applicants will request utility locates from Gopher One Call prior to any ground disturbance. Erosion control devices will be installed, and temporary soil stabilization will be established, as needed, within the Crane and Sandhill Preliminary Development Areas in accordance with the Projects' SWPPPs. The SWPPPs will be reviewed and approved by the Minnesota Pollution Control Agency (MPCA) and the Applicants will obtain National Pollutant Discharge Elimination System (NPDES) General Permits prior to the start of ground disturbing activities.

Initial site preparation will involve grubbing and grading to create level workspaces for installation of the facilities and safe operation of construction equipment. The primary access road will be developed by stripping and segregating topsoil material from the temporary workspace that will be used during construction. Subsoil will be compacted as specified by the civil and geotechnical engineer in the geotechnical study. After subsoils are compacted, approximately 4 to 12 inches of gravel will be installed level with the existing grade to facilitate drainage and minimize ponding. Gravel will be installed with or without geo-fabric depending on the soil type and the recommendations of the geotechnical study. During grading, the Applicants intend to export soils excavated from one area and import fill for other areas. The grading quantities for both Projects will be finalized following advanced engineering designs. The design will be executed to balance the material on site for use to avoid the large import or large export of material. Topsoil from the primary access road will be removed to suitable locations near the site of removal and spread across existing topsoil for storage. Storage locations will be identified using Global Positioning System (GPS) boundary and depth and recorded on site maps to facilitate final reclamation after decommissioning.

Temporary construction workspaces and a laydown area will be established within the Crane and Sandhill Preliminary Development Areas; these areas will be used for storage of construction materials, receiving construction deliveries, setting up temporary construction offices, and temporary parking for construction personnel. Portable toilets will also be placed on site and will be serviced by licensed providers.

4.4.4 Installation of Equipment

Following site preparation activities, the facilities will generally be installed as follows:

- establishing the stormwater pond;
- installing BESS units and underground electrical collection and communication lines;
- installing inverters (if not within BESS units) and transformers;
- constructing the collector substation;
- installing the 161-kV gen-tie line; and
- installing the remaining associated facilities.

In general, most grading in the Crane and Sandhill Preliminary Development Areas will occur within the proposed fenceline areas where aboveground equipment will be installed. Trenching will also be required for placement of underground electrical collection and communication lines within the fenceline of the facilities. The proposed stormwater basins will be excavated within the fencelines of each facility to provide compensatory flood storage to offset fill placement.

4.4.4.1 BESS Facility

After grading and trenching are complete, BESS unit foundations, enclosures, and equipment vaults will be installed. The BESS units will have a grounding grid installed and will be covered with at least 18 inches of soil or aggregate surfacing for safe operation with the final depth to be confirmed by the results of the facility grounding study. Foundations for the BESS units will be concrete, pier, or other foundation type as deemed appropriate based on the results of the geotechnical study.

As the preassembled BESS units are offloaded onto foundations, the electrical collection and communication systems, inverters, and transformers will also be installed. The inverters and transformers will be installed on skids adjacent to the BESS units. Aggregate fill will be placed between and around the BESS equipment and adequate lighting will be installed around the BESS site for worker safety during operation.

All equipment will be checked and commissioned prior to operation for both Projects.

4.4.4.2 Collector Substation

The Crane and Sandhill Projects will share one collector substation. The schedule for construction of each of the Crane Project and Sandhill Project has not been determined at this time. As such, whichever entity constructs its project first will be responsible for constructing the collector substation. When both projects are developed, Crane Storage and Sandhill Storage will enter into a Joint Facilities Agreement for the shared collector substation.

Construction of the collector substation will occur simultaneously with construction of the first BESS facility to be constructed. The collector substation will also have a grounding grid installed that will be covered with at least 18 inches of soil or aggregate surfacing for safe operation. The final depth will be confirmed by the results of the facility grounding study.

Construction work within the collector substation site will include installation of substructures and electrical equipment. Installation of concrete foundations and embedments for equipment will require the use of trenching machines, concrete trucks and pumpers, vibrators, forklifts, boom trucks, and large cranes. Aboveground and underground conduits from this equipment will run to

a control enclosure that will house the protection, control, and automation relay panels. A substation service transformer will be installed for primary AC power requirements. Batteries and battery chargers will be installed inside the enclosure for auxiliary power to the switchyard's control system. Down-lit lighting will be installed around the substation for worker safety during construction and operation.

One of two methods will be used to install the substation foundations. Option 1 would be to use a small rubber tire backhoe to dig out major foundations prior to pouring the concrete slabs. Option 2 would use an auger/drill type machine for minor foundations.

After the foundations are installed, collector substation equipment will be delivered to the site and installed on the prepared foundations. Secondary containment areas for the transformer will be constructed as required by applicable federal, state and/or local oil pollution prevention regulations, and final grading will occur around the collector substation site. Finally, electrical wires will be strung, perimeter fencing will be installed, and aggregate will be placed within the fenced area of the collector substation site.

All topsoil from the substation footprint will be removed to a pre-established suitable location for storage. The storage area will be near the site where the soil was removed, accurately located (GPS boundary, soil depth) and graded to facilitate revegetation after decommissioning. Subsoil will be removed, if necessary, to an acceptable pre-established and approved area for storage. After decommissioning, subsoil will be returned to the area from which it was excavated (as needed), topsoil will be replaced, and the area will be brought back to pre-construction contours.

4.4.4.3 Gen-tie Line

Similar to the collector substation, the Crane and Sandhill Projects will share the 161-kV gen-tie line. The precise schedules for construction of the Crane Project and Sandhill Project have not been determined at this time. As such, whichever entity constructs its project first will be responsible for constructing the gen-tie line. Similar to the shared collector substation, when both projects are developed, Crane Storage and Sandhill Storage will enter into a Joint Facilities Agreement for the shared gen-tie line.

The 161-kV gen-tie line will be installed above ground between the collector substation and the Bryon Substation. Minimal grading is anticipated to be required for installation of the gen-tie line. Approximately two structures will be required to connect the BESS and collector substation to the Byron Substation. These structures will be wood or steel monopoles.

Foundations for the gen-tie monopole structures will be of a drilled pier foundation type, or something equivalent as is found appropriate for the area pending the results of the geotechnical study. Structure foundations will be installed below ground, typically to a depth around 10 to 15 feet, with the final details to be confirmed after the geotechnical study. Temporary construction workspaces of approximately 150-foot diameter would be required for installation.

4.4.5 Inspections and Commissioning

Equipment inspections will be conducted prior to commercial operation of the Projects and in compliance with applicable Site Permit conditions. Inspections and testing will occur for each component of the BESS facilities, as well as the associated electrical collection, interconnection, communication, and management systems. Inspections, testing, and commissioning of equipment will occur during construction and upon completion of the construction phase.

4.4.6 Site Restoration

Following construction, temporary workspaces within the Crane and Sandhill Preliminary Development Areas where aggregate has not been installed will be revegetated with perennial vegetation for soil stabilization and erosion control purposes. In addition to revegetation of temporarily disturbed areas, permanent erosion control measures will be installed in accordance with the Projects' SWPPPs to address long-term stormwater requirements.

With the exception of the primary access road that will be maintained for access to the BESS facilities during operation, temporary workspace along the primary access road will be decompacted and restored to pre-construction contours and characteristics to the extent practicable. This restoration will allow agricultural production in the area east and west of the primary access road to continue as before.

Based on discussions with landowners, the Applicants are aware that drain tile is present within the natural drainage that crosses the Crane and Sandhill Land Control Areas from southwest to northeast (refer to Map 9). If damage occurs to drain tile or private ditches as a result of construction activities or operation of the Projects, the Applicants will repair any damages.

4.5 OPERATION AND MAINTENANCE PROCEDURES

4.5.1 General Operation and Maintenance Procedures

Periodic maintenance and inspection of the BESS and associated facilities will occur intermittently during the operation phase of both Projects, currently estimated to be 30 years. Typical maintenance activities will include basic monthly inspections, preventative quarterly inspections, and an in-depth annual maintenance program. Up to four full-time, locally based personnel will be on staff during operation for each of the Projects. On average, two vehicle trips to the site per month are anticipated during operations.

Approved technicians will service the BESS units and associated equipment once per month. A performance audit and inspection to assess the quality of equipment will be conducted annually. If any equipment needs to be replaced before the Projects' end-of-life, the Applicants will reuse, recycle, or dispose of equipment in accordance with applicable regulations and best management practices. Ethylene glycol, refrigerant, and lubricating oils will be kept in the O&M storage containers on site; note that all BESS equipment will come pre shipped with 136-gallon ethylene glycol-based coolant. Small amounts may be kept on hand in storage for maintenance purposes. No operational water is anticipated to be required.

Vegetation outside the facility's fencelines and graveled areas will be managed for the operational life of the Projects. Mechanical vegetation control such as mowing, trimming, and pruning will be the primary means for vegetation management. Mowing frequency is anticipated to be once per month during the growing season. Herbicides may be utilized for vegetation control; however, an effort will be made to minimize use and only apply bio-degradable, U.S. Environmental Protection Agency-(EPA) registered, organic solutions that are non-toxic to wildlife and used in a manner that fully complies with all applicable laws and regulations.

Table 4.5.1-1 provides a list of O&M tasks for the Crane and Sandhill Projects, along the anticipated frequency of each task. The frequency of operations and maintenance tasks may vary based on facility demands and performance.

Table 4.5.1-1

Operations and Maintenance Tasks and Frequency

Project Component	Task	Anticipated Frequency
BESS Units	System Visual Inspection	Monthly
	Battery Condition Check	Every 2 Years
	Cooling System Check	Annually
Electric Boards	Case Visual Check	Annually
	Fuses Check	Annually
	Surge Arresters Check	Annually
	Torque Check	Annually
	Grounding Check	Annually
Inverters	Case Visual Inspection	Monthly
	Data Logger Memory Download	Monthly
	Fuses Check	Annually
	Ground Check	Annually
	Torque Check	Annually
Support Structures	Visual Check	Monthly
Transformers	Visual Check	Every 6 Months
Fire Alarming and Detectors	Visually and Functionally Checked	Annually

Additional periodic maintenance of the facilities will include access road maintenance, snow removal, vegetation maintenance, fence and gate inspection, and lighting system checks, as needed.

4.5.2 Performance Monitoring

As described in Section 3.1, each BESS facility will include an Energy Management System and a Battery Management System that will be used to monitor facility performance and identify any equipment that is not functioning properly so that any necessary repairs can be made quickly and efficiently.

4.6 DECOMMISSIONING

At the end of the Crane and Sandhill Projects' Site Permits, the Applicants will either apply to the Commission for an extension of the Site Permit (i.e., re-permit the respective Projects) or will decommission the Projects and remove the facilities. The objective for decommissioning a project is to restore the site to a condition that will allow preconstruction land uses to resume. The summary of decommissioning activities and commitments provided below applies to each project. Copies of the Draft Decommissioning Plans for the Crane and Sandhill Projects are provided in Appendix D.

At the end of commercial operations, the Applicants will be responsible for removing all BESS components and associated facilities or applying for an extension of the Site Permit to allow repowering and continued operation of the BESS facility. Should the Applicants decide to continue operation, a decision will be made by the project owners as to whether the BESS facility

will continue to operate with the existing equipment or if the facilities will be upgraded with newer technologies.

Decommissioning of the Projects would include removing the BESS units and foundations, inverters, transformers, underground cables and lines, equipment pads and foundations, ancillary equipment, fencing, and the associated collector substation and gen-tie line. However, because the collector substation, and gen-tie line would be used by both Projects, in the event that one of the Projects is decommissioned while the other requests an updated Site Permit from the Commission, the owner of the Project that wishes to pursue continued operation would assume ownership of these shared facilities and would include them in its request.

Below ground equipment, such as cable and foundations, will only be removed to a depth of 48 inches in order to minimize future disturbance. Leaving this equipment in place will not affect future use of the land.

Standard decommissioning practices will be used, including dismantling and repurposing, salvaging/recycling, or disposing of the Project equipment and restoring the site as near as practicable to preconstruction conditions.

The Applicants will provide written notice to the Commission, landowners, and local units of government prior to the start of decommissioning activities. These parties will again be notified once decommissioning activities have been completed.

4.6.1 Anticipated Timeline

Decommissioning activities are expected to be completed in approximately six months.

4.6.2 Financial Resource Plan

The Applicants will be responsible for all costs to decommission the Projects and associated facilities.

- Decommissioning of the Crane Project is expected to cost approximately $15 million with an estimated scrap/salvage value of $1.2 million.

- Decommissioning of the Sandhill Project is expected to cost approximately $15 million with an estimated scrap/salvage value of $1.2 million.

The Applicants anticipate establishing a financial assurance in the form of an escrow account or surety bond equal to the costs necessary to ensure proper decommissioning, less the estimated scrap/salvage value, with a local government unit, such as Olmsted County, listed as the beneficiary. Consistent with the Minnesota DOC Energy Environmental Review and Analysis (EERA), recommendations, the Applicants anticipate posting the financial assurances no earlier than the 10th anniversary of each Project's commercial operation date.

The Applicants will submit a revised Decommissioning Plan every five years, or any time there is a change in ownership or permit amendment. Each revised plan will reflect advancements in construction techniques, reclamation equipment, and decommissioning standards. The amount of the financial assurance will be adjusted accordingly to offset any increases or decreases in decommissioning costs and salvage values determined during each plan reassessment. At that time, the Applicants will either enter into a surety bond agreement and create an escrow account

or create a reserve fund for decommissioning purposes. The Applicants will abide by the applicable Site Permit condition(s) and ensure the Projects are decommissioned in accordance with the Site Permits. Additional information on financial resource plans and assurances can be found in the Draft Decommissioning Plans in Appendix D.

4.6.3 Removal and Disposal of Project Components

Decommissioning will involve removal of all equipment associated with each of the Projects and returning the areas to substantially the same condition as existed prior to development. Decommissioning will include consideration of local environmental factors to minimize effects such as erosion during the removal process, and the recycling of materials demolished or removed from the sites to the extent feasible. The activities that may occur as part of decommissioning are summarized below:

- Decommissioning will commence once each of the Projects have been discharged below 30 percent of their rated capacity or to the more stringent requirements set forth by the Department of Energy or Department of Transportation at the time of decommissioning in order to meet all transportation guidelines.

- The batteries within the purpose-built enclosure will be isolated to the smallest individual component recommended by the manufacturer for on-site handling and removed from the enclosure to be packaged for reuse or recycling. After removing the battery modules, heating and cooling, fire suppression, or other internal equipment, the equipment will be separated for recycling. The purpose-built enclosure for the batteries will then be disassembled and separated for recycling.

- Consistent with the measures described for construction and operation of the Projects, best management practices (BMPs) will be implemented and maintained throughout the decommissioning phase as needed to avoid and minimize potential impacts to the surrounding environment, particularly those related to soil erosion and stormwater management.

- For both Projects, once the site has been adequately prepared for decommissioning, the following equipment will be removed: BESS units, inverters and step-up transformers, electrical wiring and connections, collector substation components, communication equipment, and fencing. All above-grade foundations will be removed to a level of no less than four feet below the ground surface unless requested to be maintained by the landowner.

- The primary access road will be used for decommissioning activities and kept in place after the decommissioning to maintain access to the purchased property sites, which will be owned by Crane Storage and Sandhill Storage during and after Project operation unless and until the land is sold to another person or entity.

- Equipment and materials will be salvaged or recycled to the extent feasible and in coordination with licensed subcontractors, local waste haulers, and/or other facilities that recycle construction/demolition waste; the remaining materials will be disposed of by the contractor at authorized sites, in accordance with applicable laws. Reuse or recycling of materials will be prioritized over disposal. Batteries will most likely be shipped to recycling facilities. All waste requiring special disposal (e.g., transformers) will be handled

according to regulations that are in effect at the time of disposal. Additional battery recycling information is listed in the draft decommissioning plans in Appendix D.

During decommissioning, the Applicants will adhere to federal, state, and local requirements, including obtaining and adhering to applicable permits and authorizations.

4.6.4 Restoration/Reclamation of Facility

For both Projects, following removal of equipment, site restoration will be conducted such that the physical conditions of the area are returned to substantially the same condition that existed prior to development. These activities will include removal of gravel and other aggregate material, localized grading, and discing to match surrounding elevations, decompaction, replacement of topsoil from on-site stockpiles, and revegetation of disturbed areas in non-agricultural areas with an appropriate hydroseed mix.

4.6.5 Post-restoration Monitoring

Decommissioning of both Projects will comply with applicable regulations including the NPDES Permit, SPCC Plan, and SWPPP, if grading activities are necessary and exceed applicable permit thresholds. Decommissioning may include post-restoration monitoring as required by the NPDES Permit and SWPPP among other applicable requirements. In addition, the Applicants will each assign a Field Representative to monitor and coordinate decommissioning activities; each Field Representative will stay in contact with the landowners and conduct on-site check-ins until the NPDES Permit is closed.

5.0 AREA SELECTION AND CONSTRAINTS ANALYSIS

The Applicants researched several areas to find a suitable POI location and sites for development of the Crane and Sandhill Projects. The sites described herein were chosen based on several factors as described further throughout this section. For both Projects, locating open space where substations and transmission lines have capacity for the Crane Project and Sandhill Project to connect and supply energy narrowed down feasible sites.

The Applicants identified the SMMPA-owned Byron Substation as having available capacity and low interconnection costs. The Applicants then screened available land near the proposed POI to reduce the financial burden and physical impact of constructing a longer transmission line (i.e., construction cost, easement acquisition cost, electrical losses, and number of landowners directly impacted). Lands near the POI were determined potentially suitable if they were cleared and otherwise undeveloped; not currently encumbered by other easements (e.g., wind farms, pipelines); and contained minimal wetlands, streams, transmission lines, roads, or other obstacles that would limit the buildable land or lead to irregularly shaped development areas. The Applicants also screened the areas for geotechnical risks, habitat for endangered species, proximity to culturally sensitive areas, other potential environmental risks (e.g., pollutants, steep slopes, flood zones), current land use conflicts, and a clear and uncontested title. Following this screening, the Applicants approached landowners to negotiate voluntary Purchase Option Agreements and easements.

The final Crane and Sandhill Land Control Areas were chosen based on proximity to the POI, supportive landowners, and limited competition with other potential BESS projects. Map 6 depicts the potential development constraints surrounding the Crane and Sandhill Projects sites.

5.1 PROHIBITED AND EXCLUSION SITES

Minnesota Rules 7850.4400 subp. 1 prohibits large energy facilities (and pursuant to recent Minnesota legislation, energy storage systems) from being sited in several prohibited areas, including national parks; national historic sites and landmarks; national historic districts; national wildlife refuges; national monuments; national wild, scenic, and recreational riverways; state wild, scenic, and recreational rivers and their land use districts; state parks; nature conservancy preserves; state scientific and natural areas; and state and national wilderness areas. The Crane and Sandhill Projects' facilities are not located within any prohibited areas as discussed further in Section 6.0.

Additionally, Minnesota Rules 7850.4400 subp. 3 prohibits siting of large energy facilities (and pursuant to recent Minnesota legislation, energy storage systems) in several exclusion areas unless there is no feasible and prudent alternative. Exclusion areas include state registered historic sites, state historic districts, state Wildlife Management Areas (WMAs), county parks, metropolitan parks, designated state and federal recreational trails, designated trout streams, and state water trails (as identified in Minn. Stat. § 85.32). The Crane and Sandhill Projects' facilities are not located within any exclusion areas. An analysis of the Projects in relation to avoidance and exclusion areas or other sensitive environmental areas is provided below in Section 6.0.

5.2 FACTORS DRIVING CHOICE OF REGION

The region of Minnesota in which the Projects are located was selected after searching for regions in Minnesota that were suitable for an energy storage facility to further state and national goals of supplying reliable energy to the grid. Based on several factors—including existing and planned

renewable energy projects in region, environmental constraints, land availability, and costs—the Applicants identified the southeast region of the state for further exploration to develop an energy storage project.

Existing transmission interconnection feasibility was also a factor in determining the Projects' location. The existing 161-kV SMMPA-owned Byron Substation was identified as having capacity to allow interconnection of new facilities, and as such could serve as the POI for the Projects.

The Projects require sufficient acreage that is conducive to development with respect to the energy resources, topography, interconnection, and environmental constraints. The Projects will be located on land that is not expected to limit or constrain the development of a BESS and related infrastructure. These factors are described below and are specific to the Projects.

5.3 MITIGATION AND OFFSETTING BENEFITS

In addition to the minimization measures described throughout this Joint Application, the Projects include mitigation measures for public health and safety, agricultural land, and erosion control during construction. This is described further in Section 6.0.

5.4 ALTERNATIVE SITES CONSIDERED BUT REJECTED

In accordance with Minn. Stat. § 216E.04, energy storage projects qualify for the Alternative Review Process as described in Minn. R. 7850.2800 to 7850.3900. Under the Alternative Review Process, pursuant to Minn. R. 7850.3100, the Applicants are not required to analyze alternative sites for the Crane or Sandhill Projects. The Applicants selected the proposed Crane and Sandhill Land Control Areas based on proximity to the electrical grid and existing infrastructure (i.e., the Byron Substation), willing landowner participation, minimal environmental impacts, and available capacity on the electrical grid for interconnecting the Projects.

The Project initially identified and contracted for a site in the City of Byron Industrial Park as shown on Figure 5.4-1. Upon further diligence of this site, several issues were identified including insufficient land to meet the Projects' capacities, a challenging gen-tie line route to the POI, and title issues. Additionally, the City of Byron had new business opportunities on this land in the Industrial Park and therefore welcomed the Applicants to look for a new site location. Based on this, the Applicants looked for a new site location with more land closer to the POI to minimize the gen-tie line distance, which resulted in identifying and contracting for the proposed locations.

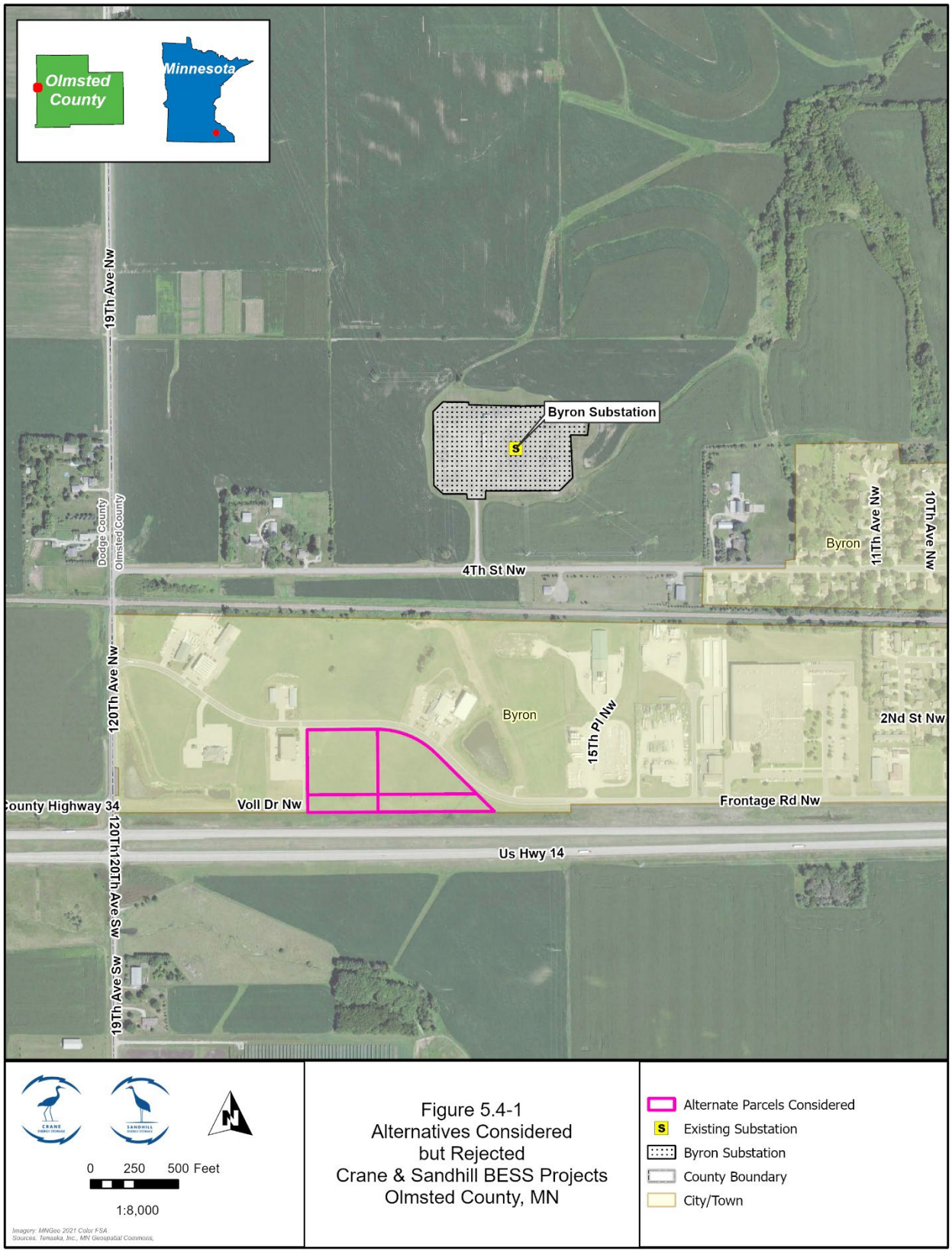


Figure 5.4-1
Alternatives Considered
but Rejected
Crane & Sandhill BESS Projects
Olmsted County, MN

6.0 ENVIRONMENTAL INFORMATION

The description of existing environment throughout Section 6.0 is centered around the approximately 36-acre Crane Land Control Area and the approximately 43-acre Sandhill Land Control Area, as shown on Map 1 of this Joint Application. The portions of the respective land control areas that would be used to construct and operate the BESS and supporting facilities are referred to as the Crane Preliminary Development Area and the Sandhill Preliminary Development Area. Detailed descriptions of each preliminary development area, including a breakdown of temporary and permanent impacts, are provided in Sections 2.1.1 and 2.2.1.

Although the Crane and Sandhill Projects are separate, individual facilities that require separate Site Permits from the Commission, the Projects would share a collector substation, an approximately 700-foot-long 161-kV gen-tie line, and a primary access road. These shared facilities are included in the description and analysis of human settlement and environmental impacts for each of the Crane Project and Sandhill Project throughout Section 6.0. Accordingly, impacts for these shared aspects of the two Projects are duplicative.

The Applicants analyzed potential impacts on human and environmental resources for the Crane and Sandhill Projects using impact assessment areas (IAAs). The IAA for each resource is the geographic area within which the Projects may exert some influence. These impact assessment areas vary with the resource being analyzed and the potential impact and are summarized in Table 6.0-1.

The following IAAs will be used:

- **Preliminary Development Areas**. The preliminary development areas include the temporary construction workspaces and the permanent facility footprints that would be required for the preliminary design of the Crane and Sandhill Projects as described in Sections 2.1.1 and 2.2.1, respectively. This is used as the IAA for displacement, geology and groundwater resources, soils, surface waters (including stormwater, floodplains, and wetlands), and vegetation.

- **One Mile**. A distance of one mile from the land control area for each Project is used as the IAA for analyzing potential impacts to aesthetics, recreation, archaeological and historic resources, wildlife and their habitats, and rare and unique natural resources.

- **3,200 Feet from the Land Control Area**. A distance of 3,200 feet from the land control area for each Project is used as the IAA for analyzing potential impacts related to noise.

- **Study Area**. Defined generally as the township and county where the Projects are located, the Study Area is used as the IAA for analyzing potential impacts to cultural values, environmental justice, public health and safety, public services and infrastructure, land use and zoning compatibility, socioeconomics, land-based economies, air quality, climate change, and greenhouse gas emissions. These are resources for which impacts may extend throughout communities surrounding the Crane and Sandhill Projects.

Table 6.0-1

Impact Assessment Areas

Impact Assessment Area	Specific Resource/Potential Impact to Resource
Preliminary Development Areas	Displacement, Geology and Groundwater Resources, Soils, Surface Waters (Including Stormwater, Floodplains, and Wetlands), and Vegetation
One Mile Buffers	Aesthetics, Recreation, Archaeological and Historic Resources, Wildlife and Their Habitats, and Rare and Unique Natural Resources
3,200-foot Buffers	Noise
Study Area	Cultural Values, Environmental Justice, Public Health and Safety, Public Services and Infrastructure, Land Use and Zoning Compatibility, Socioeconomics, Land-Based Economies, Air Quality, Climate Change and Greenhouse Gas Emissions

6.1 ENVIRONMENTAL SETTING

The Minnesota Department of Natural Resources (MDNR) and the U.S. Forest Service have developed an Ecological Classification System (ECS) for ecological mapping and landscape classification in Minnesota that is used to identify, describe, and map progressively smaller areas of land with increasingly uniform ecological features (MDNR, 2024a). Through the ECS, the State of Minnesota is split into Ecological Provinces, Sections, and Subsections. Both Projects are within the Eastern Broadleaf Forest Province (222), the Minnesota and NE Iowa Morainal Section (222M), and the Oak Savanna ecological subsection (222Me).

The topography in the Oak Savanna ecological subsection consists of gently rolling areas of loess plains over sandstone and carbonate bedrock or glacial till along Late Wisconsin end moraines, stagnation moraines, and outwash (MDNR, 2024b). A well-developed drainage network is present throughout, with stream valleys most prevalent in the eastern portion of the ecological subsection. Some lakes are present near moraines in the western portion of the ecological subsection, although few lakes are present in this area overall. Pre-settlement vegetation was dominated by oak savanna, with smaller areas of tallgrass prairie and maple-basswood forest located on the level to gently rolling areas of the landscape near the center of this ecological subsection. Agricultural production is currently the predominant land use in the Oak Savanna ecological subsection, although the pace of urban development has accelerated in the northern portion of this ecological subsection from expansion of the Minneapolis/St. Paul metropolitan area.

6.2 HUMAN SETTLEMENT

Both construction and operation of BESS facilities have the potential to impact human settlements. Public health and safety issues may occur during construction or operation related to injuries from falls, equipment use, and electrocution. The potential also exists for BESS facilities to displace homes or businesses, introduce new noise sources, affect the aesthetics and socioeconomics of the surrounding area, be incompatible with local land use and zoning, and impact the availability or use of public services (e.g., transportation). The Applicants reviewed publicly available data, as well as the results of field studies conducted for the Projects, to assess the potential for the Crane and Sandhill Projects to affect human settlements; detailed descriptions of this analysis are provided throughout Section 6.2.

The Crane and Sandhill Projects are in a rural area approximately 0.3 and 0.1 mile west of Byron, respectively. The Town of Kasson is about 2.8 miles west of the Crane Project and about 3.0 miles west of the Sandhill Project. The nearest metropolitan area is Rochester, which is about 6.0 miles west of the Projects. Multiple residences are present within the municipal boundary of Byron. Areas of rolling terrain intersected by drainages with thin strips of forested riparian areas separate the Land Control Areas from the residences in this location.

The area north and west of the Projects consists of actively cultivated fields and rural farmsteads located near public roadways. The Byron Substation is directly adjacent to the southern edge of the Land Control Area for both Projects, with existing transmission lines crossing the temporary construction workspace for the 161-kV gen-tie line that would connect the Crane and Sandhill Projects to the Byron Substation. The Projects are sited on relatively flat, upland areas that are conducive to BESS development. U.S. Highway 14 is about 0.3 miles south of the Byron Substation and an area of commercial/industrial development is located between the substation and the highway.

6.2.1 Aesthetics

The landscape within one mile of the Crane and Sandhill Land Control Areas consists of gently rolling agricultural fields intersected by natural swales to the north and west, the City of Byron to the east, and a commercial/industrial area to the south. A few scattered farmsteads are situated along public roads within one mile of the Crane and Sandhill Land Control Areas to the north, west, and southwest. Residential areas within the City of Byron are present to the east and southeast of the Crane and Sandhill Land Control Areas. Forested swales are present between the Crane and Sandhill Land Control Areas and the residential areas in Byron. No designated scenic byways or public lands managed for their scenic value are located within or within one mile of the Crane and Sandhill Land Control Areas.

Given the proximity of the Projects to the City of Byron, the existing built environment has shaped the area surrounding the Crane and Sandhill Land Control Areas. The Byron Substation (the POI for both Projects) is about 325 feet south of the Crane and Sandhill Land Control Areas and several existing transmission lines enter the substation from the southeast, south, northwest, and north. One of these existing transmission lines crosses the southwestern corner of the Crane Land Control Area. South of the Byron Substation, a commercial/industrial area is present between 4th Street NW and U.S. Highway 14; the Dakota, Minnesota, and Eastern Railroad is in this area, as well, and runs roughly parallel along the south side of 4th Street NW.

6.2.1.1 Impacts and Mitigation

Crane Project

Construction and operation of the Crane Project would represent a new vertical and horizontal element (i.e., Kalmar Township and Olmsted County) that would be visible to residences and passersby using public roadways. However, the BESS portion of the Crane Project is located more than 1,300 feet from the nearest residence or public roadway. Moreover, given the presence of several other industrial and commercial developments, including the Byron Substation and the existing transmission lines that connect to this substation, the presence of the Crane Project would be similar to much of the existing landscape. As such, visual impacts associated with the Crane Project would be moderate but not unlike other nearby developments; therefore, no mitigation measures specific to aesthetic impacts are proposed.

Sandhill Project

The BESS portion of the Sandhill Project is located more than 1,200 feet from the nearest residence and more than 1,300 feet from the nearest public roadways. Considering the proximity of the Sandhill Project to the Crane Project and the similarities in their respective designs, aesthetic impacts from construction and operation of the Sandhill Project would be the same as what is described for the Crane Project above. As such, no additional mitigation measures specific to the Sandhill Project are proposed.

6.2.2 Cultural Values

Cultural values include those perceived community attitudes or beliefs that provide a framework for community unity. The Projects are in Olmsted County, Minnesota and according to the U.S. Census Bureau (U.S. Census Bureau, 2022), the majority of the population in Olmsted County identifies as White only, not Hispanic or Latino with an ethnic background of European origin. Cultural representation in community events appears to be more closely tied to geographic features (such as Oxbow Park), seasonal events, national holidays, and municipal events than to ethnic heritage.

One example of a cultural event in the Study Area for the Projects is the City of Byron's Good Neighbor Days (City of Byron, 2024). Celebrated annually in July, Good Neighbor Days is a week-long celebration with food, fireworks, and family fun. Another example of cultural events occurring in the Study Area for the Projects is the regular events put on by Oxbow Park and Zollman Zoo, which are located about 2.9 miles north/northwest of the Crane and Sandhill Land Control Areas. These events often involve educational activities for children and families including deer and elk feedings, scavenger hunts, raptor feedings, and night hikes (City of Byron, 2024). These events are often free, and anyone is welcome to join.

6.2.2.1 Impacts and Mitigation

Crane Project

The Crane Project would not impact public participation in the regional community cultural events noted above because it is located about 0.4 mile west of the Byron municipal boundary and about 2.9 miles away from Oxbow Park and the Zollman Zoo. At this distance, no impacts on public participation in regional community cultural events are anticipated and no mitigation measures are proposed.

Sandhill Project

The Sandhill Project would not impact public participation in the regional community cultural events noted above, because it is located about 0.2 mile west of the Byron municipal boundary and about 2.9 miles away from Oxbow Park and the Zollman Zoo. At this distance, no impacts on public participation in regional community cultural events are anticipated and no mitigation measures are proposed.

6.2.3 Displacement

No residences, businesses, or structures are present within the Crane and Sandhill Land Control Areas. Two residences are within 250 feet on either side of the primary access road that would be shared by the Projects. These residences are on the south side of 13th Street NW. Another

residence is located on the north side of 13th Street NW and about 375 feet northeast of the intersection of the primary access road and 13th Street NW. Additional residences are present south of the Crane and Sandhill Land Control Areas, along the north side of 4th Street NW and within the western boundary of Bryon; residences in these areas are greater than 750 feet from the Crane and Sandhill Land Control Areas. Residences within 3,200 feet of the Crane and Sandhill Land Control Areas are depicted on Map 8.

The nearest commercial and industrial facilities to the Crane and Sandhill Land Control Areas are located about 0.1 mile south of the Byron Substation, between 4th Street NW and U.S. Highway 14.

6.2.3.1 Impacts and Mitigation

No residences, businesses, or structures are present within the Crane and Sandhill Land Control Areas. As such, development of the Crane and Sandhill Projects would not result in displacement and no mitigation measures are proposed.

6.2.4 Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income in decisions related to the development, implementation, and enforcement of environmental laws, regulations, and policies (MPCA, 2024a). The MPCA developed the Understanding Environmental Justice in Minnesota online screening tool to assist with identifying areas of concern for environmental justice (MPCA, 2024a). The online tool uses demographic and economic data from the U.S. Census Bureau at the census tract level to identify environmental justice communities.

Minn. Statutes § 216B.1691, Subd. 1(e) defines an environmental justice area in Minnesota:

> “(e)"Environmental justice area" means an area in Minnesota that, based on the most recent data published by the United States Census Bureau, meets one or more of the following criteria:
>
> (1) 40 percent or more of the area's total population is nonwhite;
>
> (2) 35 percent or more of households in the area have an income that is at or below 200 percent of the federal poverty level;
>
> (3) 40 percent or more of residents over the age of five have limited English proficiency; or
>
> (4) the area is located within Indian country, as defined in United State Code, title 18, section 1151.”

Data used in the MPCA’s online tool is from the U.S. Census Bureau’s 2018-2022 American Community Survey 5-year estimates (MPCA, 2024a). The Crane and Sandhill Projects are within Census Tract 18 in Olmsted County. Table 6.2.4-1 presents the data from the MPCA’s online tool for Census Tract 18. This information is also depicted on Figure 6.2.4-1.

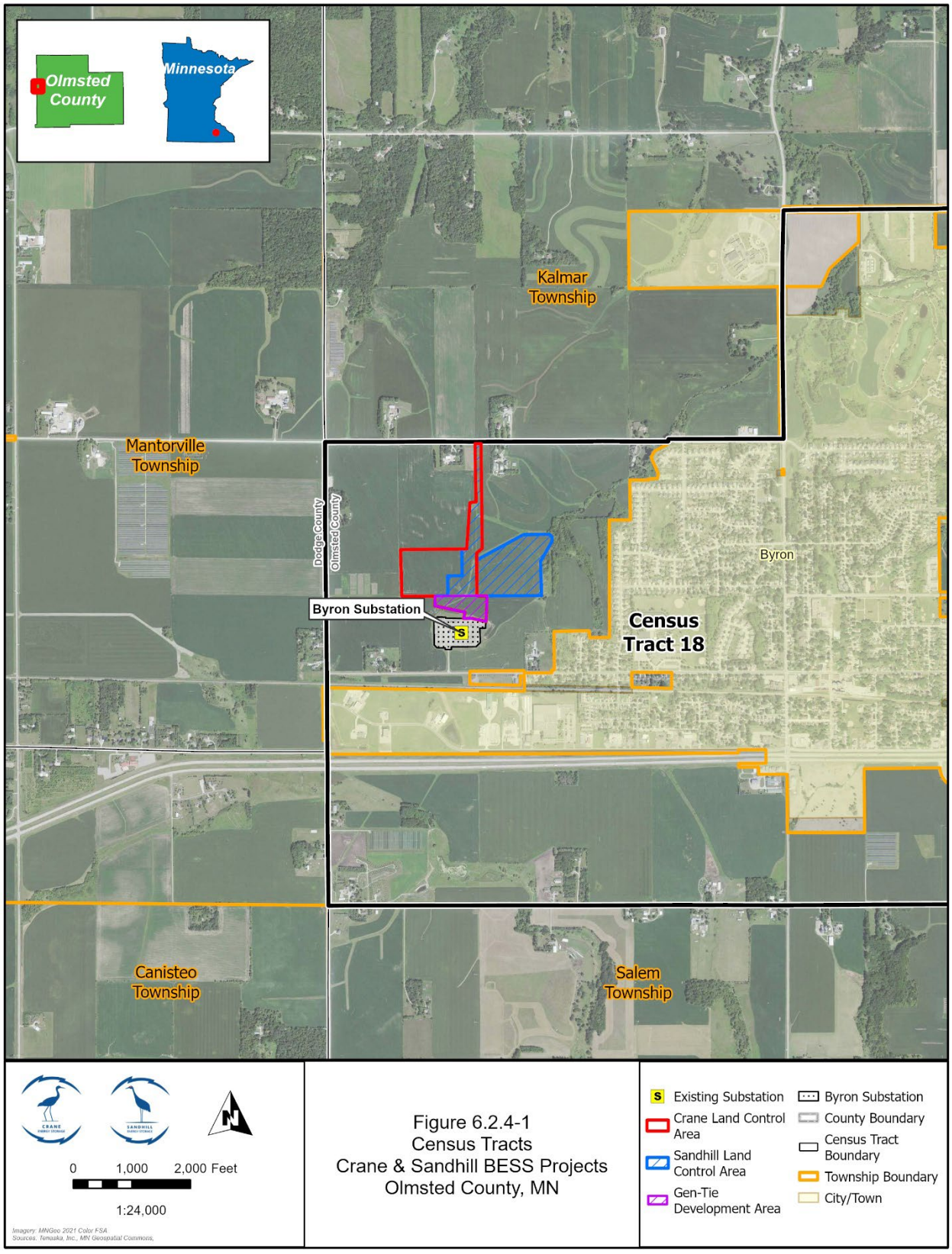

Olmsted County
Minnesota
Kalmar Township
Mantorville Township
Dodge County
Olmsted County
Byron
Byron Substation
S
Census Tract 18
Canisteo Township
Salem Township
0 1,000 2,000 Feet
1:24,000
Imagery: MNGeo 2021 Color FSA
Sources: Tomaska, Inc., MN Geospatial Commons
Figure 6.2.4-1
Census Tracts
Crane & Sandhill BESS Projects
Olmsted County, MN
Existing Substation
Crane Land Control Area
Sandhill Land Control Area
Gen-Tie Development Area
Byron Substation
County Boundary
Census Tract Boundary
Township Boundary
City/Town

Table 6.2.4-1

Environmental Justice Review of the Crane and Sandhill Study Areas[1]

County / Census Tract	Minn. Statutes § 216B.1691, Subd. 1(e) Criteria			
	Percent Non-white Population	Percent of Households with Income Equal to or Below 200 Percent of Poverty Level	Percent of Residents with Limited English Proficiency	Within Indian Country?
Olmsted County				
Census Tract 18	10.3%	11.4%	0.6%	No
Source: MPCA, 2024a				

The Projects are not located within Indian Country as defined in United State Code, title 18, section 1151. Furthermore, review of the MPCA's online tool indicates that there are no areas of environmental justice concern within the Crane and Sandhill Land Control Areas (MPCA, 2024a).

6.2.4.1 Impacts and Mitigation

Crane Project

No environmental justice areas are present within the Crane Land Control Area based on review of the MPCA's Understanding Environmental Justice in Minnesota online screening tool. Because the Crane Project would not impact environmental justice communities, no mitigation measures specific to these communities are proposed.

Sandhill Project

No environmental justice areas are present within the Sandhill Land Control Area based on review of the MPCA's Understanding Environmental Justice in Minnesota online screening tool. Because the Sandhill Project would not impact environmental justice communities, no mitigation measures specific to these communities are proposed.

6.2.5 Public Health and Safety

The Projects are in rural Kalmar Township which, according to the U.S. Census Bureau, has a total area of 32.5 square miles and a population of 1,117 persons (U.S. Census Bureau, 2020). If emergency personnel were needed for the Crane or Sandhill Projects, multiple agencies would likely respond, depending on the situation. These include the Olmsted County Sheriff, Byron Fire Department, Olmsted Medical Center, and Mayo Clinic Ambulances, all of which are located approximately 2 to 12 miles southeast of the Projects.

There are five towers that are a part of the Allied Radio Matrix for Emergency Response (ARMER) in Olmsted County (The RadioReference Wiki, 2024). These ARMER towers are a part of Minnesota's Statewide Communication Interoperability Plan, which aims to improve communication for emergency responders. The ARMER radio system operates by line of sight, talking to other ARMER towers. In order for the system to operate effectively, multiple towers are needed to produce a solid blanket of coverage. The system can be interrupted if tall objects are proposed within the line-of-sight, typically at or near the top of a tower over 150 feet tall. There

are no ARMER towers within one mile of the Crane and Sandhill Projects; the nearest ARMER tower is located east of Rochester which is approximately 19 miles east of the Crane and Sandhill Land Control Areas (The RadioReference Wiki, 2024).

6.2.5.1 Impacts and Mitigation

Crane Project

Construction and operation of the Crane Project is not anticipated to affect the security and safety of the local populace. Before construction begins, a location and technology-specific HMA will be shared with local first responders. This analysis will include detailed information about the BESS technology and any potential emissions that can be expected if a failure occurs on-site. Using the HMA as a reference, the Crane Project will provide local first responders an ERP and subsequent review of the same to ensure respondents to any incident understand and follow the agreed upon ERP. A typical ERP includes the following components:

- Contact Info (including emergency response coordinator)
- Preparation and Planning (including alarm response)
- Hazard / Safety Precautions
- Emergency Procedures
- Firefighting
- Emergency Shutdown
- Maintenance (including alarm inspection)
- Decommissioning

Crane Storage is committed to using Tier 1 battery energy storage products which are preferentially differentiated from other products based on the experience and financial wherewithal of the vendor and product quality. The Crane Project will be designed and operated in accordance with the NFPA 855 Standard on the Installation of Energy Storage Systems as well as other applicable industry codes and standards. NFPA 855 is considered the gold-standard for battery energy storage fire safety and includes requirements for the design, construction, installation, commissioning, operation, maintenance, and decommissioning of stationary energy storage systems.

Additionally, installation of the Crane Project facilities will comply with standard construction practices. Established industry safety procedures will be followed during and after construction of the Crane Project; these include clear signage during all construction activities and fencing the BESS facility and collector substation to prevent public access.

Given the distance between the nearest ARMER tower in Rochester (i.e., 19 miles), and the fact that the Crane Project facilities are proposed to be well below the typical height of a tower and line-of-sight near the top of these towers (i.e., greater than 150 feet above ground), the Crane Project is not anticipated to impact the ARMER communication system. Crane Storage anticipates the tallest BESS facilities and gen-tie line structures to be approximately 75 feet and up to 95 feet above ground, respectively. As such, no mitigation measures specific to ARMER towers are proposed.

Sandhill Project

Due to the proximity of the Crane and Sandhill Projects and the similarities in their proposed preliminary designs, the discussion of potential impacts on public health and safety and the proposed mitigation measures provided for the Crane Project also apply to the Sandhill Project. No impacts on the availability of emergency services or the existing ARMER communication system are anticipated from the Sandhill Project and no mitigation measures specific to public health and safety are proposed.

6.2.6 Electromagnetic Field and Stray Voltage

The term electromagnetic field (EMF) refers to electric and magnetic fields that are present around any electrical device. Electric fields arise from the voltage or electrical charges and magnetic fields arise from the flow of electricity or current that travels along transmission lines, power collection lines, substation transformers, house wiring, and electrical appliances. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors. EMF can occur indoors and outdoors. The general consensus is that electric fields pose no health risk to humans (Ministry of Health, New Zealand, 2013).

For the Crane and Sandhill Projects, the sources of EMF will be electrical collection lines, the gen-tie line, and the transformers installed in the collector substation. EMF from electrical collection lines, transmission lines, and transformers dissipates rapidly with distance from the source (National Institute of Environmental Health Sciences [NIEHS], 2002). Generally speaking, higher voltage electrical lines produce higher levels of EMF at the source before dissipating with distance. The internationally accepted guideline for the general public exposed to electric fields is 4.2 kilovolt per meter (kV/m) and 833 milliGauss (mG) for magnetic fields (NIEHS, 2002).

Stray voltage is also often a concern in agricultural areas, particularly on dairy farms. Stray voltage is an unintended transfer of electricity between two grounded objects and is typically caused by improperly grounded electrical equipment in farm buildings or by a faulty utility connection.

6.2.6.1 Impacts and Mitigation

Crane Project

EMF levels were not modeled for the electrical collection lines, 161-kV gen-tie line, or the transformers. However, several studies have documented EMF exposure of various high voltage transmission lines. The NIEHS provides typical EMF levels for power transmission lines (NIEHS, 2002). The Project's gen-tie line voltage of 161-kV is not directly studied in the report; however, higher voltage generally correlates with higher power, current, and EMF. Accordingly, Crane Storage reviewed documented EMF for the next highest voltage studied, 230-kV. For 230-kV transmission lines, electric fields directly below the transmission line were reported at 2.0 kV/m before dissipating to 1.5 kV/m at 50 feet (approximate edge of right-of-way). Similarly, average magnetic fields directly below the 230-kV transmission line were reported at 57.5 mG before dissipating to 19.5 mG at 50 feet (NIEHS, 2002). A Canadian study of collection lines at a wind facility measured EMF of the project's 27.5-kV collection lines, a similar voltage to the electrical collection lines proposed for the Crane Project. This study found magnetic fields associated with buried electrical collection lines to be within background levels at 1 meter above ground (McCallum et al., 2014). As demonstrated here, both electric and magnetic fields will be well

below the international guidelines of 4.2 kV/m and 833 mG, respectively. Many of the concerns around EMF waves are more applicable to electrical applications with frequencies much higher than 60 hertz. Additionally, since the transformers are enclosed in a grounded metal case (shielded), they typically emit low levels of EMF.

All electrical components in the Crane Project, including inverters and transformers, will be grounded in accordance with NESC. Soil resistivity measurements will be taken on site as part of the Crane Project's geotechnical analysis, and that data will be used to help design grounding systems. For these reasons, the potential for stray voltage as a result of the Crane Project will be negligible. Should a fault occur during operation of the Crane Project, it would be quickly identified by monitoring systems and corrected.

The nearest residence is 1,402 feet from the Crane Project BESS units, 1,230 feet from the gen-tie line, and 1,615 feet from the transformer in the collector substation (refer to Map 8). At this distance, any electric and magnetic fields generated by the Crane Project facilities would have dissipated to background levels before reaching this residence. As such, impacts are anticipated to be negligible and no mitigation measures specific to EMF are proposed.

Sandhill Project

Due to the proximity of the Crane and Sandhill Projects and the similarities in their proposed preliminary designs, the discussion of potential impacts related to EMF and stray voltage also apply to the Sandhill Project. The nearest residence is 1,274 feet from the Sandhill Project BESS units, 1,230 feet from the gen-tie line, and 1,615 feet from the transformer in the collector substation (refer to Map 8). At this distance, any electric and magnetic fields generated by the Sandhill Project facilities would have dissipated to background levels before reaching this residence. As such, impacts are anticipated to be negligible and no mitigation measures specific to EMF are proposed.

6.2.7 Noise

Noise, also referred to sound pressure level, is measured in units of decibels (dB) on a logarithmic scale. Because human hearing is not equally sensitive to all frequencies of sound, certain frequencies are given more "weight." The A-weighted decibel scale (dBA) is used to reflect the selective sensitivity of human hearing. This scale puts more weight on the range of frequencies that the average human ear perceives and less weight on those that we do not hear as well, such as very high and very low frequencies. Common sound sources within an agricultural and/or rural environment include, but are not limited to, sound from farm equipment such as tractors and combines, sound generated from traffic on roadways, sounds from birds, and wind rustling through the vegetation. According to American National Standards Institute / Acoustical Society of America S12.9-2013/Part 3 (2013), rural residential areas have a typical daytime noise level of 40 dBA and a typical nighttime noise level of 34 dBA.

Background noise in the vicinity of the Crane and Sandhill Projects is typically generated as a result of farming equipment/operations, wind, and passenger vehicles. A comparison of typical noise-generating sources is outlined below in Table 6.2.7-1.

Table 6.2.7-1

Common Noise Sources

Sound Pressure Level (dBA)	Common Noise Source
110	Rock Band
110	Car horn at 3 feet
105	Inside subway train
95	Gas lawnmower at 3 feet
85	Garbage disposal or shouting at 3 feet
80	Noisy urban
78	Vacuum cleaner at 10 feet
73	Busy highway at 50 feet
68	Normal speech at 3 feet
65	Commercial area
58	Quiet urban
45	Quiet rural
29	Bedroom at night
12	Threshold of hearing

Source: Federal Aviation Administration, 2022

The MPCA has the authority to adopt noise standards pursuant to Minnesota Statute Section 116.07, subd. 2. The adopted standards are set forth in Minn. R. Chapter 7030. The MPCA standards require A-weighted noise measurements. Different standards are specified for daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) hours. The noise standards specify the maximum allowable noise volumes that may not be exceeded for more than 10 percent of any hour (L_{10}) and 50 percent of any hour (L_{50}). Household units, including farmhouses, are included in Noise Area Classification 1. Table 6.2.7-2 shows the MPCA state noise standards.

Table 6.2.7-2

MPCA State Noise Standards - Hourly A-Weighted Decibels

	Daytime (7:00 a.m. – 10:00 p.m.)		Nighttime (10:00 p.m. – 10:00 a.m.)	
Noise Area Classification	L_{10}	L_{50}	L_{10}	L_{50}
1 – Residential	65	60	55	50
2 – Commercial	70	65	70	65
3 – Industrial	80	75	80	75

Source: Minn. R. § 7030.0040

Receptors nearest the Crane and Sandhill Projects consist of residential homes and Byron Middle School. These receptors are all located in residential areas and so are held to the Noise Area Classification 1 limits shown in Table 6.2.7-2. The MPCA provides guidance on noise propagation and attenuation in its manual “A Guide to Noise Control in Minnesota” (MPCA, 2015). This guidance states that over distance, sound attenuates, or is reduced in amplitude, and is perceived as becoming quieter. This occurs as the sound travels outward to an increasingly larger sphere or cylinder, and the energy per unit of area decreases. When the distance from a point source is doubled, the sound level decreases by 6 dBA. Similarly, when the sound energy doubles, such

as having two sources of 50 dBA instead of one source of 50 dBA, the sound level increases by approximately 3 dBA. The human ear can usually tell the difference when sound changes by 3 dBA, and a 5 dBA change is clearly noticeable.

The Applicants identified receptors within 3,200 feet of the Crane and Sandhill Land Control Areas and have summarized the proximity of these receptors to the Crane and Sandhill Land Control Areas in Table 6.2.7-3.

Table 6.2.7-3

Proximity of Receptors within 3,200 feet of the Crane and Sandhill Land Control Areas

Distance From Site to Receptors (Feet)	Crane Land Control Area (number)	Sandhill Land Control Area (number)
< 400	2	2
400 -800	1	1
800-1,600	14	102
1,600 - 3,200	226	346

During construction, construction vehicles and equipment will emit intermittent noise. Construction noise impacts will be temporary and the amount of noise will vary based on what type of construction is occurring at the Crane Project and Sandhill Project on a given day and the distance from the receptor to the noise source. Table 6.2.7-4 below shows the typical sound pressure levels in dBA at 50 feet for various construction equipment (U.S. Department of Transportation Federal Highway Administration, 2017).

Table 6.2.7-4

Typical Sound Pressure Levels from Construction Equipment

Equipment	Maximum Sound Pressure Level 50 feet (dBA)
Backhoe	80
Compactor	82
Concrete Mixer	85
Dozer	85
Generator	81
Grader	85
Loader	85
Pile Driver (Impact)	101
Truck	88
Source: U.S. Department of Transportation Federal Highway Administration, 2017	

6.2.7.1 Impacts and Mitigation

Crane Storage and Sandhill Storage engaged Burns and McDonnell to prepare a noise study for the Projects. The Noise Study considers the anticipated operational noise for the case where both projects are operating simultaneously. A copy of the study is provided in Appendix E.

A BESS operates in a manner that would not significantly fluctuate in sound level throughout operation. Project-generated L_{50} and L_{10} sound levels are expected to be very similar. Therefore,

the design goal for the Projects is to limit sound levels to not exceed 50 dBA L_{50} at the nearest residential properties and 75 dBA L_{50} at the respective property lines. Provided the Projects meet the L_{50} limit, the L_{10} limit would also be satisfied due to the Projects operating at a steady-state sound level.

At this time, the Applicants are contemplating use of the Sungrow PowerTitan 2.0 for the BESS purpose-built enclosures. If the battery technology is changed before construction, this analysis will be updated. The data used for the noise study relies heavily on vendor information from Sungrow; thus, any change to the manufacturer will require changing the inputs to this study. For the purposes of this analysis, both Projects were modelled together to determine the potential worst case scenario noise impacts on receptors. If modelled noise results at receptors meets regulatory requirements with both projects modelled together then each project, individually, would also meet regulatory noise requirements.

Results

During construction of the Crane and Sandhill Projects, noise will be emitted by the construction vehicles and equipment. The amount of noise will vary based on what type of construction is occurring on a given day. Noise associated with construction will likely be perceptible at adjacent residences (refer to Table 6.2.7-3 for distances to receptors). Construction work for both Projects is proposed to take place during daylight hours from 7:00 a.m. to 7:00 p.m. Work will not extend into non-daylight hours nor be conducted under night lighting. Additionally, the Crane and Sandhill Projects will use construction equipment and vehicles with properly functioning mufflers and noise-control devices.

Noise associated with construction activities is expected to be short-term and will vary depending on the phase of construction in progress at any one time. Construction activities will be performed with standard heavy construction equipment. Construction equipment noise levels will typically be less than 85 dBA at 50 feet when equipment is operating. People at nearby residences and buildings may be able to hear construction noise, but the overall impact will be short term and limited to daytime hours only.

The main sources of noise from the Crane and Sandhill Projects during operation will be from the medium voltage transformers, the transformer in the collector substation, and the cooling system in the BESS units. These facilities generate noise during active system operation and Table 6.2.7-5 summarizes the results for the nearest receptors to the projects.

Table 6.2.7-5

Anticipated Operational Noise Levels

Unit	Modeled Sound Level (dBA)	State of Minnesota Nighttime Limits (L_{50} dBA)
Nearest Industrial Receptor	55	75
Nearest Residential Receptor	47	50

Worst-case equipment sound levels were used in the sound modelling. These modeled sound levels represent the maximum operating noise for 24/7 operation. Based on the model results, it is anticipated that the operational noise associated with each Project will not exceed the required limits at noise receptors when operating simultaneously during daytime and nighttime hours. For the cases where the projects run on their own, we can infer that they meet these levels as well

because the noise generated by both projects combined will be greater than the noise generated by each project independently.

6.2.8 Public Services and Infrastructure

6.2.8.1 Public Services

Public services are those typically provided by a government entity to its citizens and those services are used to benefit public health and safety. These services can include emergency services, potable water, sanitary systems, and utilities. Most rural residences in Olmsted County are supplied water by wells or by water towers (refer to Section 6.2.8.4). Sewage is serviced by a municipal wastewater treatment plant (City of Bryon, n.d.). Approximately seven telephone service providers and ten broadband providers operate in Olmsted County (Minnesota DOC, 2024; Minnesota Department of Employment and Economic Development [MN DEED], 2023).

6.2.8.2 Transportation

The major roadway nearest the Crane and Sandhill Land Control Areas is U.S. Highway 14, which is approximately 0.5 miles to the south. With the exception of U.S. Highway 14, roads that surround the Crane and Sandhill Land Control Areas are local county or township roads. Access to the Crane and Sandhill Land Control Areas would be from 13th Street NW. Annual Average Daily Traffic (AADT) counts based on Minnesota Department of Transportation's (MnDOT's) Traffic Mapping Application are provided in Table 6.2.8-1 (MnDOT, 2023a).

Table 6.2.8-1

Annual Average Daily Traffic in the Study Area

Roadway	Year	AADT Traffic Volume Total
U.S. Highway 14 (south)	2023	16,955
4th St NW (south)	2018	2,300
280th Ave (west)	2022	733
9th Ave NW (southeast)	2018	600
2nd Ave NW (east)	2018	4,050
7th St NW (east)	2018	860
Frontage Rd NW (south)	2023	1,678
Source: MnDOT, 2023a		

No railroads are located within the Crane or Sandhill Land Control Areas. The Dakota, Minnesota, and Eastern Railroad is approximately 0.3 miles south of the Crane and Sandhill Land Control Areas and generally runs from east to west (MnDOT, 2024).

The nearest Federal Aviation Administration (FAA)-registered airport to the Crane and Sandhill Projects is the Dodge Center Airport located approximately 8 miles west of the Crane and Sandhill Land Control Areas. This airport operates one paved runway and one turf runway (AirNav, 2024).

6.2.8.3 Emergency Services

If emergency personnel were needed for the Crane or Sandhill Projects, multiple agencies would likely respond, depending on the situation. These include the Olmsted County Sheriff, Byron Fire Department, Olmsted Medical Center, and Mayo Clinic Ambulances, all of which are approximately 2 to 12 miles southeast of the Crane and Sandhill Land Control Areas.

6.2.8.4 Local Utilities

The City of Byron is supplied with water by two wells and two water towers. Sewage is serviced by a municipal wastewater treatment plant (City of Byron, n.d.). No wells or septic fields are present within the Crane and Sandhill Land Control Areas based on review of Minnesota Department of Health (MDH) records (MDH, 2024a).

6.2.8.5 Regional Utilities

The Applicants searched the National Pipeline Mapping System (NPMS) to assess whether pipelines are present within or adjacent to the Crane and Sandhill Land Control Areas. NPMS pipeline data consists of gas transmission pipelines and hazardous liquid pipelines jurisdictional to the Pipeline and Hazardous Materials Safety Administration. There is one gas transmission pipeline that intersects the primary access road that will be shared by the Crane and Sandhill Projects and generally runs from east to west. One hazardous liquid pipeline is mapped approximately 3.6 miles east of the Project and generally runs north to south (NPMS, 2024).

Two existing transmission lines intersect the Crane and Sandhill Land Control Areas just north of the Byron Substation and four transmission lines are mapped within one mile of the Crane and Sandhill Projects. All of these existing transmission lines connect to the Byron Substation just south of the Crane and Sandhill Land Control Areas.

6.2.8.6 Public Communications

Landline telephone service in the Study Area is provided to farmsteads, rural residences and business by Citizens Telecom Company of Minnesota, Frontier Citizens Communications of Minnesota, Kasson & Mantorville Telephone Company, and Qwest Corporation (Minnesota DOC, 2024). Cellular services in the Study Area are provided by many carriers including T-Mobile, Verizon Wireless, and AT&T Mobility. Cable service providers include Hiawatha Broadband Communications, Mediacom, and Spectrum. Other services that are operating in Olmsted County, including fixed wireless, satellite, DSL, and fiber, include CenturyLink, Consolidated Communications, HughesNet, KM Telecom, LTD Broadband, MiBroadband, Minnesota WiFi, Radio Link Internet, Starlink, and Tekstar Communications (MN DEED, 2023).

Based on data from the MN DEED, the majority of the Kalmar Township is identified as an Unserved Area (no wireline broadband of at least 25 megabytes per second (Mbps) download and 3 Mbps upload). However, a majority of the town of Bryon is identified as a Served Area (wireline broadband of at least 100 Mbps upload and 20 Mbps download) (MN DEED, 2023).

6.2.8.7 Emergency Communications

Five towers are part of ARMER in Olmsted County. These ARMER towers are a part of Minnesota's Statewide Communication Interoperability Plan, which aims to improve communication for emergency responders. The ARMER radio system operates by line of sight,

talking to other ARMER towers. In order for the system to operate effectively, multiple towers are needed to produce a solid blanket of coverage. The system can be interrupted if tall objects are proposed within the line-of-sight, typically at or near the top of a tower over 150 feet tall. No ARMER towers are within one mile of the Crane and Sandhill Projects; the nearest ARMER tower is located east of Rochester and is approximately 19 miles east of the Crane and Sandhill Land Control Areas (The RadioReference Wiki, 2024).

6.2.8.8 Impacts and Mitigation Measures

Crane Project

Transportation

Access to the Crane Project will be via existing county and township roads. No changes or improvements to existing roadways in the Study Area are anticipated. Access to the Crane Project will be from 13th Street NW as shown on Map 9. During the construction phase, temporary traffic impacts are anticipated on some public roads within the Study Area, primarily from additional traffic and slow-moving construction vehicles.

Construction traffic will use the existing county roadway system to access the Crane Project site and deliver construction materials and personnel. Traffic during construction is estimated to be approximately 31 to 70 pickup trucks, cars, and/or other types of employee vehicles onsite for the majority of construction. It is estimated that approximately eight semi-trucks per day will be used for delivery of facility components. Semi-truck delivery will vary per day depending on time of construction and delivery timeline of equipment. Overweight or oversized loads are unlikely. If they are required, Crane Storage will obtain the appropriate approvals prior to construction. For purposes of comparison, the functional capacity of a two-lane paved rural highway is in excess of 5,000 vehicles per day (AADT). Since the area roadways have AADTs that are well below capacity, this increased traffic may be perceptible to area residents, but the slight increase in volume is not expected to affect traffic function. Slow-moving construction vehicles may also cause delays on smaller roads, similar to the impact of farm equipment during planting or harvest. However, these delays should be minimal for the relatively short construction delivery period. Crane Storage will work with Olmsted County and Kalmar Township to discuss haul roads and the care and maintenance of roads during construction.

After construction is complete, traffic impacts during the operations phase of the Crane Project will be negligible. A small maintenance crew will drive through the area in pickup trucks on a monthly basis following the O&M schedule discussed in Section 4.5.1, but traffic function will not be impacted as a result.

Crane Storage used the FAA Notice Criteria Tool to determine the need for filing 7460-1 Notice of Proposed Construction forms (refer to Appendix B). The results indicated the Crane Project does not exceed the Notice Criteria. As such, Crane Project facilities will not exceed obstruction standards and would not be a hazard to air navigation. No mitigation measures are anticipated or proposed for air traffic.

Emergency Services

Construction and operation of the Crane Project will have minimal impacts on the security and safety of the local populace. Before construction begins, a location and technology-specific HMA will be shared with local first responders. This analysis will include detailed information about the

BESS technology and any potential emissions that can be expected if a failure occurs on-site. Using the HMA as a reference, Crane Storage will provide local first responders an ERP and subsequent review of the same to ensure respondents to any incident understand and follow the agreed upon ERP.

Local Utilities

Crane Storage will coordinate with Gopher State One Call before and during construction to fully understand infrastructure locations and safety concerns and to avoid possible structural conflicts. Crane Storage will also conduct an American Land Title Association survey to identify the locations of underground utilities. Final design will minimize and avoid impacts to underground utilities; if conflicts are unavoidable, Crane Storage will coordinate with the utility to develop an approach to reroute or otherwise protect the utility. Underground utilities will be marked prior to construction start.

Regional Utilities

As described in Section 2.1, the Crane Project will interconnect into the existing Byron Substation via an approximately 700-foot 161-kV gen-tie line. Crane Storage will coordinate with the owners of existing transmission lines to avoid impacting these facilities and ensure interruptions in service are minimized or avoided to the extent practicable. During interconnection of the Crane Project, customers may experience short outages when the Byron Substation is shut down. The timing and duration of any service interruptions would be determined and communicated by the interconnecting utility.

Public Communications

Crane Storage does not anticipate any impacts to existing utilities, such as public communications. If cell tower signal or broadband interference is identified during or after construction of the Crane Project, Crane Storage will address the interference on a case-by-case basis. Crane Storage does not propose mitigative measures at this time, as no impacts are anticipated.

Emergency Communications

As discussed in Section 6.2.5, the nearest ARMER tower to the Crane Project is over 19 miles to the east of Rochester. The Crane Project will not impact this communication system as Crane Project facilities are proposed well below the typical height of a tower and line-of-sight near the top of these towers (i.e., greater than 150 feet above ground). Crane Storage anticipates the tallest BESS facilities and gen-tie line structures to be approximately 75 feet and up to 95 feet above ground, respectively. As such, no mitigation is proposed.

Sandhill Project

Given its proximity to the Crane Project, impacts from construction and operation of the Sandhill Project are anticipated to be the same as those described for the Crane Project. Impacts on the safety of the local populace, transportation, local utilities, and regional utilities are expected to be minimal and impacts on public and emergency communications are not anticipated. If impacts are identified, they will be addressed on a case-by-case basis. Where needed, Sandhill Storage would adopt the same mitigation measures described for the Crane Project; no additional mitigation measures specific to the Sandhill Project are proposed.

6.2.9 Land Use and Zoning

6.2.9.1 Land Use

The Applicants reviewed information available from the U.S. Geological Survey (USGS) National Land Cover Database (NLCD) to characterize the existing land uses and cover within the Crane and Sandhill Land Control Areas (Dewitz and USGS, 2021). The Projects are in rural Olmsted County and the primary land use in both land control areas is agricultural, as shown in Table 6.2.9-1 and on Map 10.

Table 6.2.9-1

Land Use Within the Crane and Sandhill Land Control Areas

Land Use Type	Crane Land Control Area	Sandhill Land Control Area
Agricultural Land	36.0 acres / 99.3%	42.2 acres / 99.0%
Developed	0.3 acre / 0.7%	0.3 acre / 0.6%
Woody Wetlands	--	0.2 acre / 0.4%
Total	**36.3 / 100%**	**42.7 / 100%**

Source: Dewitz and USGS, 2021
Note: A double dash indicates this land use/cover type is not present.
The total acres may be off by up to 0.1 acre due to rounding.

Agricultural land in the Crane and Sandhill Land Control Areas is used for row crop agricultural production. Developed land in the Crane and Sandhill Land Control Areas is located where the gen-tie line overlaps with the existing footprint of the Byron Substation. Woody wetland areas are located along the eastern margin of the Sandhill Land Control Area; no woody wetland areas are within the Crane Land Control Area.

6.2.9.2 Zoning

Energy storage systems are subject to Minnesota's Power Plant Siting Act (Minn. Stat. § 216E). As such, and pursuant to Minn. Stat. § 216E.10, subd. 1, site permits issued by the Commission, "shall be the sole site or route approval required to be obtained by the utility. Such permit shall supersede and preempt all zoning, building or land use rules, regulations or ordinances promulgated by regional, county, local and special purpose government." Therefore, the Applicants are not required to apply to county zoning authorities for additional building or land use permits or approvals for the Projects. However, zoning information is discussed here to provide information on how the Crane and Sandhill Projects may impact existing land uses and future development in Kalmar Township and Olmsted County.

The Applicants reviewed the Kalmar Township zoning ordinance (Kalmar Township, 2018) to identify zoning requirements that could be applied to the Projects. Kalmar Township does not have zoning requirements specific to energy storage systems. The Crane and Sandhill Projects are sited in the Agricultural Protection District (A-2) according to Kalmar Township zoning information on the Olmsted County public GIS site (Olmsted County, 2024). According to the Kalmar Township Zoning Ordinance (2018), public utility buildings are conditionally permitted in the Agricultural Protection District (A-2). Zoning information for Kalmar Township is shown on Map 11.

The Applicants also reviewed the Olmsted County General Land Use Plan (GLUP) (Olmsted County, 2022). The GLUP was developed to promote orderly development patterns throughout the areas in Olmsted County's jurisdiction that protect the environment, conserve resources, and provide for the needs of the community. The GLUP also helps to define the county's goals for sustainable growth and orderly development of utilities and infrastructure, including renewable energy generation projects (e.g., wind and solar).

Given the proximity of the Projects to the municipal boundary of Byron, the Applicants also reviewed the Byron Comprehensive Plan (City of Byron, 2022) to understand the town's plans for future growth. According to the Byron Comprehensive Plan, the area where the Projects are sited is in the 25-year Growth Boundary. Future growth and expansion of the Byron municipal boundary in the 25-year Growth Boundary is largely the focus of the Byron Comprehensive Plan. The plan notes that past growth has largely followed a northerly expansion pattern, whereas future growth is more likely to happen in areas to the west, east, and south of the existing municipal boundary. The anticipated pattern of future growth is tied to recent improvements to the U.S. Highway 14 interchange, including construction of a lift station on the south side of U.S. Highway 14 in 2022. The City of Byron anticipates these highway improvements and related development will spur additional growth and expansion of commercial/industrial facilities and established the 25-year Growth Areas to facilitate planning for such growth.

6.2.9.3 Impacts and Mitigation Measures

Crane Project

A breakdown of the NLCD land use/cover types within the Crane Preliminary Development Area is presented in Table 6.2.9-2. As shown in Table 6.2.9-2, more than 99 percent (35.3 acres) of the Crane Preliminary Development Area consists of agricultural land and less than one percent (0.3 acre) consists of developed land.

Table 6.2.9-2

NLCD Land Use/Cover Within the Crane Preliminary Development Area

Land Use/Cover Type	Total in Crane Preliminary Development Area (acres / percent)	Conversion to Impervious Surfaces (acres)	Conversion to Perennial Vegetation (acres)	Restored to Previous Use (acres)
Agricultural Land	35.3 / 99.3	11.3	12.2	11.8
Developed	0.3 / 0.7	0.0	0.0	0.3
Total	**35.6 / 100**	**11.3**	**12.2**	**12.1**

Source: Dewitz and USGS, 2021
Note: A double dash indicates this land use/cover type would not be impacted.
The total acres may be off by up to 0.1 acre due to rounding.

Of the 35.6 acres that would be used to construct the Crane Project, about 11.3 acres of agricultural land would be permanently converted to impervious surfaces (e.g., gravel or asphalt) to host BESS facilities. This includes all BESS facility components within the fenceline (i.e., BESS units, access roads within the fenceline, on-site maintenance area, parking lot, trash enclosure), the collector substation, and the primary access road. The 1.3-acre stormwater basin and an additional 10.9 acres of the Crane Preliminary Development Area outside of the fenceline of the

BESS facility (or 12.2 acres total) would be planted with perennial vegetation and maintained in an herbaceous state for the life of the Crane Project. The remaining 12.1 acres of the Crane Preliminary Development Area would be used as temporary workspace during construction of the primary access road and the gen-tie line but would be restored after construction is complete and existing land uses would be allowed to resume.

Converting portions of the Crane Preliminary Development Area to impervious surfaces or herbaceous cover for the life of the Crane Project would effectively convert agricultural land to industrial use for the life of the Crane Project (anticipated to be 30 years). The conversion of 23.5 acres of agricultural land to industrial use is not anticipated to have a significant impact on the availability of agricultural land within Olmsted County. As discussed in Section 6.3.1, approximately 308,004 acres (73.6 percent) in Olmsted County are currently used for agricultural production (U.S. Department of Agriculture [USDA], 2022). Conversion of 23.5 acres of agricultural land to industrial use equates to a loss of less than 0.1 percent of land in Olmsted County that can be used for agricultural production.

During early stakeholder outreach for the Crane Project, Crane Storage met with the Minnesota Department of Agriculture (MDA) on November 7, 2024, to discuss the Crane Project and its potential impacts on agricultural land. Given the proximity of the Crane Project to the City of Byron and the city's inclusion of the property in the 25-year growth area, it is likely that the land will not revert back to agricultural uses when the Crane Project is decommissioned. Nonetheless, this Application outlines BMPs that can be incorporated into pre-construction, construction, and post construction methods; operational procedures; and decommissioning and restoration procedures to avoid and minimize impacts to soil and site productivity such that pre-construction agricultural productivity is rapidly returned to the site following decommissioning of the Crane Project. Crane Storage will continue to coordinate with MDA regarding potential impacts to agricultural land and measures needed to reduce long term impacts to the land for agricultural uses, in the event the land reverts back to agricultural uses upon decommissioning of the Crane Project.

As noted above, neither Olmsted County nor Kalmar Township has zoning requirements specific to energy storage systems. However, review of the Kalmar Township Zoning Ordinance (2018), indicates that public utility buildings (e.g., substations, transformer stations) are conditionally permitted in the Agricultural Protection District (A-2). The Crane Project's BESS facility and collector substation would be similar in nature to other substations or transformer stations. Crane Storage has designed the Crane Project to be consistent with the stated setback distances in the Agricultural Protection District (refer to Section 2.3).

Because the Crane Project would support operating and future renewable energy generation projects in Olmsted County, it would also be compatible with the stated goals of the Olmsted County GLUP. Furthermore, the location of the Crane Project is within the area identified by the City of Byron as part of its 25-year Growth Plan, within which additional commercial and industrial development is anticipated. As such, development of the Crane Project is consistent with future land use planning and development for the City of Byron.

Sandhill Project

A breakdown of the NLCD land use/cover types within the Sandhill Preliminary Development Area is presented in Table 6.2.9-3. As shown in Table 6.2.9-3, more than 99.4 percent (39.7 acres) of the Sandhill Preliminary Development Area consists of agricultural land and less than one percent (0.3 acre) consists of developed land. Woody wetland areas identified in the NLCD data are

located along the eastern margin of the Sandhill Land Control Area (refer to Table 6.2.9-1) and are avoided by the Sandhill Preliminary Development Area.

Table 6.2.9-3

NLCD Land Use/Cover Within the Sandhill Preliminary Development Area

Land Use Type	Total in Sandhill Preliminary Development Area (acres / percent)	Conversion to Impervious Surfaces (acres)	Conversion to Perennial Vegetation (acres)	Restored to Previous Use (acres)
Agricultural Land	39.7 / 99.4	10.1	14.0	15.6
Developed	0.3 / 0.6	0.0	0.0	0.3
Total	**39.9 / 100**	**10.1**	**14.0**	**15.8**

Source: Dewitz and USGS, 2021
Note: A double dash indicates this land use/cover type is not present.
The total acres may be off by up to 0.1 acre due to rounding.

Of the 39.9 acres that would be used to construct the Sandhill Project, about 10.1 acres of agricultural land would be permanently converted to impervious surfaces (e.g., gravel or asphalt) to host the Crane Project. This includes all BESS facility components within the fenceline (i.e., BESS units, access roads within the fenceline, on-site maintenance area, parking lot, trash enclosure), the collector substation, and the primary access road. The 1.1-acre stormwater basin and an additional 12.9 acres of agricultural land within the Sandhill Preliminary Development Area and outside of the fenceline of the BESS facility (or 14.0 acres total) would be planted with perennial vegetation and maintained in an herbaceous state for the life of the Sandhill Project. The remaining 15.6 acres of agricultural land and 0.3 acre of developed land within the Sandhill Preliminary Development Area would be used as temporary workspace during construction of the primary access road and the gen-tie line but would be restored after construction is complete and existing land uses would be allowed to resume.

Converting portions of the Sandhill Preliminary Development Area to impervious surfaces or herbaceous cover for the life of the Crane Project would effectively convert agricultural land to industrial use for the life of the Sandhill Project (anticipated to be 30 years). The conversion of 24.1 acres of agricultural land to industrial use is not anticipated to have a significant impact on the availability of agricultural land within Olmsted County. As discussed in Section 6.3.1, approximately 308,004 acres in Olmsted County are currently used for agricultural production (USDA, 2022). Conversion of 24.1 acres of agricultural land to industrial use equates to a loss of less than 0.1 percent of land used for agricultural production in Olmsted County.

During early stakeholder outreach for the Sandhill Project, Sandhill Storage met with the MDA on November 7, 2024, to discuss the Sandhill Project and its potential impacts on agricultural land. Given the proximity of the Sandhill Project to the City of Byron and the city's inclusion of the property in the 25-year growth area, it is likely that the land will not revert back to agricultural uses when the Sandhill Project is decommissioned. Nonetheless, this Application outlines BMPs that can be incorporated into pre-construction, construction, and post construction methods; operational procedures; and decommissioning and restoration procedures to avoid and minimize impacts to soil and site productivity such that pre-construction agricultural productivity is rapidly returned to the site following decommissioning of the Sandhill Project. Sandhill Storage will continue to coordinate with MDA regarding potential impacts to agricultural land and measures

needed to reduce long term impacts to the land for agricultural uses, in the event the land reverts back to agricultural uses upon decommissioning of the Sandhill Project.

As noted above, neither Olmsted County nor Kalmar Township has zoning requirements specific to energy storage systems. However, review of the Kalmar Township Zoning Ordinance (2018), indicates that public utility buildings (e.g., substations, transformer stations) are conditionally permitted in the Agricultural Protection District (A-2). The Sandhill Project's BESS facility and collector substation would be similar in nature to other substations or transformer stations already operating in the area. Sandhill Storage has designed the Sandhill Project to be consistent with the stated setback distances in the Agricultural Protection District (refer to Section 2.3). Because the Sandhill Project would support operating and future renewable energy generation projects in Olmsted County, it would also be compatible with the stated goals of the Olmsted County GLUP.

6.2.10 Recreation

The Applicants reviewed publicly available GIS data from USGS, U.S. Fish and Wildlife Service (USFWS), and MDNR to identify public recreation areas within and within one mile of the Crane and Sandhill Land Control Areas. No federal or state public recreation areas were identified within or within one mile of the Crane and Sandhill Land Control Areas. Map 7 presents an overview of public lands and recreation areas in the area surrounding the Crane and Sandhill Projects sites.

The nearest public recreation area is Brook Lawn 10th Park, located within the City of Byron about 0.5 mile east/northeast of the Crane Land Control Area and 0.3 mile east/northeast of the Sandhill Land Control Area. Athletic fields associated with the Bryon Middle School are also within the City of Byron and within one mile of the Projects; the middle school athletic fields are about 0.5 mile east/southeast of the Crane Land Control Area and 0.4 mile east/southeast of the Sandhill Land Control Area.

6.2.10.1 Impacts and Mitigation

The Crane and Sandhill Projects would not impact public recreation areas within the City of Byron. Both the Brook Lawn 10th Park and the Byron Middle School athletic fields are separated from the Projects by strips of forested land and residential development within Byron. Temporary increases in noise and dust during the period of active construction are unlikely to be noticeable to users of these public recreation areas given the distance from the Projects and the forested and residential areas. As such, no mitigation measures specific to public use and enjoyment of recreation areas are proposed.

6.2.11 Socioeconomics

The Applicants reviewed information from the U.S. Census Bureau's Quick Facts and the 2022 American Community Survey 5-year Estimates Data Profiles to characterize the socioeconomic environmental in the Study Area for the Crane and Sandhill Projects (U.S. Census Bureau, 2022 and 2023a). Demographic information is provided for Olmsted County and for the State of Minnesota for comparison. Demographic information for the Study Area is provided in Tables 6.2.11-1 and 6.2.11-2.

Table 6.2.11-1

Population and Economic Characteristics within the Study Area for the Crane and Sandhill Projects

Demographic	Minnesota	Olmsted County
2020 Census Population (April 1, 2020) [1]	5,706,494	162,847
Population Estimates July 1, 2023 [1]	5,737,915	164,784
Percent Change 2010 - 2023[1]	0.5	1.2
Per Capita Income (U.S. Dollars) [1]	$44,947	$49,799
Unemployment Rate (%) [2]	4.0	3.4
Persons in Poverty (%) [1]	9.3	8.9
Top Three Industries [2, 3]	E, M, R	E, R, P

[1] U.S. Census Bureau, 2023a

[2] U.S. Census Bureau, 2022

[3] Industries are defined under the 2012 North American Industry Classification System and abbreviated as follows: A = Arts, Entertainment, and Recreation, and Accommodation and Food services; Ag = Agriculture, Forestry, Fishing, and Hunting, and Mining; C = Construction; E = Educational, Health and Social Services; F = Finance and Insurance, and Real Estate and Rental and Leasing; M = Manufacturing; O = Other Services, except Public Administration; P = Professional, scientific, and managements, and administrative and water management services, R = Retail Trade; T = Transportation and Warehousing, and Utilities.

As shown in Table 6.2.11-1, population levels in Olmsted County and in Minnesota increased slightly between the 2010 census and the July 1, 2023, estimate. Per capita incomes in Olmsted County are higher than the state average and both the unemployment rate and the percent persons in poverty are lower in Olmsted County than the state average. The top three industries in Minnesota are educational services, and health care and social assistance; manufacturing; and retail trade. In comparison, the top three industries in Olmsted County are educational services, and health care and social assistance; retail trade; and professional, scientific, and management, and administrative and waste management services.

The racial and ethnic makeup of the Study Area for the Crane and Sandhill Projects varies only slightly from the State of Minnesota, as shown in Table 6.2.11-2. Most of the population in the Study Area self-identify as White Alone, Not Hispanic or Latino, making up about 81.5 percent of the county, which is similar to the state level.

Table 6.2.11-2

Race and Ethnicity of the Population in the Study Area

Race or Ethnicity	Minnesota	Olmsted County
White Alone, Not Hispanic or Latino (%)	82.3	81.5
Black or African American Alone (%)	7.9	8.2
American Indian or Alaska Native Alone (%)	1.4	0.5
Asian Alone (%)	5.5	6.8
Native Hawaiian/ Pacific Islander Alone (%)	0.1	0.1
Two or More Races (%)	2.9	2.9
Hispanic or Latino (%)	6.5	6.1
Total Minority (%) [1]	17.7	18.5

Table 6.2.11-2

Race and Ethnicity of the Population in the Study Area

Race or Ethnicity	Minnesota	Olmsted County

[1] Total minority percentage equals the total population minus the population of White Alone, Not Hispanic or Latino.

Source: U.S. Census Bureau, 2023a

6.2.11.1 Impacts and Mitigation

Crane Project

The Crane Project is designed to be socioeconomically beneficial to the landowners, local governments, and communities. Landowner compensation is established by voluntary purchase or easement agreements between the landowners and Crane Storage.

Construction of the Crane Project would provide temporary increases to the revenue of the area through increased demand for lodging, food services, fuel, transportation, and general supplies. The Crane Project will also create new local job opportunities for various trade professionals that live and work in the area and it is typical to advertise locally to fill required construction positions. Opportunity exists for sub-contracting to local contractors for gravel, fill, and civil work. Additional personal income will also be generated by circulation and recirculation of dollars paid out by the Crane Project as business expenditures and state and local taxes.

Crane Storage will solicit bids for an EPC contractor to construct the Crane Project and will prioritize EPC contractor bids that utilize local, union construction personnel to the greatest extent feasible. The EPC contractor will be required to work with local labor unions, local subcontractors, and other vendors to create a construction staffing model that prioritizes local hiring and economic benefits, while ensuring the Crane Project is safely built on time and on budget.

General skilled labor is expected to be available in Olmsted County or Minnesota to serve the Crane Project's basic infrastructure and site development needs. Specialized labor will be required for certain aspects of the Project. It may be necessary to import specialized labor from other areas of Minnesota or neighboring states because the relatively short construction duration often precludes special training of local or regional labor.

Construction of the Crane Project is anticipated to require up to 75 construction personnel. The construction workforce will likely commute to the Crane Project site each day from local communities such as Rochester. The O&M of the facility will require up to four long-term personnel. Crane Storage anticipates that sufficient temporary lodging and permanent housing will be available within Olmsted County, particularly within the Rochester metropolitan area, to accommodate construction laborers and long-term personnel.

In general, the socioeconomic impacts associated with the Crane Project will be positive; therefore, no mitigative measures are proposed. Crane Storage will pay wages and purchase goods and services from local businesses and landowners during the Crane Project's construction and operation. While the Crane Project will not generate tax revenue through a production tax, the Crane Storage is estimated to provide property tax payments to Olmsted County of approximately $4,000 annually over the 30-year life of the Crane Project for a cumulative total of approximately $120,000. Additionally, Kalmar Township is estimated to receive approximately $760 annually over the 30-year term for a cumulative total of approximately $22,800. The

development of the Crane Project is also estimated to result in payment of sales and use taxes, with the State of Minnesota expected to receive $17 million and Olmsted County to receive $1 million. The sales and use taxes are primarily a result of the purchase of equipment and construction materials needed to complete the Crane Project. In addition, purchase payments paid to the landowners will offset potential financial losses associated with removing a portion of their land from agricultural production.

In general, the socioeconomic impacts associated with the Crane Project will be positive; therefore, no mitigative measures are proposed.

Sandhill Project

The Sandhill Project is designed to be socioeconomically beneficial to the landowners, local governments, and communities. Landowner compensation is established by voluntary purchase or easement agreements between the landowners and Sandhill Storage.

Construction of the Sandhill Project would provide temporary increases to the revenue of the area through increased demand for lodging, food services, fuel, transportation, and general supplies. The Sandhill Project will also create new local job opportunities for various trade professionals that live and work in the area and it is typical to advertise locally to fill required construction positions. Opportunity exists for sub-contracting to local contractors for gravel, fill, and civil work. Additional personal income will also be generated by circulation and recirculation of dollars paid out by the Sandhill Project as business expenditures and state and local taxes.

Sandhill Storage will solicit bids for an EPC contractor to construct the Sandhill Project and will prioritize EPC contractor bids that utilize local, union construction personnel to the greatest extent feasible. The EPC contractor will be required to work with local labor unions, local subcontractors, and other vendors to create a construction staffing model that prioritizes local hiring and economic benefits, while ensuring the Sandhill Project is safely built on time and on budget.

General skilled labor is expected to be available in Olmsted County or Minnesota to serve the Sandhill Project's basic infrastructure and site development needs. Specialized labor will be required for certain aspects of the Project. It may be necessary to import specialized labor from other areas of Minnesota or neighboring states because the relatively short construction duration often precludes special training of local or regional labor.

Construction of the Sandhill Project is anticipated to require up to 75 construction personnel. The construction workforce will likely commute to the Sandhill Project site each day from local communities such as Rochester. The operations and maintenance of the facility will require one to two long-term personnel. Sandhill Storage anticipates that sufficient temporary lodging and permanent housing will be available within Olmsted County, particularly in the Rochester metropolitan area, to accommodate construction laborers and long-term personnel.

In general, the socioeconomic impacts associated with the Sandhill Project will be positive; therefore, no mitigative measures are proposed. Sandhill Storage will pay wages and purchase goods and services from local businesses and landowners during the Sandhill Project's construction and operation. While the Sandhill Project will not generate tax revenue through a production tax, the Sandhill Storage is estimated to provide property tax payments to Olmsted County of approximately $4,000 annually over the 30-year life of the Sandhill Project for a cumulative total of approximately $120,000. Additionally, Kalmar Township is estimated to receive approximately $760 annually over the 30-year term for a cumulative total of approximately

$22,800. The development of the Sandhill Project is also estimated to result in payment of sales and use taxes, with the State of Minnesota expected to receive $17 million and Olmsted Couty to receive $1 million. The sales and use taxes are primarily a result of the purchase of equipment and construction materials needed to complete the Sandhill Project. In addition, purchase payments paid to the landowners will offset potential financial losses associated with removing a portion of their land from agricultural production.

In general, the socioeconomic impacts associated with the Sandhill Project will be positive; therefore, no mitigative measures are proposed.

6.3 LAND-BASED ECONOMIES

6.3.1 Agricultural

According to the USDA's 2022 Census of Agriculture, of the 418,246 acres that comprise Olmsted County, 308,004 acres (73.6 percent) are actively cultivated farmland. A total of 1,102 individual farms are located in Olmsted County, with the average farm size at 279 acres. The top crops (in acres) cultivated in Olmsted County include corn, soybeans, and forage. Cattle and calves top the list of livestock inventory in Olmsted County, followed by poultry and goats (USDA, 2022).

The market value of agricultural production in Olmsted County in 2022 was approximately $337 million. Livestock, poultry, and their products accounted for approximately 33 percent of the total value of agricultural production, while crop sales accounted for the remaining 67 percent (USDA, 2022).

As shown in Table 6.5.4-1 in Section 6.5.4, about 59.8 percent (21.7 acres) of the soils within the Crane Land Control Area are classified as "Prime Farmland" and about 34.5 percent (12.5 acres) are classified as "Farmland of Statewide Importance." Within the Sandhill Land Control Area, about 44.9 percent (19.2 acres) of the soils are classified as "Prime Farmland" and about 46.6 percent (19.9 acres) are classified as "Farmland of Statewide Importance."

The Conservation Reserve Enhancement Program (CREP) is an offshoot of the Conservation Reserve Program (CRP), which is a land conservation program established by the USDA and administered by the Farm Service Agency that pays farmers a yearly rental fee for agreeing to take environmentally sensitive land out of agricultural production in an effort to improve environmental health and quality (USDA, n.d.). Minnesota implemented the CREP to target state-identified, high-priority conservation issues by offering payments to farmers and agricultural landowners to retire environmentally sensitive land using the Reinvest in Minnesota (RIM) Reserve Program (Minnesota Board of Water and Soil Resources [BWSR], 2019). Enrollment in the CRP and CREP is voluntary and participation in the program comes with certain restrictions on the types of development allowed on parcels enrolled in the program if such development is inconsistent with the conservation goals of the program. No CREP, CRP, or RIM easements are within or adjacent to the Crane or Sandhill Land Control Areas.

Crane Storage and Sandhill Storage obtained drain tile information from landowners for the Crane and Sandhill Land Control Areas and drain tile is present within the natural drainage area that bisects the Crane and Sandhill Land Control Areas from southwest to northeast (refer to Map 9). There are no areas used for animal husbandry, specialty farms, organic farms or Conservation are located within the Crane or Sandhill Land Control Areas.

6.3.1.1 Impacts and Mitigation

Crane Project

The Crane Project will impact approximately 35.5 acres of agricultural land within the Crane Preliminary Development Area and will not result in a significant impact to land-based economies in the Study Area, as this acreage constitutes 0.01 percent of the agricultural land in Olmsted County (308,004 acres). Agricultural production would continue in the surrounding areas during construction and operation of the Crane Project. The revenue lost from removing land from agricultural production will be offset by the easements and purchase options with the landowners. Areas disturbed during construction will be repaired and restored to pre-construction contours and characteristics to the extent practicable. This restoration will allow the Crane Project's land surfaces to drain properly, blend with the natural terrain, re-vegetate, and avoid erosion. Agricultural production would be allowed to continue in the area outside the Crane Land Control Area during construction and operation of the Project.

Drain tile is present within the natural drainage area that crosses the southeastern corner of the Crane Preliminary Development Area from southwest to northeast. Crane Storage is working with the owner of the drain tile to avoid or mitigate impacts to drain tile and ensure that the tile continues to function. Other natural drainageways in the Crane Preliminary Development Area will also be maintained. However, if damage to drain tile, private ditches, or natural drainageways were to occur as a result of construction activities or operation of the Crane Project, Crane Storage will repair any damages or otherwise ensure pre-construction drainage networks function appropriately during construction and operation of the Crane Project.

No areas used for animal husbandry are located within the Crane Land Control Area; therefore, no impacts to livestock are anticipated.

During early stakeholder outreach for the Crane Project, Crane Storage met with the MDA on November 7, 2024, to discuss the Crane Project and its potential impacts on agricultural land. Given the proximity of the Crane Project to the City of Byron and the city's inclusion of the property in the 25-year growth area, it is likely that the land will not revert back to agricultural uses when the Crane Project is decommissioned. Nonetheless, this Application outlines BMPs that can be incorporated into pre-construction, construction, and post construction methods; operational procedures; and decommissioning and restoration procedures to avoid and minimize impacts to soil and site productivity such that pre-construction agricultural productivity is rapidly returned to the site following decommissioning of the Crane Project. Crane Storage will continue to coordinate with MDA regarding potential impacts to agricultural land and measures needed to reduce long term impacts to the land for agricultural uses, in the event the land reverts back to agricultural uses upon decommissioning of the Crane Project.

Sandhill Project

The Sandhill Project will impact approximately 41.6 acres of agricultural land within the Sandhill Preliminary Development Area and will not result in a significant impact to land-based economies in the Study Area, as this acreage constitutes less than 0.01 percent of the agricultural land in Olmsted County (308,004 acres). Agricultural production would continue in the surrounding areas during construction and operation of the Sandhill Project. The revenue lost from removing land from agricultural production will be offset by the easement and purchase options with the landowners. Areas disturbed during construction will also be repaired and restored to pre-construction contours and characteristics to the extent practicable. This restoration will allow the

Project's land surfaces to drain properly, blend with the natural terrain, re-vegetate, and avoid erosion. Agricultural production would be allowed to continue in the area outside the Sandhill Land Control Area during construction and operation of the Sandhill Project.

Drain tile is present within the natural drainage area that crosses the southwestern corner of the Sandhill Land Preliminary Development Area from southwest to northeast. Sandhill Storage is working with the owner of the drain tile to avoid or mitigate impacts to drain tile and ensure that the tile continues to function. Other natural drainageways in the Sandhill Preliminary Development Area will also be maintained. However, if damage to drain tile, private ditches, or natural drainageways were to occur as a result of construction activities or operation of the Sandhill Project, Sandhill Storage will repair any damages or otherwise ensure pre-construction drainage networks function appropriately during construction and operation of the Sandhill Project.

No areas used for animal husbandry are located within the Sandhill Land Control Area; therefore, no impacts to livestock are anticipated.

During early stakeholder outreach for the Sandhill Project, Sandhill Storage met with the MDA on November 7, 2024, to discuss the Sandhill Project and its potential impacts on agricultural land. Given the proximity of the Sandhill Project to the City of Byron and the city's inclusion of the property in the 25-year growth area, it is likely that the land will not revert back to agricultural uses when the Sandhill Project is decommissioned. Nonetheless, this Application outlines BMPs that can be incorporated into pre-construction, construction, and post construction methods; operational procedures; and decommissioning and restoration procedures to avoid and minimize impacts to soil and site productivity such that pre-construction agricultural productivity is rapidly returned to the site following decommissioning of the Sandhill Project. Sandhill Storage will continue to coordinate with MDA regarding potential impacts to agricultural land and measures needed to reduce long term impacts to the land for agricultural uses, in the event the land reverts back to agricultural uses upon decommissioning of the Sandhill Project.

6.3.2 Forestry

There are no commercial forestry operations in the Crane or Sandhill Land Control Areas; therefore, no forestry resources will be affected by the Projects. One wooded area is located along the west side of the Crane Project; the wooded area is a small corridor between open land areas and is populated with trees and bushes. Additional narrow bands of forested swales are present along the eastern edge of the Sandhill Land Control Area.

6.3.2.1 Impacts and Mitigation

Crane Project

No trees or commercial forestry operations are present in or adjacent to the Crane Land Control Area. As such, the Crane Project would not impact commercial forestry operations and no mitigative measures are proposed.

Sandhill Project

No commercial forestry operations are present in or adjacent to the Sandhill Land Control Area. Small areas of forested swales are present along the eastern boundary of the Sandhill Land Control Area, but these trees would be avoided by the preliminary design of the Sandhill Project,

as described herein. The Sandhill Project would not impact commercial forestry operations and no mitigative measures are proposed.

6.3.3 Tourism

Primary tourism activities in the Study Area for the Crane and Sandhill Projects are associated with local community festivals and other events. Examples of local community festivals include the as mentioned Good Neighbor Days and events put on by Oxbow Park and Zollman Zoo. The Rochester metropolitan area is approximately nine miles east of the Crane and Sandhill Projects, and there are multiple tourist destinations in Rochester, including the Rochester Art Center, the Charles E. Gagnon Museum and Sculpture Garden, and the History Center of Olmsted County.

6.3.3.1 Impacts and Mitigation

Crane Project

Crane Storage will construct the Crane Project facilities within the limits of the Crane Preliminary Development Area and no road closures are anticipated to be necessary during active construction. The annual Good Neighbor Days in Byron occur within city limits and would not be affected by construction or operation of the Crane Project. Events put on by Oxbow Park and the Zollman Zoo are only held within the park and zoo which is about 3.3 miles northeast of the Crane Land Control Area. Tourism opportunities in Rochester are far enough away from the Crane Project that no impacts are anticipated. Because no impacts on tourism are anticipated from construction or operation of the Crane Project, no mitigative measures are proposed.

Sandhill Project

Sandhill Storage will construct the Sandhill Project facilities within the limits of the Sandhill Preliminary Development Area and no road closures are anticipated to be necessary during active construction. The annual Good Neighbor Days in Byron occur within city limits and would not be affected by construction or operation of the Sandhill Project. Events put on by Oxbow Park and the Zollman Zoo are only held within the park and zoo which is about 2.9 miles northeast of the Sandhill Land Control Area. Tourism opportunities in Rochester are far enough away from the Sandhill Project that no impacts are anticipated. Because no impacts on tourism are anticipated from construction or operation of the Sandhill Project, no mitigation measures are proposed.

6.3.4 Mining

Based on review of MnDOT's Aggregate Source Information System (ASIS) and the County Pit Map for Olmsted County, there are no gravel pits in the Crane or Sandhill Land Control Areas (MnDOT, 2023b; MnDOT, 2003). In the ASIS data and on the Olmsted County Pit Map, one gravel pit is shown between 1.8 and 2.3 miles northeast of the Crane and Sandhill Land Control Areas, respectively.

6.3.4.1 Impacts and Mitigation

Crane Project

No mining operations are located within or adjacent to the Crane Land Control and Preliminary Development Areas. As such, no impacts on mining operations from construction and operation of the Crane Project are anticipated and no mitigative measures are proposed.

Sandhill Project

No mining operations are located within or adjacent to the Sandhill Land Control and Preliminary Development Areas. As such, no impacts on mining operations from construction and operation of the Sandhill Project are anticipated and no mitigative measures are proposed.

6.4 ARCHAEOLOGICAL AND HISTORIC RESOURCES

The Applicants engaged TRC Companies, Inc (TRC) to conduct a background literature review to identify previously recorded cultural resources that could be affected by the Crane and Sandhill Projects. Information from the Minnesota Office of the State Archaeologist's (OSA) online database (OSA Viewer), the Minnesota State Historic Preservation Office's (SHPO) Minnesota Statewide Historic Inventory Portal (MNSHIP), the National Register of Historic Places (NRHP) database, USGS 15-Minute and 7.5-Minute topographic quadrangle maps, historic atlases, and historic aerial maps were reviewed. The review considered a 47-acre Cultural Resources Study Area around the Crane and Sandhill Land Control Areas, and a one-mile radius around the Cultural Resources Study Area to identify previously recorded cultural resources.

6.4.1.1 Previously Recorded Cultural Resources

Two previously recorded archaeological sites were identified within one mile of the Crane and Sandhill Land Control Areas as a result of the background literature review. Site 21Olq is the anticipated location of the historic City of Byron and 21OL35 is the Byron Whistle Stop. Both sites are located within the municipal boundary of Byron, about 1.0 mile from the Crane Land Control Area and about 0.8 mile from the Sandhill Land Control Area; neither site has been evaluated for listing in the NRHP.

The Byron Cemetery, a historic Euro-American cemetery established in 1855 and still in use today, was also identified as a result of the background literature review. The Byron Cemetery is located within the municipal boundary of Byron, over 1.0 mile southeast of the Crane Land Control Area and about 1.0 mile southeast of the Sandhill Land Control Area. The cemetery has not been reviewed for listing in the NRHP, however, cemeteries are protected under the Minnesota Private Cemeteries Act (Minn. Stat. § 307.08).

Thirteen historic structures were identified within one mile of the Crane and Sandhill Land Control Areas; no historic structures were identified within the Crane and Sandhill Land Control Areas. These structures include two bridges, one bank, one municipal building, one commercial building, three residences, one farmstead, one culvert, the Mobil Oil Depot, the Byron Consolidated School, and Trunk Highway/U.S. Highway 14 (formerly Trunk Highway 7). Most of these historic structures are located within the City of Byron. Six of the 13 resources have been determined not eligible for listing in the NRHP, including the two historic structures nearest to the Crane and Sandhill Land Control Areas (OL-KAL-00025 and OL-KAL-00026). The remaining seven resources have not been evaluated for NRHP listing.

6.4.1.2 Phase I Field Inventory

The Applicants also engaged TRC to conduct a Phase I field inventory of the Crane and Sandhill Land Control Areas to check for previously undocumented archaeological sites that could be affected by the Projects. TRC conducted the Phase I field inventory in November 2024. No cultural resources were documented during the field review.

6.4.1.3 SHPO Coordination

The results of TRC's background literature review and Phase I field inventory were submitted to SHPO for review on September 5, 2024, and December 19, 2024, respectively. On February 3, 2025, SHPO responded and agreed with the findings and recommendations in the Phase I field inventory report and commented that the Crane and Sandhill Projects would not affect properties listed in the National or State Registers of Historic Places or within the Historic Sites Network.

6.4.1.4 Impacts and Mitigation

Crane Project

No archaeological sites, cemeteries, or historic structures were identified within the Crane Land Control Area as a result of the background literature and field inventories for the Projects. As such, the Crane Project would not affect historic properties eligible for or listed in the NRHP.

Prior to the start of construction of the Crane Project, Crane Storage will develop an Unanticipated Discoveries Plan that will outline steps to be taken if previously undocumented cultural resources or human remains are encountered during construction.

Sandhill Project

No archaeological sites, cemeteries, or historic structures were identified within the Sandhill Land Control Area as a result of the background literature and field inventories for the Projects. As such, the Sandhill Project would not affect historic properties eligible for or listed in the NRHP.

Prior to the start of construction of the Sandhill Project, Sandhill Storage will develop an Unanticipated Discoveries Plan that will outline steps to be taken if previously undocumented cultural resources or human remains are encountered during construction.

6.5 NATURAL ENVIRONMENT

6.5.1 Air Quality

The Clean Air Act requires the EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants, referred to as "criteria pollutants" to protect health, the environment, and property. The six criteria pollutants are ground-level ozone (O_3), particulate matter, sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), and lead (Pb) (EPA, 2024a). Minnesota is currently complying with all the NAAQS (MPCA, 2023), Olmsted County is in attainment with the NAAQS, and the Study Area presently meets federal air quality standards.

In Minnesota, air quality is tracked using air quality monitoring stations across the state. The MPCA uses data from these monitors to calculate the Air Quality Index (AQI), on an hourly basis, for O_3, particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), SO_2, NO_2, and CO. The pollutant with the highest AQI value for a particular hour sets the overall AQI for that hour. The AQI is used to categorize the air quality of a region as one of five levels of quality: good, moderate, unhealthy for sensitive groups, unhealthy, or very unhealthy (MDH, 2024b).

The Crane and Sandhill Projects are located nearest to the air quality monitor in Rochester, MN. This station monitors O_3 and $PM_{2.5}$. The AQI for Rochester, Minnesota for the past five years is provided in Table 6.5.1-1 (MDH, 2024b).

Table 6.5.1-1

Days in Each Air Quality Index Category (Rochester, MN)

Year	Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Very Unhealthy
2023	190	160	14	1	0
2022	280	78	1	0	0
2021	275	84	2	0	0
2020	292	73	1	0	0
2019	271	93	0	0	0

Source: MDH, 2024b

Air quality has been considered good or moderate for the majority of the past five reported years in Rochester. Since 2019, the largest number of days classified as moderate occurred in 2023. There were a couple days each in 2020, 2021, 2022 and 2023 where air quality was considered unhealthy for sensitive groups; each of these days were between May and July and were likely a result of wildfire smoke. One day was classified as unhealthy in 2023, which was the result of wildfires in Canada. No days have been classified as very unhealthy.

6.5.1.1 Impacts and Mitigation

Construction Emissions

Impacts on air quality from construction of the Crane and Sandhill Projects would be low and primarily limited to the periods of construction. Minor temporary effects on air quality are anticipated during construction of the Crane BESS, Sandhill BESS, collector substation, gen-tie line, and primary access road as a result of exhaust emissions from construction equipment and other vehicles and from fugitive dust that becomes airborne during dry periods of construction activity. During construction, the amount of dust generated would be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic, vehicle types, and road surface characteristics. Dust emissions would be greater during dry periods and in areas where fine-textured soils are subject to surface activity.

The magnitude of air emissions during construction is influenced by weather conditions and the type of construction activity. Air emissions during construction would primarily consist of emissions from construction equipment and would include carbon dioxide (CO_2), nitrogen oxides (NO_X), and particulate matter; dust generated from earth disturbing activities would also give rise to particulate matter. Emissions from construction vehicles will be minimized by using modern equipment with lower emissions ratings. Adverse effects on the surrounding environment are expected to be negligible because of the short and intermittent nature of the emission and dust-producing construction phases. Table 6.5.1-2 shows the estimated criteria pollutant emissions from construction activities.

TABLE 6.5.1-2

Construction Related Criteria Pollutant Emissions, in tons

Construction Activity	CO	NO_X	VOC	PM_{10}	$PM_{2.5}$	SO_2
Crane Project						
Off-Road Engines	2.21	10.81	0.59	0.35	0.35	0.01
Unpaved Roads	-	-	-	0.56	0.06	-
Earthmoving	-	-	-	5.48	0.58	-
Shared Facilities: Substation, Gen-Tie Line, Primary Access Road						
Off-Road Engines	0.69	3.58	0.22	0.12	0.12	0.01
Unpaved Roads	-	-	-	0.22	0.02	-
Earthmoving	-	-	-	-	-	-
Total – Crane Project	**2.91**	**14.39**	**0.81**	**6.73**	**1.13**	**0.01**
Sandhill Project						
Off-Road Engines	2.21	10.81	0.59	0.35	0.35	0.01
Unpaved Roads	-	-	-	0.56	0.06	-
Earthmoving	-	-	-	6.00	0.63	-
Shared Facilities: Substation, Gen-Tie Line, Primary Access Road						
Off-Road Engines	0.69	3.58	0.22	0.12	0.12	0.00
Unpaved Roads	-		-	0.22	0.02	0.00
Earthmoving	-					
Total – Sandhill Project	**2.91**	**14.39**	**0.81**	**7.25**	**1.18**	**0.01**

Note: CO = carbon monoxide, NO_X – nitrogen oxides; VOC = volatile organic compound; PM_{10} = particulate matter less than 10 microns; $PM_{2.5}$ = particulate matter less than 2.5 microns; and SO_2 = sulfur dioxide.

Applicable BMPs will be used during construction of the Crane and Sandhill Projects to minimize dust emissions if wind erosion becomes an issue. If construction activities generate problematic dust levels, the Applicants may employ construction-related practices to control fugitive dust such as application of chlorine-free water or other commercially available dust control agents on unpaved areas subject to frequent vehicle traffic, reducing the speed of vehicular traffic on unpaved roads, and covering open-bodied haul trucks. Other practices may include containment of excavated material, protection of exposed soil, soil stabilization, reducing speed limits within construction zones, and treating stockpiles to control fugitive dust. A SWPPP will be developed prior to construction that will include BMPs to minimize the potential for fugitive dust. Over the long term, dust emissions currently experienced annually in the area through farming practices are likely to be reduced through the establishment of perennial vegetative cover.

Additionally, since agricultural operations at the Crane and Sandhill Project sites will no longer occur during construction and operation of the facility, reduced particulate emission, dust, and farm equipment exhaust would occur and further improve air quality at and in the vicinity of the Crane and Sandhill Projects.

6.5.2 Climate Change and Greenhouse Gas Emissions

Executive Order 19-37 (EO 19-37), signed in December 2019, established the Governor's Advisory Council and the Climate Change Subcabinet to coordinate climate change mitigation and resilience strategies in the State of Minnesota. EO 19-37 describes climate change as an existential threat that impacts all Minnesotans, listing consequences of more frequent weather events, undue economic stress and risking our communities and environment (State of Minnesota, 2019).

The Next Generation Energy Act of 2007 set statutory goals to reduce greenhouse gas (GHG) emissions in the state by 30 percent of 2005 levels by 2025, and 80 percent by 2050. The Climate Change Subcabinet is responsible for identifying policies and strategies to meet or exceed the statutory goals set in the Next Generation Energy Act and to identify policies and strategies to increase climate resiliency across the state (State of Minnesota, 2019). As of 2020, Minnesota is on track to meet this goal and has experienced a 23 percent reduction in GHG emissions across all industry sectors (MPCA and DOC, 2023).

The Crane Project and Sandhill Project will further the State's clean energy goals set forth by the Governor's Office by eliminating energy waste and storing energy when there is an excess supply. The Crane Project and Sandhill Project will beneficially impact climate change because each will reduce the need for carbon-based electric generation processes, reduce the need for and minimize the increase of additional transmission infrastructure, and temporarily reduce emissions from agricultural activities during the lifetime of the Crane and Sandhill Projects.

Additionally, the Crane and Sandhill Projects have been designed with resiliency in mind as the climate continues to change in Minnesota. Crane and Sandhill Project equipment will be carefully engineered and selected to withstand the potential for an increase in the frequency of severe weather events. Similarly, the stormwater management system has been designed using National Oceanic and Atmospheric Administration Atlas-14, a modeling tool that provides precipitation frequency estimates for many of the Midwestern states, including Minnesota. The model takes into consideration the historical frequency of heavy rainfall events from the National Oceanic and Atmospheric Administration's precipitation frequency data server, which is of importance to project engineers when designing stormwater infrastructure that will be in place for the life of the Project.

6.5.2.1 Impacts and Mitigation Measures

GHGs are gases that warm the atmosphere and surface of the planet. The primary GHGs are CO_2, nitrous oxide (N_2O), methane (CH_4), sulfur hexafluoride, and hydrofluorocarbons and perfluorocarbons. GHGs come from a variety of sources, with fossil fuel combustion being responsible for most CO_2 emissions in Minnesota. The majority of fossil fuels used today generate electricity and fuel vehicles (MPCA and DOC, 2023).

Construction of the Crane Project and Sandhill Project will result in short-term increases in GHGs from the combustion of fossil fuels utilized in construction equipment and vehicles. Table 6.5.2-1 shows the estimated GHG emissions from construction activities. The estimate is based on the number and type of equipment, the days and duration, and the estimated fuel consumption to determine the total amount of gas and diesel fuel used during construction of the Crane Project and Sandhill Project. Detailed emission calculations are provided in Appendix F.

Short-term production of GHGs will primarily result from the combustion of fossil fuels utilized in construction equipment and vehicles.

TABLE 6.5.2-1

Construction Related Greenhouse Gas Emissions, in tons

Construction Activity	CO_2	CH_4	N_2O	CO_2e [1]
Crane Project				
Off-Road Engine Emissions	479.96	0.02	0.00	481.53
Commuters and Delivery Vehicles	1,144.43	0.00	0.00	11,44.43
Shared Facilities: Substation, Gen-Tie Line, Primary Access Road				
Off-Road Engine Emissions	162.16	0.01	0.00	162.70
Commuters and Delivery Vehicles	-	-	-	-
Total – Crane Project	**1,786.54**	**0.03**	**0.00**	**1,788.66**
Sandhill Project				
Off-Road Engine Emissions	479.96	0.02	0.00	481.53
Commuters and Delivery Vehicles	1,144.43	0.00	0.00	1,144.43
Shared Facilities: Substation, Gen-Tie Line, Primary Access Road				
Off-Road Engine Emissions	162.16	0.01	0.00	162.70
Commuters and Delivery Vehicles	-	-	-	-
Total – Sandhill Project	**1,786.55**	**0.03**	**0.00**	**1,788.66**

[1] CO_2e calculated using global warming potentials from Code of Federal Regulations Title 40 Part 98 Table A-1.

Note: CO_2 – carbon dioxide; CH_4 – methane; 1 short ton CH_4 = 28 short tons CO_2e; N_2O – nitrous oxide; 1 short ton N_2O = 265 short tons CO_2e; CO_2e – carbon dioxide equivalent

Crane Project

The Crane Storage is expected to produce a number of beneficial climate change effects; therefore, additional mitigative measures are not proposed.

Sandhill Project

The Sandhill Storage is expected to produce a number of beneficial climate change effects; therefore, additional mitigative measures are not proposed.

6.5.3 Geology and Groundwater Resources

6.5.3.1 Geology

The Land Control Areas for both Projects are located in the Oak Savanna subsection of the Minnesota and Northeast Iowa Morainal Section as classified as by the MDNR ECS. This subsection consists of loess plain over bedrock or till and may include Late Wisconsin end moraines, stagnation moraines, and outwash. Topography is gently rolling with steep slopes that are associated with Stagnation moraines. Glacial drift is 100 to 200 feet thick with locally exposed

Ordovician and Devonian dolomite prevalent in dissected stream valleys at the eastern edge of the subsection (MDNR, 2024b).

The Land Control Areas for both Projects are located in MDNR Groundwater Province 3, which is characterized by thin glacial sediment overlying extensive and thick bedrock comprised of carbonate and sandstone. These units can consist of karst features such as labyrinthine conduits and sinkholes (MDNR, 2021).

Karst landscapes can develop where limestone and dolostone are at or near the surface. Limestone is composed mostly of the mineral calcite (calcium carbonate); dolostone is composed mostly of the mineral dolomite (calcium magnesium carbonate). Over time, the carbonate minerals in these rocks are dissolved by rain and groundwater, creating karst. In Minnesota, limestone and dolostone underlie the southeastern corner of the state, and erosion has removed most of the glacial cover and exposed the carbonate bedrock. Karst is characterized by sinkholes, caves, springs, and underground drainage dominated by rapid conduit flow. The MDNR has documented regions prone to surface karst feature development across the state (MDNR, 2024c). No regions prone to surface karst feature development are displayed within the Crane or Sandhill Land Control Areas. The closest region prone to surface karst development is the Galena Group / Cummingsville Fm, which is approximately 484 feet to the northeast of the northern edge of the Crane and Sandhill Land Control Areas. In addition, no Karst Feature Inventory Points are located within the Crane and Sandhill Land Control Areas and are greater than 1 mile of distance from each. The closest documented spring is located approximately 4,355 linear feet to the northwest of the Crane and Sandhill Land Control Areas (refer to Map 12) (MDNR, 2024d).

6.5.3.2 Groundwater

The Land Control Areas for both Projects are located in MDNR Groundwater Province 3, which is characterized by thin glacial sediment overlying extensive and thick bedrock comprised of carbonate and sandstone. These units can consist of karst features such as labyrinthine conduits and sinkholes (MDNR, 2021).

The Applicants reviewed publicly available GIS data to identify EPA-designated sole source aquifers (SSAs), wells listed on the County Well Index (CWI), Drinking Water Supply Management Areas (DWSMAs), and MDH Wellhead Protection Areas (WHPAs). SSAs, CWI wells, DWMAs, and WHPAs were not identified in the Crane or Sandhill Project Control Areas (refer to Map 12).

The EPA defines a SSA or principal source aquifer area as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer, where contamination of the aquifer could create a significant hazard to public health, and where there are no alternative water sources that could reasonably be expected to replace the water supplied by the aquifer (EPA, 2024b). According to the EPA Sole Source Aquifers webmap, there are no EPA designated SSAs within the Crane or Sandhill Land Control Areas (EPA, 2024c).

The CWI is a database that contains subsurface information for over 533,000 water wells drilled in Minnesota. CWI is maintained by the Minnesota Geological Survey in partnership with the MDH. The data is derived from water-well contractors' logs of geologic materials encountered during drilling (Minnesota Geological Survey and MDH, 2023). According to the CWI, there are no wells within the Crane or Sandhill Land Control Areas. The closest documented well is approximately 410 feet to the northeast of the portion of the Crane and Sandhill Land Control Areas that overlap to form the primary access road. The well is listed as “domestic use” (MDH, 2024a).

The MDH enforces the federal Safe Drinking Water Act including the National Primary Drinking Water Regulations created under the Act (MDH, n.d.(a)). These regulations are legally enforceable standards and treatment techniques that apply to public water systems to protect drinking and source water. As a result, Minnesota adopted the State Wellhead Protection (WHP) Rule 4720.5100-4720.5590 in 1997. The MDH is responsible for administering the State WHP Program. Under the WHP Program, public water systems are required to develop and implement a plan that protects its drinking water source. WHPA are approved surface and subsurface area surrounding a public water supply well or well field that supplies a public water system, through which contaminants are likely to move toward and reach the well or well field (MDH, 2019). DWSMAs contain the WHPA but are outlined by clear boundaries, like roads or property lines. The DWSMA is managed in a WHP plan, usually by a city (MDH, n.d.(b)). There are no DWSMAs or WHPAs located within the Crane or Sandhill Land Control Areas. The nearest DWSMA is the Byron DWSMA, which is located approximately 0.79 miles to the southeast of the Crane Land Control Area and 0.63 miles to the southeast of the Sandhill Land Control Area. The nearest WHPA is 0.85 miles to the southeast of the Crane Land Control Area and 0.70 miles to the southeast of the Sandhill Land Control Area (MDH, 2019).

6.5.3.3 Impacts and Mitigation

Crane Project

Impacts to geology and groundwater resources from construction and operation of the Crane Project as proposed in this Joint Application are not anticipated. The potential for the Crane Project to impact these resources is limited. Due to the thickness of surficial materials (approximately 100 to 200 feet), excavation or blasting of bedrock is extremely unlikely.

Impacts on geologic resources are not anticipated and mitigation is not expected to be necessary. Crane Project facilities are not likely to affect the use of existing water wells because there are no wells within the Crane Preliminary Development Areas. Any dewatering required during construction will be discharged to the surrounding surface, thereby allowing it to infiltrate back into the ground to minimize potential impacts. If dewatering is necessary, the Crane Project or Sandhill Project will obtain a Water Appropriation Permit from MDNR.

Impacts on groundwater resources, including aquifers, are not anticipated as water supply needs will be quite limited. Based on the small amount of impervious surface area that will be created by the Crane Project components (refer to Section 3.0), the Crane Project will likely have minimal impacts on regional groundwater recharge. Concrete foundations may be required for the Crane Project components. Geotechnical soil testing will determine final installation process. Similarly, the exterior agricultural fence may require concrete foundations in some locations. If concrete is needed, it will be locally sourced; an on-site concrete batch plant will not be required for the Crane Project.

In addition, the closest documented domestic well is approximately 410 feet to the northeast of the portion of the Crane Land Control Area that forms the primary access road, thereby minimizing the risk of impacts on private wells in the area. Construction of the Crane Project facilities is not likely to require subsurface blasting; therefore, disturbances to groundwater flow from newly fractured bedrock are not anticipated.

A NPDES permit to discharge stormwater from construction facilities will be acquired from the MPCA. BMPs will be used during construction and operation of the Crane Project to protect topsoil and adjacent resources and to minimize soil erosion, whether the erosion is caused by

water or wind. Practices may include containment of excavated material, protection of exposed soil, stabilization of restored material, and treating stockpiles to control fugitive dust. A SWPPP will be developed for the Crane Project prior to construction that will include BMPs such as silt fencing (or other erosion control devices), revegetation plans, and management of exposed soils to prevent erosion. Crane Storage will submit the SWPPP to MPCA for review and approval prior to construction and obtaining coverage under the General Construction Stormwater Permit.

Sandhill Project

Due to the proximity of the Crane and Sandhill Projects, and the similarities in their proposed preliminary designs, the discussion of potential impacts to geology and groundwater resources and the proposed mitigation measures provided for the Crane Project also apply to the Sandhill Project. The nearest well is approximately 410 feet to the northeast of the temporary workspace around the primary access road. No impacts to the geology and groundwater resources are anticipated from the Sandhill Project and no additional mitigation measures specific to geology and groundwater resources are proposed.

6.5.4 Soils

Soil characteristics within the Crane and Sandhill Land Control Areas were assessed using the Soil Survey Geographic database (SSURGO) (Soil Survey Staff, 2024). The SSURGO database is a digital version of the original county soil surveys developed by Natural Resource Conservation Service (NRCS) for use with GIS. It provides the most detailed level of soils information for natural resource planning and management. Soil maps are linked in the SSURGO database to information about the component soils and their properties (USDA, NRCS, 2024). Table 6.5.4-1 lists the soil types located within the Crane and Sandhill Land Control Areas; soil map units are depicted on Map 13 and farmland classifications are depicted on Map 14.

Table 6.5.4-1

Summary of Soils Within the Crane and Sandhill Land Control Areas

Map Unit Symbol	Map Unit Name	Farmland Classification	Hydric Rating	Crane Project (acres)	Sandhill Project (acres)
176	Garwin silty clay loam	Prime farmland if drained	Yes	5.3	5.6
1832C	Ostrander-Dowagiac loams, 6 to 12 percent slopes	Farmland of statewide importance	No	1.7	6.4
1846	Kato silty clay loam, depressional	Prime farmland if drained	Yes	--	3.1
203	Joy silt loam, 1 to 4 percent slopes	All areas are prime farmland	No	3.6	1.5
322D2	Timula silt loam, 12 to 20 percent slopes, moderately eroded	Not prime farmland	No	1.0	1.0
369B	Waubeek silt loam, 1 to 6 percent slopes	All areas are prime farmland	No	1.0	1.0
468	Otter silt loam, channeled	Not prime farmland	Yes	1.1	2.6
493C	Oronoco loam, 6 to 12 percent slopes	Farmland of statewide importance	No	2.5	1.5

Table 6.5.4-1

Summary of Soils Within the Crane and Sandhill Land Control Areas

Map Unit Symbol	Map Unit Name	Farmland Classification	Hydric Rating	Crane Project (acres)	Sandhill Project (acres)
N501C2	Downs silt loam, 6 to 12 percent slopes, moderately eroded	Farmland of statewide importance	No	6.4	1.5
N536B	Tama silt loam, driftless, 2 to 6 percent slopes	All areas are prime farmland	No	11.8	8.0
N536C2	Tama silt loam, driftless, 6 to 12 percent slopes, moderately eroded	Farmland of statewide importance	No	1.9	10.5
			Total [1]	**36.3**	**42.7**

[1] The total acres may be off by up to 0.1 acre due to rounding.

Note: A double dash indicates this soil map unit would not be impacted.

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at: http://websoilsurvey.sc.egov.usda.gov/. Accessed November 2024.

6.5.4.1 Impacts and Mitigation

Crane Project

Impacts to soils will occur during construction and operation of the Crane Project. Table 6.5.4-2 provides a breakdown of the anticipated temporary and permanent impacts to soils for the Crane Project. Temporary impacts will primarily be due to grading of the BESS facility, substation area, primary access road, and the stormwater pond. Additionally, soil compaction may result from construction vehicles driving over wet soils, which could reduce pore space within the soil, increase runoff potential, and cause rutting. During operation of the Crane Project, ongoing soil compaction could occur from continued use of the primary access road and access roads within the BESS facility.

Table 6.5.4-2

Selected Soil Characteristics Within the Crane Preliminary Development Area

Soil Characteristic	Temporary Impacts (acres / percent)		Permanent Impacts (acres / percent [1])	
Preliminary Development Area	35.6		14.8	
Prime Farmland [2]	21.2	59.4%	9.6	27.0%
Farmland of Statewide Importance [3]	12.4	34.9%	5.0	14.0%
Water Erodible [4]	9.2	25.9%	2.5	7.0%
Wind Erodible [5]	--	0.0%	--	0.0%
Hydric [6]	5.8	16.2%	1.1	3.1%
Compaction Prone [7]	9.4	26.4%	3.9	11.0%
Stony/Rocky [8]	--	0.0%	--	0.0%

Table 6.5.4-2

Selected Soil Characteristics Within the Crane Preliminary Development Area

Soil Characteristic	Temporary Impacts (acres / percent)	Permanent Impacts (acres / percent [1])

[1] Percentages for permanent impacts are shown in relation to the total temporary Crane Project impacts.
[2] Includes prime farmland, and prime farmland if limiting factor is mitigated, as designated by the Natural Resource Conservation Service (NRCS).
[3] Includes soils that are classified as farmland of statewide importance.
[4] Includes soils with a slope >15% or soils with a K value of >0.35 and slopes greater >5%.
[5] Soils with a wind erodibility group classification of 1 or 2.
[6] Includes soils that are classified as hydric by SSURGO.
[7] Soils with somewhat poor to very poor drainage classes and surface textures of sandy clay loam or finer.
[8] Soils with one or more horizons with cobbley, stony, bouldery, channery, flaggy, very gravelly, or extremely gravelly in their textural class and/or contain greater than 5 percent by weight of rocks larger than 3 inches.
Note: A double dash indicates this soil characteristic is not present.
Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at: http://websoilsurvey.sc.egov.usda.gov/. Accessed November 2024.

The Crane Project will temporarily impact approximately 21.2 acres of soil classified as prime farmland soils. Approximately 9.6 acres of prime farmland soil will be permanently impacted.

Overall, given that approximately 14.8 acres would be converted to impervious surfaces (e.g., gravel or asphalt), risk of ongoing soil compaction and rutting during operation of the Crane Project is likely to be minimal. During the decommissioning, equipment will be removed and site restoration will occur (e.g., decompaction of soils) such that the physical conditions of the area are returned to substantially the same condition that existed prior to development. Refer to Section 4.6 for additional discussion of decommissioning activities.

Additionally, the Crane Project is expected to reduce the potential for erosion by water by establishing perennial vegetation outside the fenceline of the BESS facility. There are no stony/rocky soils or soils prone to wind erosion within the Crane Preliminary Development Area.

Sandhill Project

Impacts to soils will occur during construction and operation of the Sandhill Project. Table 6.5.4-3 provides a breakdown of the anticipated temporary and permanent impacts to soils for the Sandhill Project. Temporary impacts will primarily be due to grading of the BESS facility, substation area, primary access road, and the stormwater pond. Additionally, soil compaction may result from construction vehicles driving over wet soils, which could reduce pore space within the soil, increase runoff potential and cause rutting. During operation of the Sandhill Project, ongoing soil compaction could occur from continued use of primary access road and access roads within the BESS facility.

Table 6.5.4-3

Selected Soil Characteristics Within the Sandhill Preliminary Development Area

Soil Characteristic	Temporary Impacts (acres / percent)		Permanent Impacts (acres / percent [1])	
Preliminary Development Area	39.9		13.4	
Prime Farmland [2]	16.9	42.4%	6.2	15.5%
Farmland of Statewide Importance [3]	19.6	49.2%	7.0	17.5%
Water Erodible [4]	13.1	32.8%	5.5	13.8%
Wind Erodible [5]	--	0.0%	--	0.0%
Hydric [6]	8.8	22.1%	1.0	2.5%
Compaction Prone [7]	10.3	25.9%	1.7	4.3%
Stony/Rocky [8]	--	0.0%	--	0.0%

1 Percentages for permanent impacts are shown in relation to the total temporary Sandhill Project impacts.
2 Includes prime farmland, and prime farmland if limiting factor is mitigated, as designated by the Natural Resource Conservation Service (NRCS).
3 Includes soils that are classified as farmland of statewide importance.
4 Includes soils with a slope >15% or soils with a K value of >0.35 and slopes greater >5%.
5 Soils with a wind erodibility group classification of 1 or 2.
6 Includes soils that are classified as hydric by SSURGO.
7 Soils with somewhat poor to very poor drainage classes and surface textures of sandy clay loam or finer.
8 Soils with one or more horizons with cobbley, stony, bouldery, channery, flaggy, very gravelly, or extremely gravelly in their textural class and/or contain greater than 5 percent by weight of rocks larger than 3 inches.
Note: A double dash indicates this soil characteristic is not present.
Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at: http://websoilsurvey.sc.egov.usda.gov/. Accessed November 2024.

The Sandhill Project will temporarily impact approximately 16.9 acres of soil classified as prime farmland soils. Approximately 6.2 acres of prime farmland soil will be permanently impacted.

Overall, given that approximately 13.4 acres would be permanently converted to impervious surfaces (e.g., gravel or asphalt), risk of ongoing soil compaction and rutting during operation of the Sandhill Project is likely to be minimal. During the decommissioning, equipment will be removed and site restoration will occur (e.g., decompaction of soils) such that the physical conditions of the area are returned to substantially the same condition that existed prior to development. Refer to Section 4.6 for additional discussion of decommissioning activities.

Additionally, the Sandhill Project is expected to reduce the potential for erosion by water by establishing perennial vegetation outside the fenceline of the BESS facility.

6.5.5 Surface Waters

The Projects are located within the Zumbro River Watershed (HUC8: 07040004) (MDNR, 2024e). This watershed contains over 900,000 acres of surface area and spans across six counties. Land use within the Zumbro River Watershed is dominated by row crops (MPCA, 2024b).

6.5.5.1 Lakes, Rivers, Streams, and Ditches

The MDNR Hydrography Dataset identifies one intermittent stream located within the northern portion of the Crane and Sandhill Land Control and Preliminary Development Areas (MDNR, 2024e). It is located within the north central portion of the primary access road temporary workspace.

An on-site wetland and waterway delineation was conducted from July 20 to July 23, 2024, to identify and characterize wetlands and waterways per U.S. Army Corps of Engineers methodology. The area considered for the delineation totals 168 acres and generally encompasses Crane and Sandhill Land Control Areas. The temporary workspace associated with the gen-tie line was not field delineated during this field effort. Additional field delineations for this area will be conducted in fall of 2024.

The wetland and waterway delineation identified five streams for a total of 1,235 feet in combined length, including, two perennial streams (1,150 feet), one intermittent stream (10 feet), and two ephemeral streams (75 feet). The intermittent stream identified by the MDNR Hydrography Dataset was confirmed and delineated as an ephemeral stream that is within the eastern edge temporary construction workspace for the primary access road that will be shared by the Crane and Sandhill Projects, flowing 62 feet and transitioning into a wetland feature. The wetland and waterway delineation did not identify any other lakes, rivers, streams or ditches within the Crane and Sandhill Land Control Areas. The mapped stream within the Crane and Sandhill Land Control Areas does not intersect the Crane and Sandhill Preliminary Development Areas and is located approximately 35 feet to the west (refer to Map 15).

6.5.5.2 Minnesota Public Waters

The MDNR Public Waters Basin and Watercourse Delineations dataset does not identify any MDNR Public Waters Inventory (PWI) watercourses or basins within the Crane and Sandhill Land Control Areas. The closest PWI watercourse (Cascade Creek) is located approximately 3,370 feet to the south of the Crane Land Control Area and 3,800 feet to the south of the Sandhill Land Control Area (MDNR, 2024f).

6.5.5.3 Water Quality

There are no impaired waters within the Crane and Sandhill Land Control Areas (MDNR, 2024g). The nearest impaired water is 9,550 feet from the northern edge of the Crane and Sandhill Land Control Areas.

6.5.5.4 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map does not identify FEMA floodplains within the Crane or Sandhill Land Control Areas (FEMA Flood Insurance Rate Map Panel 27109C0125E) (FEMA, 2023). The closest FEMA floodplain is Zone A (100-year) located approximately 2,560 feet to the southwest of the Crane Land Control Area and 3,100 feet to the southwest of the Sandhill Land Control Area and is associated with Cascade Creek.

6.5.5.5 Wetlands

A desktop review of the USFWS National Wetland Inventory identifies a Palustrine Emergent (PEM) wetland associated with a small stream valley located within the north central portion of the primary access road that will be shared by the Crane and Sandhill Projects (USFWS, 2019).

A wetland and waterway delineation was conducted from July 20 to July 23, 2024, to identify and characterize wetlands and waterways per USACE methodology. The area considered in the delineation is 168 acres and generally encompasses the Crane and Sandhill Land Control Areas. The temporary workspace associated with the gen-tie line was not field delineated during this field effort. Additional field delineations for this area were conducted in fall of 2024.

The wetland and waterway delineation identified seven total wetlands for a total of 4.5 acres, including six PEM wetlands (1.7 acres) and one palustrine forested wetland (PFO)/PEM wetland complex (2.5 acres of PEM, 0.4 acre of PFO). The potential wetlands identified during the desktop review were confirmed and identified as PEM wetlands. The Crane Land Control and Preliminary Development Areas do not intersect delineated wetlands. The northeast boundary of the Sandhill Land Control intersects one PEM wetland by 5 feet; however, the Sandhill Preliminary Development Area is located approximately 25 feet south of the wetland (refer to Map 15).

6.5.5.6 Impacts and Mitigation

Crane Project

The Crane Project has been designed to minimize all impacts to surface waters to the extent practicable. The Crane Project components are not sited within surface waters and all wetlands are avoided. Approximately 14 feet of an ephemeral stream is located within the eastern edge of the primary access road temporary construction workspace. As discussed in Section 4.4.2, a SWPPP will be developed for the Crane Project prior to construction that will include BMPs such as silt fencing (or other erosion control devices), revegetation plans, and management of exposed soils to prevent sediment from entering into adjacent surface waters. As described in Section 3.6.4, a stormwater basin will be constructed to help control runoff during rain events. The SWPPP will be submitted to the MPCA for review and approval prior to construction and obtaining coverage under the General Construction Stormwater Permit.

Sandhill Project

Due to the proximity of the Crane and Sandhill Projects and the similarities in their proposed preliminary designs, the discussion of potential impacts to surface waters and the proposed mitigation measures provided for the Crane Project also apply to the Sandhill Project. No additional or different impacts to surface waters are anticipated from the Sandhill Project and no additional mitigation measures specific to surface waters are proposed.

6.5.6 Vegetation

The Crane and Sandhill Projects are in the Oak Savanna Subsection of the Eastern Broadleaf Forest Province (MDNR, 2024a). The Oak Savanna Subsection consists of rolling plains of loess-mantled ridges over sandstone and carbonate bedrock. The terrain is gently rolling, but slopes are often steep. The area is fairly well drained due to natural landforms; however, few lakes are present. Soils within this subsection are a mosaic of Mollisols within the upland prairie ridgetops

or broad depressional wetland prairies and Alfisols within the savannas and forests (MDNR, 2024b).

Pre-settlement vegetation in the Oak Savanna Subsection was dominated by bur oak savanna with areas of tallgrass prairies and maple-basswood forests. Current vegetation consists largely of farmed agriculture and urban development (MDNR, 2024b). Based on field observations from the wetland delineations and threatened and endangered species habitat assessment conducted for the Projects, the majority of the Crane and Sandhill Land Control Areas is dominated by cultivated agriculture consisting of corn (*Zea Mayes*) and soybean (*Glycine max*). Additionally, there are several herbaceous agriculture conservation buffers that divide the crop fields consisting of orchard grass (*Dactylus glomerata*), timothy (*Phleum pratense*), smooth brome (*Bromus inermis*), clovers (*Trifolium* spp.), and scattered individuals of common milkweed (*Asclepias syriaca*).

Based on the USGS NLCD landcover data, as presented in Table 6.2.9-1 in Section 6.2.9, the Crane Project would affect predominantly agricultural land (35.5 acres/99.3 percent). A small amount of developed land is also within the Crane Land Control Area (0.3 acre/0.7 percent). No forested land or wetlands are within the Crane Land Control Area.

Based on the USGS NLCD landcover data, as presented in Table 6.2.9-1 in Section 6.2.9, the Sandhill Project would affect predominantly agricultural land (41.6 acres/99.0 percent). A small amount of developed land (0.3 acre/0.6 percent) and woody wetlands (0.2 acre/0.4 percent) is also present in the Sandhill Land Control Area. The USGS NLCD identified woody wetland areas are located along the eastern margin of the Sandhill Land Control Area; these wetland areas are avoided by the Sandhill Preliminary Development Area. In addition, based on the wetland delineation discussed in Section 6.5.5.5, there is one PEM wetland located approximately 5 feet within the Sandhill Land Control Area; however, the Sandhill Preliminary Development Area avoids the wetland. A discussion of wetland impacts is provided in Section 6.5.5.5.

6.5.6.1 Impacts and Mitigation

Crane Project

The majority of the Crane Preliminary Development Area consists of active agricultural fields representing approximately 35.3 acres within the approximate 36-acre Crane Project Area. Approximately 11.3 acres of agricultural land will be converted to impervious surfaces for the BESS. Approximately 12.2 acres will be converted to perennial vegetation (grasses), which includes a stormwater pond. The remaining 11.8 acres of agricultural land will be restored for agriculture use upon completion of Crane Project construction activities. The Applicants will develop a Vegetation Management Plan for the Crane and Sandhill Projects that will provide recommended seed mixes and maintenance strategies for restoration of areas outside of the fencelines of the Crane and Sandhill Projects.

Vegetative conversion from agriculture to the BESS is considered minor as the biodiversity of agricultural land is low due to routine mechanical and/or chemical clearing and planting with monoculture cover crops. As such, to mitigate impacts to vegetation Crane Storage, will implement the SWPPP and BMPs to control erosion, prevent sedimentation, and promote soil stabilization in disturbed areas. The planting of perennial grasses will increase the biodiversity of the Crane Preliminary Developed Area. Additionally, the planting of perennial grasses and agricultural restoration will help prevent erosion and sedimentation and promote soil stabilization long term.

Sandhill Project

The majority of the Sandhill Preliminary Development Area consists of active agricultural fields representing 39.7 acres within the approximate 40-acre Sandhill Project Area. Approximately 10.1 acres of agricultural land will be converted to impervious surfaces for the BESS. Approximately 14.0 acres will be converted to perennial vegetation (grasses), which includes a stormwater pond. The remaining 15.5 acres of agricultural land will be restored for agriculture use upon completion of Sandhill Project activities. Preliminary design avoids any tree clearing; therefore, forested land will not be impacted. The Applicants will develop a Vegetation Management Plan for the Crane and Sandhill Projects that will provide recommended seed mixes and maintenance strategies for restoration of areas outside of the fencelines of the Crane and Sandhill Projects.

Vegetative conversion from agriculture to the BESS is considered minor as the biodiversity of agricultural land is low due to routine mechanical and/or chemical clearing and planting with monoculture cover crops. As such, to mitigate impacts to vegetation Sandhill Storage will implement the SWPPP and BMPs to control erosion, prevent sedimentation, and promote soil stabilization in disturbed areas. The planting of perennial grasses will increase the biodiversity of the Sandhill Preliminary Developed Area. Additionally, the planting of perennial grasses and agricultural restoration will help prevent erosion and sedimentation and promote soil stabilization long term.

6.5.7 Wildlife and Their Habitats

6.5.7.1 Common Wildlife

The Crane and Sandhill Land Control Areas are dominated by cultivated agriculture characterized by corn and soybean production, with the greater surrounding area consisting of agricultural buffer strips and forested areas, creating edge habitats. This mosaic of agricultural areas with adjacent edge habitats is likely to be utilized by the following species: white-tailed deer (*Odocoileus virginianus*), common raccoon (*Procyon lotor*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*), American crow (*Corvus brachyrhynchos*), eastern bluebird (*Sialia sialis*), mourning dove (*Zenaida macroura*), ring-necked pheasant (*Phasianus colchicus*), wild turkey (*Meleagris gallopavo*), American toad (*Anaxyrus americanus*), and common garter snake (*Thamnophis sirtalis*) (MDNR, 2024h). Additionally, some pollinator species may be present within the Crane and Sandhill Land Control Areas including bees, butterflies, and moths.

6.5.7.2 Avian Species

The Crane and Sandhill Projects are located within the Mississippi Flyway, a crucial migration route for millions of birds that migrate annually between nesting habitat and wintering habitat in North, Central, and South America. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 USC 703-711), which prohibits the taking of any migratory bird, or a part, nest, eggs, or products. Additionally, Bald and Golden Eagles are also protected under the Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668-668d) which prohibits disturbance that may lead to biologically significant impacts.

Although the MBTA provide protection for all migratory birds, the USFWS has also developed lists of Birds of Conservation Concern (BCC), which includes MBTA species and some non-MBTA protected species, to foster proactive conservation actions by federal and state agencies and private parties by

focusing first on species of concern (USFWS, 2024a). In addition, the U.S. North American Bird Conservation Initiative (NABCI) has developed Bird Conservation Regions (BCRs) to "facilitate domestic and international cooperation in bird conservation" (NABCI, 2024); each BCR has a list of birds present or possibly present within the region that are considered BCC.

The Crane and Sandhill Projects are also located within the Eastern Tallgrass Prairie Bird Conservation Region (BCR 22), (NABCI, 2024). The USFWS identified 26 species considered BCC within BCR 22. Table 6.5.7-1 provides a list of each BCC species within BCR 22.

Table 6.5.7-1

Birds of Conservation Concern that Potentially Occur in the Crane and Sandhill Land Control Areas

BCR	Listed Birds	
	Common Name [1]	**Scientific Name**
22 (Eastern Tallgrass Prairie)	American Golden-Plover (nb)	*Pluvialis dominica*
	Black-billed Cuckoo	*Coccyzus erythropthalmus*
	Bobolink	*Dolichonyx oryzivorus*
	Buff-breasted Sandpiper (nb)	*Calidris subruficollis*
	Cerulean Warbler	*Setophaga cerulea*
	Chimney Swift	*Chaetura pelagica*
	Dunlin (nb)	*Calidris alpina*
	Eastern Whip-poor-will	*Antrostomus vociferus*
	Grace's Warbler	*Setophaga graciae*
	Grasshopper Sparrow	*Ammodramus savannarum*
	Henslow's Sparrow	*Centronyx henslowii*
	Hudsonian Godwit (nb)	*Limosa haemastica*
	Kentucky Warbler	*Geothlypis formosa*
	King Rail	*Rallus elegans*
	Lesser Yellowlegs (nb)	*Tringa flavipes*
	Loggerhead Shrike	*Lanius ludovicianus*
	Pectoral Sandpiper (nb)	*Calidris melanotos*
	Prothonotary Warbler	*Protonotaria citrea*
	Red-headed Woodpecker	*Melanerpes erythrocephalus*
	Ruddy Turnstone (nb)	*Arenaria interpres*
	Rusty Blackbird (nb)	*Euphagus carolinus*
	Semipalmated Sandpiper (nb)	*Calidris pusilla*
	Short-billed Dowitcher (nb)	*Limnodromus griseus*
	Short-eared Owl (nb)	*Asio flammeus*
	Upland Sandpiper	*Bartramia longicauda*
	Wood Thrush	*Hylocichla mustelina*

[1] (nb) non-breeding in this BCR.

The USFWS has established Waterfowl Production Areas (WPAs) to protect habitat determined essential to the breeding, resting, and nesting habitat for countless avian and other wildlife species (MDNR, 2023). The Crane and Sandhill Projects are not located within or near any WPAs.

The National Audubon Society has established Important Bird Areas (IBAs). IBAs are discrete sites that provide essential habitat for one or more bird species and include habitat for breeding, wintering, and/or migrating birds (National Audubon Society, 2022). The Crane and Sandhill Projects are not located within or near any IBAs.

6.5.7.3 Impacts and Mitigation

Crane Project

Impacts to wildlife species, avian species and MBTA and BGEPA protected species (wildlife) are expected to be minor due to the agricultural setting of the Crane Project and the availability of similar habitat within the vicinity of the Crane Preliminary Development Area. Most of the wildlife species that utilize habitat within the Crane Land Control Area are highly mobile and will likely avoid the area during construction in favor of areas with less anthropogenic activities. During operation of the Crane Project, impacts are expected to be minimal as wildlife will become accustomed to operational activities similar to the agricultural practices of the current land use. Less mobile species may be more prone to impacts; however, impacts resulting from the construction and operation of the Crane Project are not expected to differ from current impacts of annual farming activities.

The Crane Project has been designed to avoid adverse impacts to quality habitat to the greatest extent possible. The Crane Project will utilize BMPs to stabilize, protect, and mitigate potential impacts to species' habitat. These BMPs will be implemented during construction, post-construction, and operational phases of the Project. No species-specific mitigation is proposed as all potential impacts to wildlife are expected to be minimal and insignificant.

Sandhill Project

Given the Sandhill Project's proximity to the Crane Project and the similarity in the design of the Projects, potential impacts to wildlife and habitat resulting from the construction and operation of the Sandhill Project are also expected to be minimal and insignificant. Please refer to the Crane Project impact assessment above.

6.5.8 Rare and Unique Natural Resources

The USFWS's Information for Planning and Conservation (IPaC) website was reviewed for a list of federally endangered, threatened, proposed, and candidate species and designated critical habitat that may be present in Crane and Sandhill Land Control Areas. The USFWS utilizes determination keys (DKeys) within the IPaC system to streamline the effects analysis process using the best available scientific information and the Dkeys contain the analytical basis for determining whether or not actions are reasonably certain to result in take of federally listed species for both federal and non-federal projects. A Dkey was run for the combined Crane and Sandhill Project areas; the results of this Dkey are summarized below.

The MDNR's Natural Heritage Information System (NHIS) was reviewed for documented occurrences of federally listed species and state-listed species within one mile of the Crane and

Sandhill Land Control Areas. The MDNR maintains the NHIS database through their Natural Heritage Program and Nongame Game Research Program; the NHIS is the most complete source of data on Minnesota's threatened and endangered species, as well as ecologically significant areas, native plant communities, and other rare natural features. The NHIS information provided here is based on a query of licensed NHIS data (per MDNR license agreement; MDNR, 2024i). In addition, the Applicants submitted a Natural Heritage Review Request to the MDNR via the MDNR's Minnesota Conservation Explorer (MCE) online tool most recently on October 16, 2024; the MDNR responded to this request on December 9, 2024.

Although these reviews do not represent a comprehensive survey, they provide information on the potential presence of rare and unique species and habitats.

6.5.8.1 Federally Listed Species

According to the IPaC review, the following species have been identified as potentially present in the Crane and Sandhill Land Control Areas, as shown in Table 6.5.8-1 (USFWS, 2024b).

Table 6.5.8-1

Federally Listed, Proposed, and Candidate Species Potentially Present in the Crane and Sandhill Land Control Areas

Scientific Name	Common Name	Federal Status
Grus americana	Whooping Crane	Experimental population, Non-essential
Danaus plexippus	Monarch butterfly	Proposed Threatened
Lespedeza leptostachya	Prairie Bush-clover	Threatened

In addition, the IPaC review indicates if a project area overlaps with designated critical habitat for listed species, as defined by the USFWS. Designated critical habitat for the species listed in Table 6.5.8-1 is not present in the Crane and Sandhill Land Control Areas.

Whooping Crane

One of only two crane species found in North America, the whooping crane is named for its loud, single-note whooping call which can travel over long distances. The species is noted for its size; adults stand nearly 5 feet tall. Males are larger than females and birds weigh an average of 16 pounds and 14 pounds, respectively. Adult plumage is white in color with a red crown and a long, dark, pointed bill. Black wing tips are visible only during flight. Immature cranes are brownish until adult plumage grows in at approximately one year of age.

While the historic range of the whooping crane once extended from the Arctic coast south to central Mexico, and from Utah east to New Jersey, into South Carolina, Georgia, and Florida, there are now three distinct populations of whooping cranes in North America. One, the Aransas/Wood Buffalo population, is a self-sustaining, wild population. A second is a non-migratory, captive-raised population in central Florida.

A third population consists of captive-raised birds that migrate between Wisconsin and Florida; this population is considered by the USFWS to be an experimental, non-essential population. The intent is to establish a migratory flock which will summer and breed in central Wisconsin and migrate to west-central Florida to over-winter. The birds are taught the migration route after being conditioned to follow costumed pilots in ultralight aircraft. For the purposes of consultation,

non-essential experimental populations are treated as threatened species on National Wildlife Refuge and National Park lands. On private lands, they are treated as a proposed species and do not receive any protections under the Endangered Species Act (ESA) (USFWS, 2024c).

Monarch Butterfly

The monarch butterfly is a large butterfly with an approximate 3- to 4-inch wingspan and characterized by bright orange coloring on the wings, with distinctive black borders and veining. The species can be found in a wide variety of habitats including prairies, grasslands, urban gardens, road ditches, and agricultural fields, provided a supply of nectar plants are available for adult foraging and milkweed plants are present for laying eggs and as a food source for caterpillars (USFWS, 2024d).

On December 17, 2020, the USFWS published the result of their 12-month review of the monarch butterfly and determined that listing the species under the ESA was warranted but precluded. The species meets the criteria for listing as an endangered or threatened species, but the USFWS cannot currently implement the listing due to limited staff and/or funding and because there are other listing actions with a higher priority. On December 12, 2024, the USFWS published a proposed rule to the federal register to list the monarch as threatened with a 4(d) rule (USFWS, 2024e). A final rule is expected to be published to the federal register in 12 months, and the listing made effective 30 to 60 days later (i.e., January or February 2026). Proposed species are not protected under the Endangered Species Act, and as such, a determination of effect is not applicable. However, federal agencies are required to confer with the USFWS on agency actions that may be likely to jeopardize a proposed species.

Prairie Bush-clover

Prairie bush-clover is found only in the tallgrass prairie region of four Midwestern states. It is a member of the bean family and a midwestern "endemic" – known only from the tallgrass prairie region of the upper Mississippi River Valley (USFWS, 2024f).

6.5.8.2 State-listed Species

Documented occurrences of state-listed species within one mile of the Crane and Sandhill Land Control Areas are shown in Table 6.5.8-2 (MDNR, 2024j).

Table 6.5.8-2

State Listed Species Potentially Present Within One Mile of the Crane and Sandhill Land Control Areas

Scientific Name	Common Name	State Status
Lanius ludovicianus	Loggerhead Shrike	Endangered

Loggerhead Shrike

The loggerhead shrike is a medium sized bird identified by a black mask through the eyes, a gray back, a white patch on otherwise black wings, and white outer tail feathers. In Minnesota, the species is a seasonal resident, nesting in shrubs, hedgerows, and small trees. Loggerhead shrikes can be found in both non-native and native grasslands, and utilize agricultural areas, hunting in short grasses in farmyards, cemeteries, and old fields. The species was once common in grassland habitats but is now absent from much of its former range; in Minnesota, they are only

consistently found in Dakota and Clay counties, with sporadic, scattered observations elsewhere. Threats to the species include tree encroachment on grasslands and a loss of shelterbelts and windrows due to increases in intensive row-cropping practices (MDNR, 2024k).

6.5.8.3 MDNR High-value Areas

The MDNR recommends identifying high value natural resources during Crane and Sandhill Project development. High value resources include but are not limited to

- State-listed species,
- Minnesota Biological Survey (MBS) sites of biodiversity significance (SOBS), MDNR Native Plant Communities (NPCs), and Native Prairie,
- Wetlands, calcareous fens, shorelands, floodplains, and PWI,
- Minnesota Wildlife Action Plan Species and Wildlife Action Network
- Public conservation and recreation lands, and
- Large block and other important habitats.

State-listed species are discussed in Section 6.5.8.2; shorelands, floodplains, public waters, and wetlands are discussed above in Section 6.5.5; and public lands are discussed in Section 6.2.9. The remaining high value natural resource areas are discussed below and shown on Map 16.

Native Plant Communities

Using aerial surveys, desktop review, and follow-up field-based survey efforts, MDNR's MBS evaluates Minnesota landscapes for rare plant and animal species, NPCs, and intact ecological communities. The most recent classification effort was in 2003; this "Version 2.0" is strongly based on plant species composition and was developed using extensive data from sample plots throughout the state from a variety of habitat types including wetlands, forests, prairies, and others.

A biodiversity significance rank is assigned to each site; these are then referred to as SOBS. Ranks are based on the landscape context (i.e., proximity of site to other intact sites or isolation within agricultural, urban, or other disturbed areas), presence/extent of native plant communities, and the presence of rare species populations. The ranking process allows for prioritization of sites for conservation and guides management and monitoring efforts. Sites are ranked as outstanding, high, moderate, and below.

Based on review of the MDNR NPC data, there are no NPCs within the Crane and Sandhill Land Control Areas. However, one NPC, the Mantorville 24 SE, is located approximately 0.7 mile to the northwest.

Native Prairie

The MDNR defines native prairie as areas dominated by native prairie vegetation including grasses and forbs, as well as wildlife endemic to these areas (MDNR, 2024l). Typically, they are found in areas of the state where the sod has never been broken.

There is no MDNR-mapped native prairie in the Crane and Sandhill Land Control Areas.

The MDNR also has identified native prairie remnants that occur along railroad rights-of-way (MDNR, 2024m). The 1997 Minnesota State Legislature instructed the MDNR to inventory railroad lines in the state to identify native prairie that may be associated with the railroad right-of-way. Railroad rights-of-way are ranked by the MDNR as very good, good, and fair. There are no MDNR-mapped railroad prairie rights-of-way in the Crane and Sandhill Land Control Areas.

Calcareous Fens

Calcareous fens are rare wetlands dependent on a persistent source of calcium-rich groundwater. These areas support unique plant communities that are highly sensitive to changes in both groundwater quality and quantity (MDNR, 2024n). Reductions in groundwater upwelling rates changes in surface water can damage fen condition and/or extent, in some cases irreparably. Based on review of MDNR's data, there are no calcareous fens within 5 miles of the Crane and Sandhill Land Control Areas.

Minnesota Wildlife Action Plan and Wildlife Action Network

Minnesota's State Wildlife Action Plan (SWAP) (2015-2025) is a plan which aims to address the primary issues facing Minnesota's Species of Greatest Conservation Need (SGCNs) including habitat loss, degradation, and fragmentation, biological factors such as low reproduction, poor dispersal ability, disease, or overexploitation, and the impacts of climate change (MDNR, 2024o). SGCNs are native species with rare, declining, or vulnerable populations. All state and federally listed species that occur in Minnesota are automatically listed as SCGNs.

The SWAP defines actions that can be taken to prevent populations declining further and resulting in the need to list them under the state endangered species program or the federal ESA.

The Wildlife Action Network (WAN) is a spatial dataset developed by the MDNR to assist in developing and focusing conservation efforts for species identified in the SWAP (MDNR, 2024p). The WAN is comprised of 10 GIS data layers that represent terrestrial and aquatic habitats across the state that support SGCN. These include lakes of biological significance, rivers and streams with high biological integrity, and high conservation value forests. The closest mapped area is located approximately 1.2 miles southeast of the Crane and Sandhill Land Control Areas.

Large Block Habitats

Large, contiguous blocks of habitat, such as forests or grasslands, can provide foraging, denning, and breeding habitats for species requiring greater separation from anthropogenic development. These areas often include more complex ecological communities, which may lead to an increased diversity of species, and larger and more resilient species populations. Construction of projects within large block habitats may increase habitat loss and fragmentation, which is counterproductive to area-sensitive species for feeding, breeding, and sheltering. No large block habitats are present in the Crane and Sandhill Land Control Areas.

6.5.8.4 Impacts and Mitigation Measures

Federally Listed Species

Crane Project

Field-based surveys conducted by TRC July 20-23 and November 8, 2024, determined there is low to no potential for occurrence of federally-listed species within the Crane Land Control Area. Suitable habitat for whooping cranes and prairie bush-clover is not present in the Crane Land Control Area, and while some milkweed and other flowering plants were identified during surveys, TRC determined that the potential for monarch butterflies in the Crane Land Control Area is low. The results of these surveys informed the answers used to complete the Dkey for the combined Crane and Sandhill Project areas; *no effect* determinations were made for Whooping Crane, monarch butterfly, and prairie bush-clover. The IPaC website will be reviewed again prior to the start of construction to ensure the species list remains current. If federally listed species are identified through this review as potentially present in the vicinity of the Crane Land Control Area, Crane Storage will work with the USFWS to develop avoidance and minimization measures to ensure Crane Project activities will not result in unauthorized take of federally listed species.

Sandhill Project

Due to the proximity of the Sandhill Project to that of the Crane Project, impacts to these species are also not expected in the Sandhill Land Control Area. Please refer to the Crane Project assessment above.

State-listed Species

Crane Project

Field-based surveys conducted by TRC July 20-23 and November 8, 2024, determined there is low potential for occurrence of state-listed species within the Crane Land Control Area. There are limited perching sites in the Crane Land Control Area; these opportunities exist within or near the grassed conservation buffer strips. Per the original MDNR response to the Natural Heritage Review Request received on June 13, 2024, recent surveys for loggerhead shrikes indicate that they are no longer using the Study Area. MDNR responded to the October 16, 2024, request on December 9, 2024, stating that the presence of loggerhead shrikes in the Land Control Area is unlikely, and as such, impacts to this species are not anticipated.

Sandhill Project

Due to the proximity of the Sandhill Project to that of the Crane Project, impacts to loggerhead shrikes are also not expected in the Sandhill Land Control Area. Please refer to the Crane Project assessment above for additional details.

Minnesota Department of Natural Resources High-value Areas

Potential impacts on state-listed species are discussed above. Shorelands, floodplains, public waters, and wetlands are discussed in Section 6.5.5 and public lands are discussed in Section 6.2.10. There are no additional MDNR High Value Areas in the Crane and Sandhill Land Control Areas, including MBS SOBS, NPCs, native prairie, calcareous fens, SWAP species or WAN

areas, or large block habitats. As such, impacts on MDNR High Value Areas will be avoided and no mitigative measures are proposed.

6.6 UNAVOIDABLE IMPACTS

The Applicants developed the Crane and Sandhill Projects to avoid impacts on environmental resources whenever possible. In some cases, impacts on environmental resources could not be entirely avoided, but could be minimized by implementation of mitigation measures. A detailed discussion of the environmental impacts of the proposed Projects, as well as the mitigation measures that would be used to minimize impacts is presented in Sections 6.1 through 6.5 of this Joint Application. Environmental impacts that would be minimized by the use of mitigation measures, but not entirely avoided, are provided below. Most of these unavoidable impacts would occur during construction and would be the same for both the Crane and Sandhill Projects. Most unavoidable impacts would resolve with the completion of construction.

Unavoidable impacts related to the Crane and Sandhill Projects that would last only as long as the construction periods include:

- noise emitted from vehicles and equipment during construction that will be audible to neighboring landowners;
- increased traffic on roads surrounding the Crane and Sandhill Land Control Areas;
- minor air quality impacts due to fugitive dust;
- potential for soil erosion; and
- disturbance to and displacement of some species of wildlife.

Unavoidable impacts related to the Crane and Sandhill Projects that would last as long as the life of the Projects would include:

- changes to existing aesthetics of landscape (from agrarian to BESS facilities), which will be visible from local roadways and parcels; and
- changes in land use and vegetation from agricultural land of predominately corn and soybeans to two BESS facilities with impervious surfaces and perennial herbaceous vegetation outside the fenceline of the Crane and Sandhill BESS facilities.

6.7 IRRETRIEVABLE COMMITMENT OF RESOURCES

An irretrievable commitment of resources refers to the use or consumption of resources in a way that is neither renewable nor recoverable for later use by future generations. The commitment of resources refers primarily to the use of nonrenewable resources such as fossil fuels, water, and other materials (e.g., aggregate minerals, steel/metals).

Construction of the Crane and Sandhill Projects would require the use of fossil fuels for electricity (portable generators) and for the operation of vehicles and equipment. Use of raw building materials for construction would be an irretrievable commitment of resources from which these materials are produced, excluding those materials that may be recycled at the end of the Projects'

life cycle. The use of water for dust abatement during construction activities would also be irreversible. Further, commitment of labor and fiscal resources to develop and build the Projects is considered irretrievable.

6.8 CUMULATIVE POTENTIAL IMPACTS

Cumulative impacts on the environment can occur if the impacts of one activity overlap either geographically or temporally with other activities, thereby resulting in cumulatively greater impacts on a particular area or important resource.

Review of MnDOT District 6 planned projects did not identify any proposed projects that would be adjacent to the Crane and Sandhill Projects or that would overlap with the proposed construction timeframe for either of the Projects. The nearest MnDOT District 6 project would be construction of a roundabout at the intersection of Highway 57 and County Road 16 (600th Street) and associated road resurfacing just north of Mantorville in Dodge County. The location of this project is about 5.0 miles northwest of the Crane and Sandhill Land Control Areas. This work is planned for summer of 2027, which would overlap with the anticipated periods of construction for one or both of the Crane and Sandhill Projects. However, given the distance between the Projects and the planned MnDOT project, no potential for cumulative impacts is anticipated.

Review of the MISO Generator Interconnection Queue – Active Projects Map (MISO, 2024) shows that a solar project is planned in Dodge County, about 1.0 mile southwest of the Crane Land Control Area and about 1.2 miles southwest of the Sandhill Land Control Area. Further research on the MPUC docket indicates that this is the proposed Byron Solar Project (MPUC Docket Nos. GS-20-763 and TL-20-765). The Byron Solar Project received a Site Permit and Route Permit from the Commission on May 1, 2023[1]. The POI for the Byron Solar Project is the Byron Substation; the same POI as the Crane and Sandhill Projects. A construction timing update filed on the MPUC docket indicates that Byron Solar, LLC has signed a Generator Interconnection Agreement for the first 100 MW of the Byron Solar Project and the remaining 100 MW are in the Definitive Planning Phase 3 2020 cycle[2]. This update further states that Byron Solar, LLC is continuing to market the Byron Solar Project to potential offtakers but has not yet secured an agreement.

The timeline for construction of the Byron Solar Project is unknown at this time. Because the POI for the Bryon Solar Project is the same as the POI for the Crane and Sandhill Projects, there is potential for all three projects to overlap both geographically and temporally. Specifically, the transmission line for the Bryon Solar Project appears to overlap geographically with the temporary workspace that would be used to construction the shared gen-tie line for the Crane and Sandhill Projects. The design of the shared gen-tie line has taken the proposed alignment of the Byron Solar Project gen-tie line into account and can be accommodated spatially. If construction of the transmission line for the Byron Solar Project also overlaps temporally with either the Crane Project or the Sandhill Project, potential cumulative impacts may include:

[1] Granting Certificate of Need and Issuing Site and Route Permits (May 1, 2023). E-docket ID No. 20235-195471-02. Available online at: https://www.edockets.state.mn.us/documents/%7B701ED987-0000-CA3E-9375-E274B0EA8F13%7D/download?contentSequence=0&rowIndex=6.

[2] November 2024 Construction Timing Update (November 14, 2024). E-docket ID No. 202411-211910-01. Available online at: https://www.edockets.state.mn.us/documents/%7B20842B93-0000-C21C-B94F-AA1A4E713A8D%7D/download?contentSequence=0&rowIndex=1.

- cumulative increases in noise emitted from vehicles and equipment during construction that will be audible to neighboring landowners;
- cumulative increases in traffic on surrounding public roads;
- cumulative demand for lodging for construction personnel; however, adequate lodging is anticipated to be available in nearby Rochester;
- cumulative increases in minor air quality impacts due to fugitive dust;
- increased potential for soil erosion during construction near the Bryon Substation, where the Bryon Solar Project and the Crane and Sandhill Projects overlap geographically; and
- disturbance to and displacement of some species of wildlife.

The potential cumulative impacts listed above are all associated with the period of active construction and would only occur if the Bryon Solar Project and the Crane Project or Sandhill Project overlap temporally or sequentially. Use of the mitigation measures described throughout Section 6.0 would help to mitigate any cumulative impacts during active construction. Further, cumulative impacts would be temporary in nature and would resolve when construction is complete.

Review of the Review of the MISO Generator Interconnection Queue – Active Projects Map (MISO, 2024) and the MPUC docket also identified a proposed BESS project that would be located east of the City of Byron, the Snowshoe BESS Project (MPUC Docket No. ESS-24-279). The Snowshoe BESS Project is similarly sized, but geographically distant from the Projects and is not anticipated to increase the impacts that may result from the proposed Projects.

Review of the Olmsted County Public Works website did not identify any county highway construction projects that would overlap spatially or temporally with the Crane and Sandhill Projects. Furthermore, the construction projects listed are limited to 2025, and as such, would occur prior to the anticipated construction start date for one or both of the Crane and Sandhill Projects. No potential for cumulative effects related to Olmsted County construction projects is anticipated.

No other proposed projects that may overlap spatially or temporally with the Crane and Sandhill Projects have been identified through coordination with other state, county, or local government agencies. As such, no potential cumulative impacts are anticipated from construction or operation of the Projects.

7.0 AGENCY AND STAKEHOLDER COORDINATION

The Applicants conducted early coordination with federal, state, and local agencies and Tribal Nations in Fall 2024 for the Crane and Sandhill Projects. This section describes the early stakeholder engagement conducted by the Applicants in support of this Joint Application.

A project notification letter was sent out on October 29 and 30, 2024 to the agencies and Tribal Nations listed in Table 7.0-1. A summary of responses received as of the date of this Joint Application filing follows the table. Copies of responses received from agencies and Tribal Nations are provided in Appendix B.

TABLE 7.0-1

Summary of Agency Correspondence

Agency	Response to Project Notification Mailing	Meeting Date (if applicable)
FEDERAL		
U.S. Army Corps of Engineers	Response to notification on 11/4/2024	
U.S. Fish and Wildlife Service	No response to date.	
Federal Aviation Administration	Response to notification letter on 10/31/2024	
U.S. Department of Agriculture	Response to notification on 11/12/2024	
TRIBAL NATIONS		
Fond du Lac Band of Lake Superior Chippewa	No response to date.	
Lower Sioux Indian Community	No response to date.	
Mille Lacs Band of Ojibwe	No response to date.	
Grand Portage Band of Ojibwe	No response to date.	
Prairie Island Indian Community	No response to date.	
Upper Sioux Community	No response to date.	
White Earth Nation	No response to date.	
Leech Lake Band of Ojibwe	No response to date.	
Red Lake Nation	No response to date.	
Shakopee Mdewakanton Sioux (Dakota) Community	Response to notification on 10/29/2024	
Bois Forte Band of Chippewa	No response to date.	
STATE		
Minnesota Department of Commerce, Energy Environmental Review and Analysis	Response to notification letter on 10/29/2024	Meeting on 8/1/2024.
Minnesota Board of Water and Soil Resources	Response to notification letter on 11/19/2024	
Minnesota Department of Transportation	Response to notification letter on 10/30/2024	

TABLE 7.0-1

Summary of Agency Correspondence

Agency	Response to Project Notification Mailing	Meeting Date (if applicable)
	Shapefiles provided on 10/30/2024	
Minnesota Department of Natural Resources, Energy Projects, Planners Office	Response to notification on 10/30/2024	Meeting on 10/8/2024
Minnesota Department of Natural Resources, Ecology and Water Resources	No response to date.	Meeting on 10/8/2024
Minnesota Department of Natural Resources Regional Wildlife Office	No response to date.	
Minnesota Department of Agriculture	No response to date.	Meeting on 11/7/2024
Minnesota State Historic Preservation Office	No response to date.	
Office of the State Archaeologist	No response to date.	
Minnesota Department of Health	No response to date.	
Minnesota Pollution Control Agency	No response to date.	
Minnesota Department of Employment and Economic Development	Response to notification on 10/30/2024	
Minnesota Indian Affairs Council	No response to date.	
LOCAL		
Olmsted County Board of Commissioners	No response to date.	
Olmsted County – County Commissioner	No response to date.	Meeting on 10/24/2024
Olmsted County Planning Supervisor	No response to date.	Meeting on 10/23/2024
Olmsted County Planning Advisory Commission Chairwoman	No response to date.	
Olmsted County Soil and Water Conservation District Soil Conservation Manager	No response to date.	
Olmsted County – County Administrator	No response to date.	
Olmsted County Environmental Resources Director	No response to date.	
Olmsted County Economic Development Director	No response to date.	
City of Byron - City Administration		Meeting on 3/12/24 Meeting on 10/23/24
Byron Chamber of Commerce President	No response to date.	Meeting on 10/24/24
Kalmar Township Clerk	No response to date.	
Kalmar Township Cooperative Planning Association	No response to date.	Meeting on 3/12/2024

7.1 FEDERAL AGENCIES

7.1.1 U.S. Army Corps of Engineers

The USACE responded to the Projects notification letter on November 4, 2024, and provided information about the process for requesting reviews of the Projects and obtaining any required permits should the Crane and Sandhill Projects impact Waters of the U.S. The Applicants will continue to coordinate with the USACE, as needed, to obtain any regulatory approvals needed for both Projects.

7.1.2 Federal Aviation Administration

The FAA responded to the Projects notification letter on October 31, 2024, provided a link to the Notice Criteria tool, and recommended the Applicants use this tool to determine the need for an official notice to be submitted to the FAA. The FAA further noted that unless the Applicants plan to submit an Aeronautical Study for the Projects, a case file will not be established. Instructions for submitting an Aeronautical Study were also included in the response.

7.1.3 U.S. Department of Agriculture

The USDA-NRCS responded to the Projects notification letter on November 12, 2024, and noted that Biologist David Voigt was working on a response. A follow-up response from USDA-NRCS was received on January 8, 2025, in which the agency noted that no USDA-NRCS easement would be affected by the Crane or Sandhill Projects. The agency further advised on additional authorizations that may be needed if the Projects involve any federal monies (e.g., the Farmland Policy Protection Act); the Crane and Sandhill Projects do not involve any federal monies, therefore, these recommendations are not applicable.

7.2 TRIBAL NATIONS

7.2.1 Shakopee Mdewakanton Sioux (Dakota) Community

The Shakopee Mdewakanton Sioux (Dakota) Community responded to the Projects notification letter on October 29, 2024, and requested a copy of the archaeological literature review/study when available. The Applicants will provide a copy of the relevant cultural resources inventory report when available.

7.3 STATE AGENCIES

7.3.1 Minnesota Department of Commerce, Energy Environmental Review and Analysis

Applicants' counsel from Fredrikson & Byron met with Ray Kirsch, Environmental Review Manager, EERA and Scott Ek, Energy Facility Planner and Analyst, MPUC on August 1, 2024, to introduce the Crane and Sandhill Projects. Topics discussed at this meeting included the concept of a joint site permits application to process the neighboring projects simultaneously, which parties agreed would offer considerable efficiency. The importance of including in the application a clear distinction of features associated with each project, as well as the overlapping assets, was emphasized in this discussion.

EERA responded to the Projects notification letter on October 29, 2024, and commented that they would like to review the Joint Application when available. The Applicants submitted a draft of the

Joint Application to EERA for a preliminary completeness review on December 6, 2024. EERA provided comments on the draft Joint Application on January 21, 2025. The Applicants have addressed EERA's preliminary comments throughout this Joint Application.

Coordination with EERA is ongoing and will continue during the Joint Application MPUC proceeding.

7.3.2 Minnesota Board of Water and Soil Resources

BWSR responded to the Projects notification letter on November 19, 2024, and advised that the Projects will need to comply with the Minnesota Wetland Conservation Act; a copy of the Joint Application for Activities Affecting Water Resources was also provided.

7.3.3 Minnesota Department of Transportation

MnDOT responded to the Projects notification letter on October 30, 2024, and requested shapefiles of the Crane and Sandhill Land Control Areas to confirm no state highways would be impacted by the Projects. The Applicants provided the requested shapefiles the same day. No additional responses from MnDOT have been received.

7.3.4 Minnesota Department of Natural Resources

An introductory call was conducted on October 8, 2024. Attendees included personnel from the MDNR and CIP representatives including but not limited to Merjent and Fredrikson & Byron. The meeting started by providing a description of the Projects and included information regarding the Crane and Sandhill Land Control Areas, state and federal threatened and endangered species database review results, and field surveys conducted for the Projects. The attendees of this meeting discussed MDNR's questions related to future plans for wind/solar development, the type of BESS technology being used, and karst areas in this region of Minnesota. The MDNR commented that the Projects are smaller than they had anticipated. They recommended submitting a formal MCE and anticipate about 6 weeks to receive a response from the MDNR, unless an automated response is generated indicating no further review is needed. The Applicants submitted a Natural Heritage Review Request to the MDNR via the MDNR's MCE online tool most recently on October 16, 2024; the MDNR responded to this request on December 9, 2024. Details about correspondence with MDNR regarding threatened and endangered species, including the results of the MCE coordination, are provided in Section 6.5.8.

The MDNR Planner's Office responded to the Projects introduction letter on October 30, 2024, and noted that they had forwarded the letter to the Regional Ecologist. It is customary for Applicants to conduct early coordination with the MDNR Regional Ecologist during application development; after an application is submitted, the Planner's Office begins its participation in the MPUC proceedings.

7.3.5 Minnesota Department of Agriculture

The Applicants met with the MDA on November 7, 2024, to introduce the Crane and Sandhill Projects and discuss potential impacts to agricultural lands from the Projects and consideration of potential impact minimization and mitigation measures that may be needed.

Crane Storage and Sandhill Storage met with the MDA on November 7, 2024, to discuss the Crane and Sandhill Projects and potential impacts on agricultural land. Given the proximity of the

Projects to the City of Byron and the city's inclusion of the property in the 25-year growth area, it is likely that the land will not revert back to agricultural uses when the Crane and Sandhill Projects are decommissioned. Nonetheless, this Application outlines BMPs that can be incorporated into pre-construction, construction, and post construction methods; operational procedures; and decommissioning and restoration procedures to avoid and minimize impacts to soil and site productivity such that pre-construction agricultural productivity is rapidly returned to the sites following decommissioning. Crane Storage and Sandhill Storage will continue to coordinate with MDA regarding potential impacts to agricultural land and measures needed to reduce long term impacts to the land for agricultural uses, in the event the land reverts back to agricultural uses upon decommissioning of the Projects.

7.3.6 Minnesota Department of Employment and Economic Development

The MN DEED office responded to the Projects notification letter on October 30, 2024, and directed the Applicants to contact the MPUC.

7.4 LOCAL GOVERNMENT

7.4.1 Olmsted County

Project representatives met with Allison Sosa, Olmsted County Planning Supervisor, on October 23, 2024. The purpose of the meeting was to provide information to Ms. Sosa about the Projects.

Project representatives also met with Olmsted County Commissioner Michelle Rossman on October 24th, 2024. The purpose of the meeting was to provide information to Commissioner Rossman about the Projects.

7.4.2 City of Byron

Project representatives met with City Administrator Al Roder on March 12, 2024. The meeting consisted primarily of site and project updates. Project coordinators requested Mr. Roder put them in contact with the Byron Fire Chief as their department would handle any incidents at the site. He agreed to do so and said the Chief was up to speed on the BESS concept, as Mr. Roder briefed him when the initial site was being considered.

Another meeting was held on October 23, 2024, between Projects representatives and Mr. Roder and the Byron Fire Chief. The purpose of the meeting was to provide a status update on the Projects.

7.4.3 Byron Chamber of Commerce

Projects representatives made a presentation to the Byron Chamber of Commerce on October 24, 2024. The purpose of the presentation was to provide information to the Chamber of Commerce about the Projects.

7.4.4 Kalmar Township Cooperative Planning Association

Project representatives met with Jerod Staten, David Meir, and Ethan Kaske with the Township Combined Planning Association on March 12, 2024. The meeting entailed details related to the Projects as a whole and MPUC permitting. Mr. Staten asked for an electronic copy of the Crane/Sandhill presentation. He plans to share it with Kalmar Township officials. If they have

any questions, a meeting to walk them through the Projects will be scheduled. The presentation has been sent to Mr. Staten. Kalmar Township has not contacted the Applicants with any project-related questions.

8.0 REFERENCES

AirNav, LLC. 2024. Dodge Center Airport, Dodge Center, Minnesota, USA. Effective November 28, 2024. Available online at: https://www.airnav.com/airport/KTOB. Accessed December 2024.

American Clean Power. 2024. Clean Energy Storage Facts. Available online at: https://cleanpower.org/facts/clean-energy-storage/. Accessed October 2024.

American National Standards Institute / Acoustical Society of America. 2013. Quantities and Procedures for Description and Measurement of Environmental Sound – Part 3: Short-term Measurements with an Observer Present.

City of Byron. No date (n.d.). Water and Sewer Information. Available online at: https://www.byronmn.com/watersewerinfo. Accessed October 2024.

City of Byron. 2022. Byron Comprehensive Plan, Adopted December 2022. Available online at: https://www.byronmn.com/vertical/sites/%7BAB4DA627-110F-4DDB-A83D-A27638C29D9A%7D/uploads/22.01__FINAL_FINAL_FINAL_-_Comp_Plan_December_2022.pdf. Accessed November 2024.

City of Byron. 2024. Community Calendar. Available online at: https://www.byronmn.com/index.asp?Type=B_EV&SEC=FCC2F66F-9693-49DE-BA8E-90E2ECC0CDE0&month=10&year=2024. Accessed October 2024.

Dewitz, J. and U.S. Geological Survey. 2021. National Land Cover Database (NLCD) 2019 Products (ver. 2.0, June 2021): USGS data release, https://doi.org/10.5066/P9KZCM54. Available online at: https://www.sciencebase.gov/catalog/item/5f21cef582cef313ed940043. Accessed November 2024.

Federal Aviation Administration. 2022. Fundamentals of Noise and Sound. Available online at: http://www.faa.gov/regulations_policies/policy_guidance/noise/basics. Accessed October 2024.

Federal Emergency Management Agency. 2023. FEMA Flood Map Service Center. Available online at: https://msc.fema.gov/portal/home. Accessed October 22, 2024.

Kalmar Township. 2018. Kalmar Zoning Ordinance. Available online at: https://static1.squarespace.com/static/65c59372531c377505e93070/t/65c5ab9ed505ea71375f6707/1707453344917/Kalmar_Update_2016_FINAL.pdf. Accessed October 2024.

McCallum, L.C., M.L. Whitfield Aslund, L.D. Knopper, G.M Ferguson, and C.A. Ollson. 2014. Measuring electromagnetic fields (EMF) around wind turbines in Canada: is there a human health concern? Environmental Health 13:9. Available online at: https://ehjournal.biomedcentral.com/articles/10.1186/1476-069X-13-9. Accessed November 2024.

Midcontinent Independent System Operator, Inc. (MISO). 2024. Generator Interconnection Queue – Active Projects Map. Available online at: https://giqueue.misoenergy.org/PublicGiQueueMap/index.html. Accessed December 2024.

Ministry of Health, New Zealand. 2013. Electric and Magnetic Fields and Your Health: Information on electric and magnetic fields associated with transmission lines, distribution lines, and electrical equipment, Revised edition 2013, Wellington: Ministry of Health. Available online at: https://www.health.govt.nz/publication/electric-and-magnetic-fields-and-your-health. Accessed November 2024.

Minnesota Board of Water and Soil Resources. 2019. Reinvest in Minnesota Overview. Available online at: https://bwsr.state.mn.us/reinvest-minnesota-overview. Accessed November 2024.

Minnesota Department of Commerce (DOC). 2023. Governor Walz Signs Bill Moving Minnesota to 100 Percent Clean Energy by 2040. Available online at: https://mn.gov/commerce/news/?id=17-563384. Accessed October 2024.

Minnesota DOC. 2024. Minnesota Telephone Exchange Boundaries. Updated March 2024. Available online at: https://minnesota.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=a61fe43236994d43b097d439befb8e70. Accessed November 2024.

Minnesota Department of Employment and Economic Development. 2023. Minnesota Broadband Map. Updated October 2023. Available online at: https://gis.connectednation.org/portal/apps/webappviewer/index.html?id=a2d243ccf7e547eba2ec0d5c80c80917. Accessed November 2024.

Minnesota Department of Health (MDH). n.d.(a). Laws and Rules. Available online at: https://www.health.state.mn.us/communities/environment/water/rules/index.html. Accessed October 2024.

MDH. n.d.(b). Wellhead Protection. Available online at: https://www.health.state.mn.us/communities/environment/water/rules/wellhead.html. Accessed October 2023.

MDH. 2019. Wellhead Protection Areas. Available online at: https://gisdata.mn.gov/dataset/water-wellhead-protection-areas. Accessed October 2024.

MDH. 2024a. Minnesota Well Index. Available online at: https://mnwellindex.web.health.state.mn.us/. Accessed October 2024.

MDH. 2024b. Count of Annual AQI Days by Category. Available online at: https://data.web.health.state.mn.us/air_aqi. Accessed October 2024.

MDNR. 2021. Groundwater Provinces of Minnesota. Available online at: https://gisdata.mn.gov/dataset/geos-groundwater-provinces-mn. Accessed October 2024.

MDNR. 2023. USFWS Waterfowl Production Areas. Available online at: https://arcgis.dnr.state.mn.us/portal/home/item.html?id=6de3eb66e7e2494ebe3669a29f22ad42. Accessed October 2024.

MDNR. 2024a. Ecological Classification System. Available online at: https://www.dnr.state.mn.us/ecs/index.html. Accessed October 2024.

MDNR. 2024b. Oak Savanna Subsection. Available online at: https://www.dnr.state.mn.us/ecs/222Me/index.html. Accessed October 2024.

MDNR. 2024c. Minnesota Regions Prone to Surface Karst Feature Development. Available online at: https://gisdata.mn.gov/dataset/geos-surface-karst-feature-devel. Accessed October 2024.

MDNR. 2024d. Karst Feature Inventory Points. Available online at: https://gisdata.mn.gov/dataset/geos-karst-feature-inventory-pts. Accessed October 2024.

MDNR. 2024d. Springs in Minnesota. Available online at: https://gisdata.mn.gov/dataset/env-mn-springs-inventory. Accessed October 2024.

MDNR. 2024e. DNR Hydrography Dataset. Available online at: https://gisdata.mn.gov/dataset/water-dnr-hydrography. Accessed October 2024.

MDNR. 2024f. Public Waters Basin and Watercourse Delineations. Available online at: https://gisdata.mn.gov/dataset/water-mn-public-waters. Accessed October 2024.

MDNR. 2024g. Impaired Waterbodies. Available online at: https://gisdata.mn.gov/dataset/env-impaired-water-2024. Accessed October 2024.

MDNR. 2024h. Animals Homepage. Available online at: https://www.dnr.state.mn.us/animals/index.html. Accessed October 2024.

MDNR. 2024i. Licensed Natural Heritage Information System data to Merjent, Inc. (License Agreement 2023-052), data current as of February 2024.

MDNR. 2024j. Minnesota Conservation Explorer. Available online at: https://mce.dnr.state.mn.us/. Accessed October 2024.

MDNR. 2024k. Rare Species Guide: Loggerhead Shrike. Available online at: https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABPBR01030. Accessed October 2024.

MDNR. 2024l. Native Prairie Defined. Available online at: https://www.dnr.state.mn.us/prairie/restore/native-prairie-defined.html. Accessed October 2024.

MDNR. 2024m. Minnesota's Railroad Rights of Way Prairie: A Report to the 1999 Legislature. Available online at: https://files.dnr.state.mn.us/eco/mcbs/publications/railroad_row_booklet_scan.pdf. Accessed October 2024.

MDNR. 2024n. Calcareous Fens. Available online at: https://www.dnr.state.mn.us/wetlands/calcareous-fens.html. Accessed October 2024.

MDNR. 2024o. Minnesota State Wildlife Action Plan (SWAP) 2015-2025. Available online at: https://www.dnr.state.mn.us/mnwap/index.html. Accessed October 2024.

MDNR. 2024p. MNSWAP Wildlife Action Network. Available online at: https://gisdata.mn.gov/dataset/env-mnwap-wildlife-action-netwrk. Accessed October 2024

Minnesota Geological Survey and Minnesota Department of Health. 2023. Well Location Points (Digitized) from Minnesota Geological Survey's County Well Index (CWI). Available online at: https://mngeo.mn.gov/chouse/metadata/wells.html#Distribution_Information. Accessed October 2024.

Minnesota Department of Transportation (MnDOT). 2003. Olmsted County Pit Map. Available online at: https://dot.state.mn.us/materials/maps/copitmaps/olmsted.pdf. Accessed October 2024.

MnDOT. 2023a. Traffic Mapping Application. Available online at: https://mndot.maps.arcgis.com/apps/webappviewer/index.html?id=7b3be07daed84e7fa170a91059ce63bb. Accessed October 2024.

MnDOT. 2023b. Aggregate Source Information Map. Available online at: https://www.dot.state.mn.us/materials/asis_GE.html. Accessed October 2024.

MnDOT. 2024. Minnesota Rail Viewer. Updated October 2024. Available online at: https://www.arcgis.com/home/item.html?id=2c6405034bfb45869d5b47fccf22a7cc. Accessed October 2024.

Minnesota Pollution Control Agency (MPCA). 2015. A Guide to Noise Control in Minnesota, Revised 2015. Available online at https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf. Accessed November 2024.

MPCA. 2023. National Ambient Air Quality Standards and Air Monitoring. October 2023. Available online at: https://www.pca.state.mn.us/sites/default/files/aq4-33.pdf. Accessed October 2024.

MPCA. 2024a. Understanding Environmental Justice in Minnesota. Available online at: https://experience.arcgis.com/experience/bff19459422443d0816b632be0c25228/page/Page/?views=Near-an-EJ-area. Accessed October 2024.

MPCA. 2024b. Zumbro River Watershed Information. Available online at: https://www.pca.state.mn.us/watershed-information/zumbro-river. Accessed October 2024.

MPCA and DOC. 2023. Greenhouse Gas Emissions in Minnesota, 2005-2020. Report to the Legislature. January 2023. Available online at: https://www.pca.state.mn.us/sites/default/files/lraq-2sy23.pdf. Accessed October 2024.

National Audubon Society. 2022. Important Bird Areas. Available at: https://www.audubon.org/important-bird-areas. Accessed October 2024.

National Institute of Environmental Health Sciences. 2002. Electric and Magnetic Fields Associated with the Use of Electric Power. June 2002. Available online at: https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf. Accessed November 2024.

National Pipeline Mapping System. 2024. NPMS Public Viewer. Available online at: https://pvnpms.phmsa.dot.gov/PublicViewer/. Accessed December 2024.

North American Bird Conservation Initiative (NABCI). 2024. Bird Conservation Regions Map. Available online at: https://nabci-us.org/resources/bird-conservation-regions-map/#bcr22. Accessed October 2024.

Olmsted County. 2022. Olmsted County General Land Use Plan, Adopted August 16, 2022. Available online at: https://www.olmstedcounty.gov/sites/default/files/2023-01/GLUP2045Final.pdf. Accessed November 2024.

Olmsted County. 2023. Olmsted County Zoning Ordinance, Available online at: https://www.olmstedcounty.gov/business/building-development-gis/planning-land-use-zoning/olmsted-county-plans-and-ordinances. Accessed October 2024.

Olmsted County. 2024. GIS Mapping & Spatial Data, Public GIS Web Map. Available online at: https://www.olmstedcounty.gov/business/building-development-gis/building-well-septic/about-gis-maps-addressing. Accessed October 2024.

The RadioReference Wiki. 2024. Allied Radio Matrix for Emergency Response (ARMER) Site Directory. Olmsted County. March 9, 2024. Available online at: https://wiki.radioreference.com/index.php/Olmsted_County_(MN). Accessed December 2024.

Soil Survey Staff. 2024. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at: http://websoilsurvey.sc.egov.usda.gov/. Accessed November 2024.

State of Minnesota. 2019. Executive Order 19-37. Available online at: https://mn.gov/governor/assets/2019_12_2_EO_19-37_Climate_tcm1055-412094.pdf. Accessed October 2024.

U.S. Census Bureau. 2020. Decennial Census, DEC Redistricting Data (PL 94-171), Table P1, 2020. Available online at: https://data.census.gov/table/DECENNIALPL2020.P1?g=060XX00US2710932282. Accessed October 2024.

U.S. Census Bureau. 2022. Selected Social Characteristics in the United States. Available online at: https://data.census.gov/table/ACSDP5Y2022.DP03?q=DP03: SELECTED ECONOMIC CHARACTERISTICS&g=040XX00US27_050XX00US27109_1400000US27109001800. Accessed October 2024.

U.S. Census Bureau. 2023a. QuickFacts. Available online at: https://www.census.gov/quickfacts/fact/table/olmstedcountyminnesota,MN/PST045223. Accessed October 2024.

U.S. Department of Agriculture (USDA). n.d. Conservation Reserve Program. Available online at: https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index. Accessed November 2024.

USDA. 2022. Census of Agriculture, Minnesota, Tables 1-57. County Summary Highlight 2022. Available online at: https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1,_Chapter_2_County_Level/Minnesota/. Accessed October 2024.

USDA, Natural Resources Conservation Service. 2024. National soil survey handbook, title 430-VI. Available online at: https://www.nrcs.usda.gov/resources/guides-and-instructions/national-soil-survey-handbook. Accessed November 2024.

U.S. Department of Transportation. 2017. Construction Noise Handbook. Available online at: https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook09.cfm. Accessed November 2024.

U.S. Energy Information Administration. 2024. How much electricity does an American home use? Updated January 8, 2024. Available online at: https://www.eia.gov/tools/faqs/faq.php?id=97&t=3. Accessed December 2024.

U.S. Environmental Protection Agency (EPA). 2024a. Minnesota Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Updated September 2024. Available online at: https://www3.epa.gov/airquality/greenbook/anayo_mn.html. Accessed October 2024.

EPA. 2024b. Overview of the Drinking Water Sole Source Aquifer Program. Available online at: https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program#What_Is_SSA. Accessed October 2024.

EPA. 2024c. Map of Sole Source Aquifer Locations. Available online at: https://www.epa.gov/dwssa/map-sole-source-aquifer-locations. Accessed October 2024.

United States Fish and Wildlife Service (USFWS). 2019. National Wetlands Inventory. Available online at: https://www.fws.gov/wetlands/index.html. Accessed October 2024.

USFWS. 2024a. Birds of Conservation Concern. Available online at: https://www.fws.gov/sites/default/files/documents/2024-03/usfwsbirdspeciesofconcern_1.pdf. Accessed October 2024

USFWS. 2024b. Information for Planning and Consultation (IPaC). Available online at: https://ipac.ecosphere.fws.gov/. Accessed October 2024.

USFWS. 2024c. Listing Status Definitions. Available online at: https://ipac.ecosphere.fws.gov/status/list. Accessed November 2024.

USFWS. 2024d. Monarch Butterfly. Available online at: https://www.fws.gov/species/monarch-danaus-plexippus. Accessed November 2024.

USFWS. 2024e. Endangered and Threatened Wildlife and Plants; Threatened Status With Section 4(d) Rule for Monarch Butterfly and Designation of Critical Habitat. Proposed Rule. 89 Federal Register 100662 (December 12, 2024). Available online at: https://www.federalregister.gov/d/2024-28855. Accessed January 2025.

USFWS. 2024f. Prairie Bush-clover. Available online at: https://www.fws.gov/species/prairie-lespedeza-lespedeza-leptostachya. Accessed November 2024.