Appendix D
Agricultural Impact Mitigation Plan

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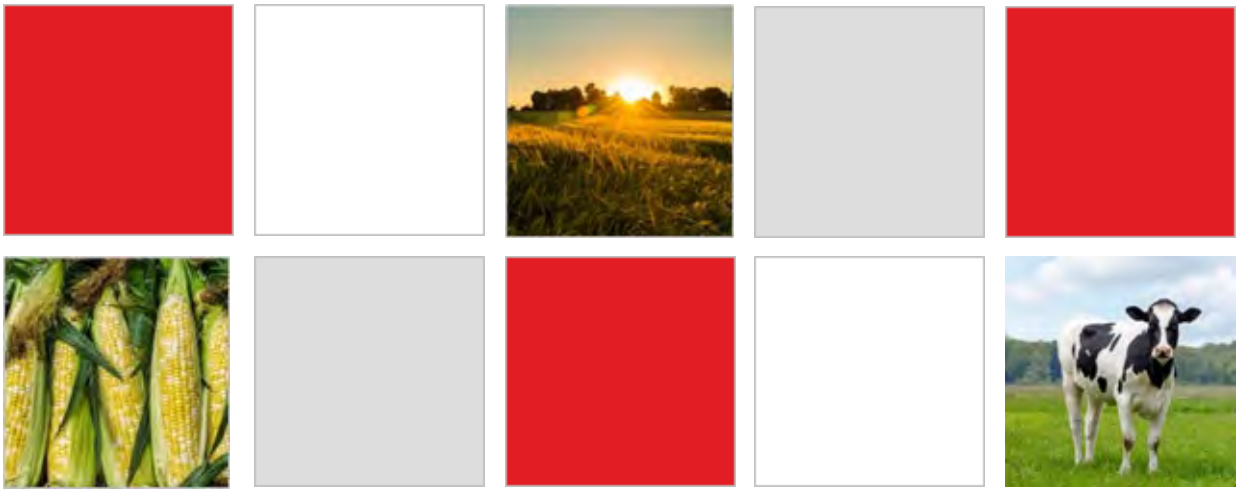

GOPHER STATE SOLAR, LLC

GOPHER STATE SOLAR PROJECT, RENVILLE COUNTY, MINNESOTA

AGRICULTURAL IMPACT MITIGATION PLAN

Docket No: IP7127/GS-24-106

GOPHER STATE SOLAR
A RANGER POWER PROJECT

Prepared By Merjent, Inc.
July 2024

merjent®

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LIST OF ABBREVIATIONS AND TERMS

Acronym	Definition
AC	alternating current
AIMP	Agricultural Impact Mitigation Plan
Applicant	Gopher State Solar, LLC
BMP	best management practices
BWSR	Minnesota Board of Water and Soil Resources
Commission	Minnesota Public Utilities Commission
Contractor	construction contractor
DC	direct current
DOC	Minnesota Department of Commerce
gen-tie	generation interconnect
Gopher State Solar	Gopher State Solar, LLC
kV	kilovolt
MDA	Minnesota Department of Agriculture
MNDNR	Minnesota Department of Natural Resources
MW	megawatt
MWac	megawatts alternating current
NESC	National Electrical Safety Code
NHD	National Hydrography Data
NWI	National Wetland Inventory
O&M	operations and maintenance
Plan	Agricultural Impact Mitigation Plan
Project	Gopher State Solar Project
PUC	Minnesota Public Utilities Commission
PV	photovoltaic
SOBS	sites of biodiversity significance
SWPPP	stormwater pollution prevention plan
VSMP	Vegetation and Soil Management Plan

1.0 PURPOSE AND APPLICABILITY OF PLAN

The objective of this Agricultural Impact Mitigation Plan (Plan or AIMP) and the associated Vegetation and Soil Management Plan (VSMP) is to identify measures that Gopher State Solar, LLC (Gopher State Solar or Applicant) and its construction contractor (Contractor) will take to avoid, minimize, mitigate, and/or repair potential negative agricultural impacts that may result from the construction, operation, and eventual decommissioning of the Gopher State Solar Project (Project). The Project will generate up to 200 megawatts alternating current (MWac) photovoltaic (PV) solar energy. The Project is planned to be sited on approximately 1,645 acres of discontinuous land located in Renville County, Minnesota. This Plan was prepared in support of the Site Permit Application that will be submitted to the Minnesota Public Utilities Commission (Commission or PUC) for approval of the Project.

Land that is proposed for development will be leased from landowners by Gopher State Solar for a term of 40 years. As a result, agricultural use/production of the areas occupied by the Project will temporarily cease during the anticipated 40-year lease term of the Project. This Plan outlines measures to ensure the Project Area can be returned to agricultural use following the closure and decommissioning of the Project, including descriptions of best management practices (BMPs) that will be used during construction to minimize long-term impacts to soil. It is important to note that while Gopher State Solar and the Contractor hired to build the facility fully intend to adhere to the specifics of this Plan, certain practices may vary as the Contractor identifies methods that work more efficiently in this specific location and provide the highest degree of safety while constructing the facility. Gopher State Solar will consult with the Minnesota Department of Agriculture (MDA) to discuss any significant deviations from practices and/or methods as outlined in this Plan prior to any such alternative practices and/or methods being implemented.

The AIMP and VSMP outline procedures to establish desired perennial vegetation within and directly adjacent to the Project perimeter fence, which will be installed around the PV solar arrays. Native and non-invasive plant species will be selected that prefer shade conditions and have growth habits that will not interfere with the operation of the solar panels, yet will provide benefits to the soil, wildlife, and insects. The seed mixes will include native and regionally established species and will be selected with recommendations from plant specialists in coordination with the MDA, Minnesota Department of Natural Resources (MNDNR), and Minnesota Board of Water and Soil Resources (BWSR), as applicable, as described in the VSMP.

Gopher State Solar will use an adaptive management approach for vegetation management, including managing invasive and weedy populations, as further detailed in the VSMP. Merjent, Inc (Merjent) is preparing the VSMP with input from the MDA, MNDNR, BWSR, and the Department of Commerce (DOC). Merjent will work with Gopher State Solar to develop plans in the VSMP for maintenance of the Project site's plantings throughout the life of the Project. More information on maintenance of the native plantings is outlined in the VSMP.

2.0 PROJECT OVERVIEW

2.1 PROJECT BACKGROUND

Gopher State Solar, LLC, a Delaware limited liability company controlled by D.E. Shaw Renewable Investments, proposes to construct the Project. The Project will generate up to 200 megawatt (MW) PV solar energy, on approximately 1,645 acres (Project Area) of land in Renville County, Minnesota (see Figure 1). The Preliminary Development Area, which refers to the areas hosting solar equipment and supporting infrastructure within the Project area, will be approximately 977 acres. Due to the size of the Project, it will require a Site Permit from the Commission. Gopher State Solar plans to have all necessary approvals for construction of the Project to commence in 2026.

The Project is located on discontinuous, private parcels that are currently primarily used for agricultural purposes. Based on National Wetland Inventory (NWI), National Hydrography Data (NHD), and field wetland and waterbody delineation completed by Merjent, wetlands and waterbodies are present within the parcels. In addition, Merjent confirmed via field verification that one area of potential native prairie exists within the Project Area; Gopher State Solar has committed to avoiding the native prairie. No sites of biodiversity significance (SOBS) are present within the Project Area.

The Project will provide up to 200 MWs of capacity annually of reliable, renewable energy. The Project will be sited and permitted to meet or exceed applicable local and state requirements. Gopher State Solar selected the proposed Project Area due to minimal environmental impacts, proximity to the electrical grid and existing transmission infrastructure, willing landowners, and available capacity of the grid to which the Project will interconnect. Importantly, in selecting the Project Area, Gopher State Solar also concluded that Project development will not result in significant human settlement or environmental impacts. Lastly, the Project will be sited and permitted to meet or exceed the prime farmland exclusion rule to the extent practicable.

2.2 PROJECT COMPONENTS

The Project will include the following major components, systems, and associated facilities:

- PV solar modules;
- Inverters;
- Step-up transformers (connecting solar panel inverters to collector lines/Project Substation);
- Electrical wiring (connecting PV solar modules to solar panel inverters);
- Single-axis trackers;
- Collector lines (connecting solar panel inverters to Project Substation);
- Security fencing and gates;
- Access roads;

- Stormwater treatment areas (associated with the Project);
- Operations and maintenance (O&M) Building;
- Supervisory control and data acquisition (SCADA) system;
- Project substation;
- Power transformer(s);
- Overhead 230 kilovolt (kV) Project generation interconnect (gen-tie line) from the Project substation to Great River Energy's existing Panther substation;
- Switchgear;
- Metering equipment; and
- Ancillary equipment or buildings as necessary.

Gopher State Solar proposes to interconnect the Project at Great River Energy's existing Panther Substation in Renville County, Minnesota (see Figure 2). Gopher State Solar will build a new substation and 230 kV gen-tie line, approximately 1,300 feet long and not longer than 1,500 feet, to connect to the Panther Substation. The gen-tie line will be supported by several wood or direct embedded steel posts that are anticipated to consist of a standard horizontal braced post. This interconnection will provide sufficient outlet to accommodate all of the solar energy generation from the Project.

2.3 CONFIGURATION OF SOLAR PANELS, ARRAYS, AND RACKING

The Project's main components include PV panels mounted on a single axis tracking system, solar inverters, and a substation. The Project will use bi-facial PV modules affixed to tracking systems that allow the PV modules to track the sun from east to west. For descriptive purposes, an individual tracker row is used as a basic unit of the Project. A tracker row is made up of modules mounted on a flat beam oriented north-south, with a break in the middle where the gear box is located. The modules and tracking rack system are generally aligned in rows oriented north and south with the PV solar modules facing east toward the rising sun in the morning, parallel to the ground during mid-day, and then west toward the setting sun in the afternoon. At the approximate maximum tilt of 60 degrees, the edge of the modules will be a maximum of 15 feet off the ground, and a minimum of 1 foot off the ground or greater, as determined by site specific constraints.

The racking system consists of all the components involved in fastening the modules to the tracker rows, plus the tracker beams, gearboxes, motors, and pier foundations. The racking system foundations will be pile driven, with the depth varying depending on the geotechnical investigation. The racking system foundations are not anticipated to require concrete; however, some concrete foundations may be needed depending on location and specific soil conditions.

Individual PV panel components will be interconnected by cabling and other Project infrastructure at increasing scales to ultimately generate up to 200 MWac of solar energy electricity to the existing Great River Energy Panther Substation via the proposed Project Substation and 230 kV gen-tie line (see Figure 3).

2.4 INVERTERS, TRANSFORMERS, AND ELECTRICAL COLLECTOR LINE SYSTEM

PV panels will be connected to inverters via electrical cables. Inverters will then convert generated solar energy from direct current (DC) to alternating current (AC). After the inverter has converted the electricity, it is stepped-up via a transformer from low voltage to 34.5 kV, which is then carried via collector lines to the Project Substation (see next section). Step-up transformers are paired with each inverter. The DC electrical collector line system from the PV panels to the inverters will be installed either buried (below-ground electrical collector line system) or underhung below the panels and then buried from the racking to the inverters (combined above and below-ground electrical collector line system). The AC electrical collector line system from the inverters/step-up transformer to the Project Substation will be buried. Final selection of the type of electrical system will be determined prior to construction based on technology, availability of materials, and costs.

2.4.1 Inverters and Step-up Transformers

Electrical collector lines will be installed below-ground, underhung beneath the PV panels and racking, suspended above ground via a cable management system, or some combination of these methods. Inverters will be pile driven and located on a mounded gravel pad and installed at locations throughout the Preliminary Development Area. Inverters convert the DC output of the PV modules to AC, which is required for delivery to the electrical grid. After the inverter has converted the electricity, it is stepped-up via a transformer from low voltage to 34.5 kV. The final number of inverters for the Project will depend on the inverter size, inverter and module availability, as well as the final array configuration.

A specific inverter has not been selected for the Project. The proposed inverter at the time of the application submittal is the SG4400UD-MV-US. Gopher State Solar will select a final inverter based on availability at the time of procurement. Gopher State Solar will consider the cost and performance of each option, as well as environmental and safety standards, when making its final selection. This process has been included in the proposed Project timeline and the final selection should not alter the Project scope, timeframe, or budget.

2.4.2 Below-ground Electrical Collector Line System

Solar panels will provide DC power to the inverters and step-up transformers via electrical cabling. Gopher State Solar is proposing an entirely below-ground electrical collector line system for the Project. In such a configuration, DC cabling will be located in a below-ground trench measuring approximately 4 feet deep.

Below-ground AC collector lines will transfer the converted 34.5 kV AC electricity from the step-up transformer equipment to the Project Substation. During excavation activities, the topsoil and subsoil will be removed and stockpiled separately in accordance with Section 5.2 of this Plan. After electrical collector lines are laid in the trench, the trench will be backfilled with subsoil followed by segregated topsoil. Electrical collector line technology will be site specific depending on geotechnical analysis, constructability, and availability of materials. Final engineering recommendations will help determine the construction method for the electrical collector lines.

2.4.3 Combined Above and Below-ground Electrical Collector Line System

A combined above and below-ground electrical collector line system is being considered as a contingency plan for the Project for several reasons, such as sensitive or geological features

prevent below ground installation, to ensure ease of access for future operations and maintenance, to reduce ground disturbance, and to meet budgetary considerations. In a combined above and below-ground system, DC collector lines will be strung under each row of panels or suspended above ground via a cable management system, and AC collector lines will be buried belowground from the inverter/transformer skid to the Project Substation following the same procedures as above.

2.5 PROJECT SUBSTATION AND OPERATIONS AND MAINTENANCE BUILDING

The Project substation is proposed for an area west of 380th Street, south of the existing Great River Energy Panther Substation (see Figures 2 and 3). The Project substation is estimated to occupy approximately 1.65 acres of land and will connect the Project to the transmission grid. It will be designed in accordance with regional utility practices and codes.

Underground 34.5 kV collector lines from the Project will deliver solar generated energy to the Project substation. The collector line system voltage will then be stepped up from 34.5 kV to 230 kV and transmitted to Great River Energy's 230 kV Panther Substation via a short (between 1,300-feet-long and not longer than 1,500-foot-long) gen-tie line.

The Project substation will include a parking area and will be accessible at all times to operations personnel and other approved parties using the Project's access roads. The substation will consist of supporting structures for high voltage electrical structures, breakers, transformers, lighting protection, and control equipment. The Project substation location will be graded and the ground surface dressed with crushed rock. Secondary containment areas for the transformers will be installed as necessary, based on applicable regulations. The area within the Project substation will be graveled to minimize vegetation growth in the area and reduce fire risk. The substation will be fenced with an 8-foot-high chain-link fence for security and safety purposes. The fenced area of the Project substation footprint will be approximately 72,000 square feet in size (subject to final substation layout) and be surrounded by a minimum 20-foot buffer.

The Project will include construction and use of an O&M building (see Figure 3). The O&M building will be located within the Project Area, near the proposed substation, in an upland area. The O&M building is anticipated to be around 29,400 square feet in area and will be used to conduct maintenance and repair of Project equipment and solar module components, store parts and other equipment, store the SCADA system that will remotely monitor Project facilities, and store other operation and maintenance supplies (e.g., materials for cleaning PV panels, etc.). The O&M building will be locked when not in use by Project staff.

2.6 ACCESS ROADS

The Project will include approximately 12.1 miles of graveled access roads that lead to the O&M building (see Figure 4). The final length of the access roads will depend on the equipment selected and final engineering. These roads will be typically 12-16 feet wide along straight portions and wider (approximately 45 feet) along curves at internal road intersections. During construction, access roads may be temporarily wider and then reduced in width for long term site access upon completion. A permanent gravel road extending west from 380th Street to the Project facilities will provide access to the Project substation and O&M building.

Gopher State Solar is proposing access roads at strategic locations throughout the Project for effective, efficient, and safe access for operations and maintenance activities, employees, visitors, and emergency responders. Gopher State Solar has minimized the amount of access roads

within the Preliminary Development Area and has avoided existing infrastructure to prevent interference with other land use.

Upgrades or other changes to the public roads may be required for construction or operation of the Project. These upgrades may include but are not limited to road improvements, additional aggregate, and driveway changes. Gopher State Solar will work with Renville County to facilitate upgrades to meet required standards and with landowners for final design considerations. Gopher State Solar will secure permits from the applicable road authorities for any new driveways or changes to existing driveways prior to construction. Gopher State Solar will also work with the applicable road authorities on a road use or similar agreement to address road use and related concerns.

2.7 PERMANENT FENCING

Permanent security fencing will be installed along the perimeter of each grouping of the solar arrays (see Figure 4). Fencing will consist of a lightweight agricultural woven wire fabric secured to wooden posts which will be directly embedded in the soil or set in concrete foundations as required for structural integrity. The fencing will extend a maximum total height of approximately 7 feet above grade.

Warning signs, including “high voltage keep out” signs, will be placed in accordance with MNDNR and National Electrical Safety Code (NESC) requirements along the fence line. This fencing will be designed to prevent the public and larger wildlife from gaining access to solar array electrical equipment which could cause harm or injury.

To comply with the NESC, security fencing around the Project Substation will consist of 7-feet high chain-link fence with one foot of barbed wire at the top. Fence posts will be spaced a maximum of 10 feet apart and high voltage warning signs will also be installed on the Project Substation fence. As indicated above, a lockable gate will be installed with the Project Substation site fencing. This fencing and gate will be designed to prevent the public and wildlife from gaining access to electrical equipment which could cause injury.

2.8 STORMWATER DRAINAGE BASINS

Gopher State Solar will design drainage basins or similar stormwater BMPs throughout the Preliminary Development Area that will manage stormwater runoff from the Project during operation. These basins will be in existing low areas, where feasible, and vegetated with wet seed mix, or appropriate alternative, that will help stabilize soils after rain events.

2.9 TRANSMISSION SYSTEM

The Project will interconnect into Great River Energy’s existing Panther Substation via an approximately 1,300-foot-long 115-kV overhead gen-tie line extending from the Project Substation to the Panther Substation. The gen-tie line will be supported by several wood or direct embedded steel posts that are anticipated to consist of a standard horizontal braced post. This interconnection will provide sufficient outlet to accommodate all of the solar energy generation from the Project.

2.10 TEMPORARY CONSTRUCTION FACILITIES

During construction, Gopher State Solar will use temporary construction laydown areas within the Project Area. Temporary laydown locations have not been finalized at this time but will be determined as the final design is completed; laydown areas will be sited to avoid environmentally sensitive features and tree clearing. These areas will serve as a parking area for construction personnel, staging area for Project materials, and temporary office trailer location during construction. Topsoil will be removed to a depth that will be dependent on final geotechnical engineering surveys. Filter fabric may be placed and topped with aggregate to segregate subsoil from aggregate topping. Silt fencing or a similar BMP will be used downslope of all disturbed areas throughout the site which may include the fence line plus a buffer, access road entrances, laydown yards, the substation, interconnection, and O&M building. After construction, the laydown areas will be restored to pre-construction elevation and conditions and reseeded as described in the Project VSMP.

3.0 CONSTRUCTION

Project construction will begin with workforce mobilization and the initial site preparation work, including grading, vegetation removal, and any necessary tree removal. The preliminary grading acreage estimate is 14.5 acres and was calculated using the proposed O&M building site, Substation site, and proposed access roads.

Typical construction equipment such as scrapers, bulldozers, dump trucks, watering trucks, motor graders, vibratory compactors, and backhoes will be used during construction. Specialty construction equipment that may be used during construction will include:

- Skid steer loader;
- Pile driver;
- Medium duty crane;
- All-terrain forklift;
- Concrete truck and boom truck;
- High reach bucket truck; and
- Truck-mounted auger or drill rig.

Upon completion of construction, heavy equipment will be removed from the Project site.

3.1 SITE CLEARING AND VEGETATION REMOVAL

Construction is expected to start as early as first quarter 2026 subject to permitting and other factors. A majority of the Project Area and area to be developed with Project facilities are agricultural fields and contain little other vegetation or other natural features (see Figure 4). Depending on timing of the start of construction, crops may be harvested prior to construction, mowed down to remove vegetation, or not planted, if construction occurs between fall and late spring. Site preparation and the sequence of activities will ultimately be determined when construction starts. Temporary and perennial vegetation seed mixes, herbicide treatments, and mowing will be used in combination to prepare the site for re-vegetation while keeping soil stabilized during construction and reducing the establishment of noxious or invasive species. The VSMP includes the process for scheduling and sequencing site preparation activities under different construction start timeline scenarios.

3.2 EARTHWORK

The majority of soil disturbances will occur during the first phase of Project construction when grading takes place; this will include constructing the internal access roads, substation, and O&M building site. The Contractor may need to move soil to level portions of the Project site or to complete minor grading of topsoil to minimize disruption and avoid erosion. The earthwork activities will be completed using typical earthmoving construction equipment such as scrapers, bulldozers, front-end loaders, excavators, and skid-steers. BMPs that will be used during earthwork are described in Section 5.0.

Topsoil that sits higher than other areas will be moved to lower areas that need to be leveled. Topsoil will be moved outside of the graded areas, where necessary, and stored in designated locations for later use. Once topsoil is removed from the graded areas, the contractor will remove the subsoil material as required for construction from on-site elevated areas and relocated to on-site low spots. Prior to relocating subsoil materials to the low spots, topsoil in the low areas will be stripped and set aside before the fill is added, then re-spread over the new fill. The subsoil

material will be compacted in place. When compaction is complete, the topsoil will be re-spread over the reconditioned subsoil material.

Subsoil handling will be similar to the handling of topsoil as described above. Excess subsoil will be segregated and relocated to low spots (see Section 4.6.3 below). Low spots will be filled with subsoil after topsoil is stripped and set aside; topsoil will then be respread over the new fill.

3.3 ACCESS ROAD CONSTRUCTION

As a component of earthwork, permanent Project entrances, access roads, and turnouts will be constructed to support the Project as shown on Figure 4. Access road construction will start with the stripping and segregating of topsoil materials from the proposed roads. The Contractor will then compact the subgrade materials to the specified compaction requirements as laid out by the civil and geotechnical engineer. After suitable compaction levels are reached and verified, the Contractor will then install the road as designed, with a gravel surface generally 4 to 12 inches deep. The gravel will be placed level with the existing grade to facilitate drainage and minimize ponding. After the road surface is compacted, the Contractor will shape Project drainage ditches, where needed as based on the grading plan, which will be developed prior to construction.

Topsoil removed from permanent access roads (see Figure 4) will be moved to storage locations near the site of removal and graded for storage. At the time of topsoil removal, storage locations will be identified (including boundary and depth) and recorded on site maps to facilitate final reclamation as part of decommissioning.

3.4 SOLAR ARRAY CONSTRUCTION

After grading activities are complete, the racking system foundations will be pile driven, with the depth varying depending on the geotechnical investigation. In general, the racking system foundations are not anticipated to require concrete; however, some concrete foundations may be needed depending on location and specific soil conditions. Foundations will typically be made of galvanized steel. The pile is driven using a hydraulic ram, screw installer that moves along tracks, or similar. Soil disturbance for this task will be negligible since the pile driver equipment that will be used does not excavate soil. Pile driving equipment is commonly about the size of a small tractor and often equipped with tracks to disperse its weight over a larger ground surface and reduce soil disturbance, rutting, and compaction.

The remainder of the racking system will be installed on top of the driven pilings; this is typically completed by construction crews using hand tools and tracked equipment to distribute the materials. The racking system consists of all the components involved in fastening the modules to the tracker rows, plus the tracker beams, gearboxes, and motors.

During racking and array assembly, multiple crews and various types of vehicles will be working within the Project Area. To the extent practicable, vehicular traffic will be limited to permanent and temporary access roads to minimize soil disturbance, mixing, and compaction. These vehicles could include flatbed trucks, small all-terrain vehicles, pick-up trucks, and trailers used to transport equipment and workers throughout the Project Area. Installation crews will proceed along staked temporary access roads in a pre-established route to minimize off-road traffic.

3.5 ELECTRICAL COLLECTOR LINE SYSTEM

The collector line system will either be buried in a trench or conduit or may be a combination of both above and belowground, in which case the DC collector lines will be strung under each row of panels and racking, and the AC collector lines will be buried belowground. Gopher State Solar plans to install the collector lines beneath the ground surface using a directional bore under Conservation Reserve Enhancement Program (CREP) lands and no impacts to the surface of the CREP easement are anticipated. Final engineering and procurement will determine the construction method for the electrical collector line system; as such, additional areas of collector line system may be installed via directional bore. For the purposes of this Plan, Gopher State Solar assumes the trench installation method, as a worst-case scenario, and provides BMPs for trenching. Measures to mitigate activities and conditions that have the potential to cause sediment runoff, such as trenching, will be outlined in the construction stormwater permit and associated SWPPP, which will be prepared prior to and implemented during construction of the Project.

The electrical collector line system cables will be installed using a trenching machine, excavator, or equivalent to a depth of approximately 4 feet to account for existing utilities or other features. During trench excavations, the topsoil and subsoil will be removed and stockpiled separately. Once the collector lines are laid in the trench, the trench will be backfilled with subsoil followed by segregated topsoil. Stockpiled topsoil will be replaced over the subsoil in sufficient quantities to ensure restoring the trench to the original grade after settling. BMPs that will be used during earthmoving activities are described in detail in Section 5.0 and will be further discussed below.

3.6 INVERTER AND ASSOCIATED FACILITY INSTALLATION

Inverter installation will begin with topsoil removal. Topsoil will be stockpiled at designated locations to be identified prior to construction and graded to facilitate revegetation. Each inverter will be pile driven and located on a mounded gravel pad. Inverters are commonly set in place using a hydraulic crane or similar equipment. Electrical cables and conduit will be installed and junction boxes will be located on the rear of the PV panels to house required cabling connecting equipment. Other associated facilities that will also be installed include switchgear, step-up transformers, supervisory control and data acquisition (SCADA) system, and metering equipment.

3.7 PROJECT SUBSTATION CONSTRUCTION

Project substation construction will begin with removing and segregating topsoil and placing it in a designated location that will be identified prior to construction. Refer to Section 5.2 for additional detail on soil segregation. Site preparation will also involve installation of substructures and electrical equipment. Equipment needed for the installation of concrete foundations and equipment embedments may include trenching machines, concrete trucks, pumpers and vibrators, forklifts, boom trucks, and cranes. Structures to be installed at the substation includes high voltage electrical structures, breakers, transformers, lighting protection, and control equipment. The graded surface will be dressed with crushed rock between and among installed substation equipment. Adequate lighting will be installed around the substation site for worker safety during construction and operation.

Larger substation foundations will typically be installed using a small backhoe to excavate, prior to pouring the concrete slabs. More minor substation foundations will typically use an auger drill type machine. Using either method, the disturbance limit will be within the footprint of the substation for both the foundation equipment and the concrete delivery trucks. BMPs that will be

used during earthmoving activities are described in Section 5.0. Topsoil removed from the Project Substation will be segregated from the subsoil and preserved in a nearby designated location for later restoration during Project decommissioning. The topsoil stockpile area(s) will be recorded and graded to facilitate long term preservation and revegetation. Subsoil will be removed during excavation and re-used, as needed, or moved to a pre-established approved area for storage. As part of later decommissioning, subsoil will be replaced first, followed by topsoil placement. The soil will be replaced and brought back to pre-construction contours.

3.7.1 Gen-Tie Line

Collector lines from the Project will deliver solar generated energy to the Project substation, where the voltage will then be stepped up from 34.5 kV to 230 kV and transmitted to Great River Energy's 230 kV Panther Substation via an approximately 1,300 feet long gen-tie line. The gen-tie line will be supported by several wood or direct embedded steel posts that are anticipated to consist of a standard horizontal braced post. The number of poles needed is pending final engineering and design. For installation, the poles are typically directly embedded in an augured hole. The type of conductor will be determined following the completion of detailed electrical design.

3.8 STORMWATER DRAINAGE BASINS

During construction, stormwater BMPs (i.e., drainage basins) will have topsoil removed and temporarily stored in a pre-established suitable location. Subsoil will then be excavated, and the sides of the drainage basin sloped to design requirements, including inlet and outlet areas. Excavated subsoil will be distributed as fill material to areas where leveling is required. Topsoil will be replaced, and the basins vegetated with a wet seed mix.

3.9 PROJECT FENCING INSTALLATION

The Contractor or a subcontractor fencing company will be engaged to construct the perimeter fencing around the Project as described above. The fencing will consist of lightweight agricultural woven wire fabric secured to wooden posts and extend about 7 feet above grade.

The fencing around the Project Substation will be a 7-foot-high chain link fence, with adequate hazard and high voltage warning signs to comply with the NEC. A lockable gate will be installed with the Project Substation site fencing. This fencing and gate will be designed to prevent the public and wildlife from gaining access to electrical equipment which could cause injury.

Corner fence posts will be augured to about 4 feet, or a depth per manufacturer's specifications, and embedded in concrete for structural support. Tangent posts will typically be directly buried 4 feet, similar to corner posts. Holes created by fence poles will be filled in with stockpiled soil to pre-construction conditions.

4.0 LIMITATIONS AND SUITABILITY OF SITE SOIL

In general, soil types can vary considerably in its physical and chemical characteristics that strongly influence the suitability and limitations that soil has for construction, reclamation, and restoration. Overall major soil properties include:

- Soil texture;
- Drainage and wetness;
- Presence of stones, rocks, and shallow bedrock;
- Fertility and topsoil characteristics; and
- Slope.

Interpretative limitations and hazards for construction and reclamation are based to a large degree on the dominant soil properties, and include:

- Prime farmland status;
- Hydric soil status;
- Susceptibility to wind and water erosion;
- Susceptibility to compaction;
- Fertility and plant nutrition; and
- Drought susceptibility and revegetation potential.

4.1 LAND USE CONSIDERATIONS

Based on a historical review of the Project Area completed as part of the Phase I Environmental Site Assessment, nearly all of the Project Area and surrounding land has been in agricultural use since at least 1938. The Project Area is within the East Fork Beaver Creek, Headwaters East Fork Beaver Creek, and Buffalo Creek Hydrologic Unit Code (HUC) 12 Watersheds (EPA, 2023). Most of the land in Renville County is used for farm operations (USDA, 2022).

The Soil Survey Geographic Database (SSURGO) is the digitized county soil survey and provides a geographic information system (GIS) database relating mapped soil units to soil characteristics and interpretations. Based on SSURGO data, the majority of Renville County is made up of prime farmland if drained (54%), prime farmland (35%), farmland of statewide importance (5%), not prime farmland (4%), and prime farmland if protected from flooding or not frequently flooded during the growing season (2%). Predominant crops in Renville County include corn for grain and soybeans. Upon decommissioning of the Project and expiration of leases and easements related to the Project, the land will be restored such that participating landowners could return the land back to agriculture uses.

4.2 IMPORTANT SOIL CHARACTERISTICS

Soil map unit polygons in the SSURGO database were clipped to the Project Area and internal infrastructure boundaries, including the major pieces of infrastructure:

- Fenced area hosting solar panels, racks, and arrays;
- Inverter locations;
- Collector lines;
- Access roads;
- Laydown areas; and
- Project Substation and O&M building.

The acreage of major Project features sharing physical properties, classifications, and limitation interpretations important for construction, use, revegetation, and reclamation were determined by spatial query of GIS data. The analysis is limited to the approximate 977-acre Preliminary Development Area that may be affected by construction (see Figure 3). Soils within the 1,645-acre Project Area (see Figure 1) that are not anticipated to be affected by construction or operations are not included in the analysis but are indicated in Tables 4.3-1 through 4.5-1 below for completeness.

A soil map of the Project Area and a table of selected site soil characteristics including physical properties, classifications, and construction-related limitations are provided in Appendix A.

4.3 SELECTED PHYSICAL CHARACTERISTICS: TEXTURE, SLOPE, DRAINAGE AND WETNESS, TOPSOIL DEPTH, BEDROCK AND PRESENCE OF STONES AND ROCKS

The Project Area is approximately 1,645 acres in size. Table 4.3-1 shows physical characteristics of site soils broken down by acreage within the 977-acre Preliminary Development Area and the 1,645-acre Project Area (the 668 acreage difference accounts for soils within the Project Area, but outside the fence of the Preliminary Development Area) in Table 4.3-1.

Soil texture affects the behavior of soils including drainage, water retention, drought tolerance, compaction, rutting, and revegetation. Soil texture is described by the relative proportion of sand, soil, and clay in a soil, and soils are then grouped based on those proportions. Most of the soils within the Preliminary Development Area are in the Fine-Loamy (717.50 acres, 62 percent) and Fine (367.81 acres, 32 percent) textural families, indicating fine-textured soils dominated by a diverse mix of soil particles in the loam, silt, sand, and clay fractions as shown in Appendix A. Fine- to medium-textured soils typically have high water-holding capacity to support plant growth, if not in excessively steep or wet conditions.

Slope impacts constructability, soil erosion, revegetation, compaction, and rutting. Most of the soils (99 percent) within the Preliminary Development Area are nearly level soils with representative slopes falling within the 0 to 5 percent slope range. The remaining soils (1 percent) are within the 5 to 10 percent slope range.

The soil drainage class in Table 4.3-1 indicates the wetness in the soil profile along with the speed at which internal water moves through the soil. Soil drainage affects constructability, erosion by wind and water, and revegetation success. Most of the soils within the Preliminary Development Area are in the Poor (P) drainage class (620 acres, 54 percent of the Preliminary Development Area), with smaller areas mapped into Moderately Well Drained (MW) (178 acres, 15 percent), Very Poorly Drained (VP) (172 acres, 15 percent), Somewhat Poorly Drained (SP) (147 acres, 13 percent), Well Drained (W) (28 acres, 2 percent), Somewhat Excessively Well Drained (SE) (6 acres, <1 percent) drainage classes, no soils within the Preliminary Development Area are considered Excessively Drained (E). Soils in P drainage classes are highly productive when drained and are frequently converted to agriculture by the installation of subsurface drain tile. MWD and W drained soils typically are not droughty or wet and are typically well suited to intensive agriculture.

Topsoil is the most nutrient dense layer of soil, and its thickness affects plant nutrition, yield, and surface soil structure. To maintain soil productivity, larger temporary storage areas will be used for soils with thick topsoil to house the larger volume of topsoil removed from permanent infrastructure footprints. Most of the soils within the Preliminary Development Area are

characterized by the presence of relatively thick topsoil greater than 12 inches in depth (944 acres, 82 percent). Constructability and revegetation are affected by very shallow bedrock and rocks or stones in the soil profile. Soils within the Preliminary Development Area characterized by the presence of relatively thin topsoil less than 12 inches in depth (205 acres, 18 percent) may be shallower to bedrock or have stones at the soil surface or within the soil profile.

Table 4.3-1
Area of Soils with Selected Physical Characteristics, in Acres

Project Feature [e]	Total Acres [f]	Textural Family [a]								Slope Range [b]		Drainage Class [c]							Topsoil Thickness [d]		
		Fine	Fine-Loamy	Fine-Silty	Coarse Silty	Coarse Loamy	Loamy	Fine-Loamy over Sandy or Sandy-skeletal	Sandy	Slope 0-5%	Slope 5-10%	E	SE	W	MW	SP	P	VP	0-12 inches	12-18 inches	>18 inches
Preliminary Development Area (Potential Disturbance)																					
Access Roads	16.22	4.34	11.21	0.00	0.00	0.08	0.00	0.45	0.13	16.08	0.14	0.00	0.13	0.18	2.21	1.96	9.63	2.11	2.37	9.66	4.19
Collector Lines	44.61	13.89	29.58	0.05	0.13	0.08	0.00	0.75	0.12	43.05	1.56	0.00	0.12	2.86	12.82	3.50	21.87	3.44	11.73	24.60	8.28
Fenced Area	1085.64	349.22	674.44	0.06	0.31	2.75	0.00	52.79	6.06	1071.50	14.13	0.00	6.06	24.41	159.55	141.72	588.03	165.86	191.00	576.55	318.08
Inverters	0.33	0.09	0.22	0.00	0.00	0.00	0.00	0.02	0.00	0.33	0.00	0.00	0.00	0.01	0.04	0.03	0.21	0.03	0.06	0.17	0.10
O&M Building	0.67	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.12	0.00	0.00	0.12	0.53	0.00	0.02	0.00	0.12	0.53	0.02
Proposed Substation	1.65	0.27	1.38	0.00	0.00	0.00	0.00	0.00	0.00	1.65	0.00	0.00	0.00	0.00	1.38	0.00	0.00	0.27	0.00	1.38	0.27
Subtotal	1149.12	367.81	717.50	0.11	0.44	2.91	0.00	54.01	6.31	1133.16	15.95	0.00	6.31	27.58	176.53	147.21	619.76	171.71	205.28	612.89	330.94
Land Under Control but Not Currently Planned for Development																					
Undisturbed	528.41	104.39	369.32	15.63	3.03	8.99	0.00	25.49	1.57	493.96	34.45	0.00	1.57	51.85	73.12	40.88	312.75	48.23	92.90	214.08	221.42
Grand Total																					
TOTAL	1677.53	472.20	1086.82	15.74	3.47	11.90	0.00	79.50	7.88	1627.12	50.40	0.00	7.88	79.43	249.65	188.09	932.51	219.94	298.18	826.97	552.36

[a] Data available directly from the Natural Resources Conservation Service (NRCS) SSURGO spatial or attribute database via geospatial query of the spatial or attribute data.
[b] Representative slope values are taken directly from the SSURGO database. The SSURGO database provides representative slope values for all component soil series. Slope classes represent the slope class grouping in percent that contains the representative slope value for a major component soil series. For example, a soil mapped in the 2-6% slope class has an average slope of 4% which is within the 0-5% slope range.
[c] Drainage class as taken directly from the SSURGO database. E-excessively drained, SE - somewhat excessively drained W- well drained, MW- moderately well drained, SP- somewhat poorly drained, P- poorly drained, VP- very poorly drained
[d] Topsoil thickness is the aggregate thickness of the A horizon described in the SSURGO database.
[e] Due to the nature of the project, certain project features overlap and the associated acreages are accounted for twice (i.e., portions of collector lines will be located within the fenced area, acreage for each feature is accounted for, even in areas of overlap). This overlap accounts for a total sum of acres exceeding the project area of 1,645 acres.
[f] Total acres of Project features that are anticipated to be disturbed by supporting construction equipment traffic, excavation, and grading. Data obtained by merging Project facility polygons with the SSURGO spatial data in ArcGIS. Summations were performed in ArcGIS Pro or Microsoft Excel.

4.4 SELECTED CLASSIFICATION DATA: PRIME FARMLAND, LAND CAPABILITY CLASSIFICATION, HYDRIC SOILS

Table 4.4-1 outlines selected classification data for soils; the data is broken down by acreage within the Preliminary Development Area and the remaining undisturbed area.

Natural Resources Conservation Service (NRCS)-designated prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses (USDA, no date). Most of the soils in the Preliminary Development Area are classified into prime farmland if drained, prime farmland, soils of statewide importance, or prime farmland if protected from flooding or not frequently flooded during the growing season (795, 305, 29, and 20 acres, respectively; cumulatively 99.99 percent) (see Figure 5).

Subject to certain exceptions, Minnesota Rules 7850.4400, subp. 4 prohibits large energy power generating plants from being sited on more than 0.5-acre of prime farmland per MW of net generating capacity unless there is no feasible and prudent alternative. The Minnesota Department of Commerce (DOC) issued guidance in May 2020 that provides information on how to assess projects which exceed the 0.5-acre prime farmland per MW threshold under the rule. This includes describing why alternatives were not chosen, how avoidance of certain impacts influenced site selection, and showing a good faith consideration was given to nearby non-prime farmland areas. As part of Gopher State Solar's Site Permit Application, a detailed assessment of prime farmland impacts was included, which indicated no other feasible or prudent alternative to the proposed Project that satisfies the prime farmland exclusion rule.

Renville County has a high percentage of soils classified as a type of prime farmland; the county is made up of prime farmland if drained (54%), prime farmland (35%), farmland of statewide importance (5%), not prime farmland (4%), and prime farmland if protected from flooding or not frequently flooded during the growing season (2%). The Preliminary Development Area is 69% prime farmland if drained, 26% prime farmland, 2.5% farmland of statewide importance, 1.8% prime farmland if protected from flooding or not frequently flooded during the growing season, and no lands classified as not prime farmland. As discussed in the Site Permit Application and Appendix B, other alternative sites could not be identified in close proximity to Great River Energy's existing 230 kV Panther Substation to avoid prime farmland, make efficient use of existing equipment, minimize line loss, and avoid the need for large transmission construction that had a higher potential to negatively impact the environment. Further, as outlined in the Project VSMP, Gopher State Solar will use an adaptive management approach for vegetation management to provide the best care and protection for the prime farmland. Gopher State Solar is committed to ensuring the vitality of the soils during construction, operation, and eventual decommissioning of the Project.

Land Capability Class (LCC) is a system of grouping soils primarily based on their capability to produce commonly cultivated crops and pasture plants without deteriorating over a long period of time. Soils within the Preliminary Development Area are classified as LCC 1, 2e, 2s, 2w, 3e, 3s, and 3w. A numerical value of 1 and 2 indicates soils with no or few limitations that restrict the choice of plants or require very careful management. Soils in LCC Class 1 are typically considered prime farmland and soils in LCC Classes 2 and 3 are typically considered prime farmland with conditions. All of the soils in the Preliminary Development Area are in LCC Classes 1-3.

Hydric soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile. Hydric soils are a characteristic used to identify wetlands and can be used to indicate areas with potentially jurisdictional wetlands. Most of the soils in the Preliminary Development Area hydric (792 acres, 69 percent), with the rest of the soils (358 acres, 31 percent) being considered non-hydric soils. Historical aerial photography indicates these areas are successfully cropped yearly indicating subsurface drainage. According to the MNDNR Public Waters Inventory (PWI) maps, there are four public ditches within the Project Area (MNDNR, 2003). These public ditches were identified based on a review of aerial photography and confirmed during field survey. Beaver Creek, East Fork and County Ditch 63 are located in the south and west central portions of the Project. Judicial Ditch 9 and an unnamed stream are located in the northeast portion of the Project (see Figure 1 and Figure 4). Gopher State Solar will further evaluate ditch and potential drain tile locations and take this into account as final Project design and engineering are completed.

Table 4.4-1
Area of Soils within Selected Classification Data, in Acres

Project Feature [a]	Total Acres [b]	Farmland Classification					Land Capability Class											Hydric
		All Soils Prime Farmland	Farmland of Statewide Importance	Prime Farmland		Not Prime	1	2e	2s	2w	3e	3s	3w	4e	4s	5w	6s	7e	Soil [c]
				If Drained	If Protected from Flooding or not Frequently Flooded During the Growing Season														
Preliminary Development Area (Potential Disturbance)																			
Access Roads	16.22	3.72	0.31	12.03	0.16	0.00	1.43	2.25	0.08	10.08	0.14	0.13	2.11	0.00	0.00	0.00	0.00	0.00	11.74
Collector Lines	44.61	15.82	2.52	24.20	2.07	0.00	2.63	13.58	0.41	22.66	1.60	0.12	3.61	0.00	0.00	0.00	0.00	0.00	25.31
Fenced Area	1085.64	283.53	25.86	758.03	18.21	0.00	117.15	163.98	7.84	610.31	14.34	6.08	165.93	0.00	0.00	0.00	0.00	0.00	753.89
Inverters	0.33	0.07	0.01	0.24	0.00	0.00	0.03	0.05	0.00	0.22	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.24
O&M Building	0.67	0.53	0.12	0.02	0.00	0.00	0.00	0.53	0.00	0.02	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Proposed Substation	1.65	1.38	0.00	0.27	0.00	0.00	0.00	1.38	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.27
Subtotal	1149.12	305.05	28.82	794.79	20.44	0.00	121.24	181.77	8.33	643.29	16.20	6.33	171.95	0.00	0.00	0.00	0.00	0.00	791.47
Land Under Control but Not Currently Planned for Development																			
Undisturbed	528.41	119.75	40.74	261.79	106.13	0.00	36.97	75.84	2.67	317.16	38.83	6.17	50.76	0.00	0.00	0.00	0.00	0.00	360.99
Grand Total																			
TOTAL	1677.53	424.80	69.56	1056.58	126.57	0.00	158.21	257.61	11.00	960.45	55.03	12.50	222.71	0.00	0.00	0.00	0.00	0.00	1152.46

[a] Due to the nature of the project, certain project features overlap and the associated acreages are accounted for twice (i.e., portions of collector lines will be located within the fenced area, acreage for each feature is accounted for, even in areas of overlap). This overlap accounts for a total sum of acres exceeding the project area of 1,645 acres.
[b]Total acres of Project features that are anticipated to be disturbed by supporting construction equipment traffic, excavation, and grading. Data obtained by merging facility polygons with the SSURGO spatial data in ArcGIS. Summations were performed in ArcGIS Pro and Microsoft Excel.
[c] Data available directly from the NRCS SSURGO spatial or attribute databases via geospatial query of the spatial or attribute data.

4.5 CONSTRUCTION-RELATED INTERPRETATIONS: HIGHLY ERODIBLE LAND (WIND AND WATER), COMPACTION PRONE, RUTTING PRONE, AND DROUGHT SUSCEPTIBLE WITH POOR REVEGETATION POTENTIAL

Table 4.5-1 outlines selected construction-related interpretative data for site soils broken down by acreage within the Preliminary Development Area and remaining undisturbed area.

Highly erodible land is identified as being susceptible to water and wind erosion. Very few soils in the Preliminary Development Area are low relief, fine to medium textured soils with intermediate to poor water infiltration characteristics that can result in soil erosion by water (16 acres, 1.39 percent). Gopher State Solar will develop plans, including a project specific SWPPP, and implement BMPs as noted in Section 5, to mitigate the potential loss of soil.

Wind erosion was evaluated using the wind erodibility group. Highly wind erodible soils are medium textured, relatively well drained soils with poor soil aggregation, resulting in soils with surfaces dominated by particles that can be dislodged and carried by the wind. No highly wind erodible soils are present in the Preliminary Development Area.

Soils prone to compaction and rutting are subject to changes in soil porosity and structure due to mechanical deformation caused by construction activities, such as equipment traffic, equipment loading, or similar. Compaction and rutting are related to moisture content and texture and are worse when medium- and fine-textured soils are subject to heavy equipment traffic when wet. The majority of the soils in the Preliminary Development Area are prone to compaction (812 acres; 71 percent). All soils in the Preliminary Development Area are prone to rutting (1,149 acres; 100 percent), if they are trafficked when wet. Gopher State Solar will develop operational guidelines in the SWPPP to mitigate heavy traffic on soils when wet, to minimize potential compaction and rutting.

Soils susceptible to drought include coarse textured soils in moderately well to excessive drainage classes. Revegetation during seed germination and early seedling growth is severely compromised during dry periods on drought susceptible soils. Approximately 6.31 acres (less than 1 percent) of soils within the Preliminary Development Area are susceptible to drought.

Table 4.5-1
Soils in Selected Construction – Related Interpretations, in Acres

Project Feature [a]	Total Acres [b]	Highly Erodible [c]		Compact Prone [d]	Rutting Hazard [e]			Drought Susceptible [f]
		Water	Wind		Slight	Moderate	Severe	
Preliminary Development Area (Potential Disturbance)								
Access Roads	16.22	0.14	0.00	12.02	0.00	0.13	16.09	0.13
Collector Lines	44.61	1.56	0.00	27.64	0.00	0.12	44.49	0.12
Fenced Area	1085.64	14.13	0.00	771.41	0.00	6.06	1079.57	6.06
Inverters	0.33	0.00	0.00	0.23	0.00	0.00	0.33	0.00
O&M Building	0.67	0.12	0.00	0.02	0.00	0.00	0.67	0.00
Proposed Substation	1.65	0.00	0.00	0.27	0.00	0.00	1.65	0.00
Subtotal	1149.12	15.95	0.00	811.59	0.00	6.31	1142.80	6.31
Land Under Control but Not Currently Planned for Development								
Undisturbed	528.41	34.45	0.00	362.25	0.00	1.57	526.84	1.57
Grand Total								
TOTAL	1677.53	50.40	0.00	1173.84	0.00	7.88	1669.64	7.88

[a] Due to the nature of the project, certain project features overlap and the associated acreages are accounted for twice (i.e., portions of collector lines will be located within the fenced area, acreage for each feature is accounted for, even in areas of overlap). This overlap accounts for a total sum of acres exceeding the project area of 1,645 acres.
[b] Total acres of Project features that are anticipated to be disturbed by supporting construction equipment traffic, excavation, and grading. Data obtained by merging facility polygons with the SSURGO spatial data in ArcGIS. Summations were performed in ArcGIS Pro and Microsoft Excel.
[c] Highly Erodible Water includes soils in Land Capability Class 4e through 8e or that have a representative slope value greater than or equal to 9%. Highly Erodible Water includes wind erodibility groups 1 & 2.
[d] Includes soils that are somewhat poorly drained to very poorly drained in loamy sands and finer textural classes.
[e] Rutting potential hazard based on the soil strength as indicated by engineering texture classification, drainage class, and slope. In general, soils on low slopes in wetter drainage classes and compromised of sediments with low strength will have potential rutting hazards.
[f] Includes soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained.

4.6 SUMMARY OF MAJOR SOIL LIMITATIONS AT THE GOPHER STATE SOLAR PROJECT

4.6.1 Prime Farmland

Soils within the Project Area are nearly level, generally deep, poorly drained, medium and moderately fine textured loamy soils. A majority of the soils (69%) within the Project Area are prime farmland if drained (see Figure 5). A little over a quarter is prime farmland without condition (305 acres, 27 percent) (i.e., the categories "prime farmland if drained" and "prime farmland if protected from flooding" are not included in this acreage). The primary limitations for the soils during Project construction, operations and maintenance, and eventual decommissioning include compaction, rutting resulting from equipment traffic on wet soils, and the need to reserve and store large volumes of topsoil.

While certain soils classified as prime farmland will be impacted by the Project, Gopher State Solar will implement BMPs during construction as detailed in Section 5.0, the VSMP, and SWPPP. BMPs include soil segregation and decompaction, consideration for wet weather conditions, and erosion and sediment control measures. Following construction, soils will be stabilized and allowed to rest; during the life of the Project, the site will be revegetated with a permanent cover of perennial, regionally appropriate vegetation to the benefit of wildlife and the soil. Revegetation will follow seeding and management specifications agreed to by Gopher State Solar and as outlined in the VSMP. Upon decommissioning, the land could be returned to its pre-construction agricultural use or to another use if economic conditions indicate another use is appropriate for the site. Gopher State Solar anticipates the site will be restored to agricultural use upon decommissioning of the Project.

Cover crops may be used post-construction to support soil health by preventing erosion, supporting soil physical and biological properties, supplying nutrients, suppressing weeds, improving availability of soil water, and breaking pest cycles. Initial post-construction revegetation efforts, establishment activities including selection of suitable plants and seeding times, and maintenance of vegetation during operations are detailed in the VSMP.

4.6.2 Topsoil Storage

Topsoil thickness across the Project Area ranges from 0 to greater 18 inches (see Table 4.3-1) and the soil is high in organic matter (see Table 4.4-1). Storing topsoil in large, deep stockpiles is not recommended as deep piles of topsoil may not have the same biotic interaction as existing topsoil. To prevent compaction and retain original soil characteristics, Gopher State Solar will use larger areas of shallower topsoil stockpiles. Where feasible, topsoil will be conserved by preselecting areas to receive excess topsoil from nearby areas, grading and preparing the seed bed, as appropriate, and revegetating to maintain a rhizosphere suitable for plant growth.

4.6.3 Subsoil Storage

Subsoil storage will occur in the same process as described in Section 4.6.2 above. While some subsoil may be used to fill on-site low spots, any excess subsoil will be stored in shallow stockpiles to prevent compaction and retain original soil characteristics. During decommissioning, the stored subsoil will be used to refill drainage basins.

4.6.4 Compaction and Rutting

Compaction and rutting are potential limitations to constructing the Project in the Preliminary Development Area. Gopher State Solar will design construction access and manage construction traffic to minimize the number of trips occurring on a given soil and location and will implement wet weather procedures as outlined in Section 5.3 below when rutting is observed. Deep compaction is not anticipated to be a significant problem as the amount of construction equipment passing over a given area is expected to be limited and construction equipment consists of fairly small, low-ground-pressure tracked vehicles. If compaction becomes an issue, decompaction of the soil by tilling or ripping may be performed if safely distanced from existing buried utilities or other infrastructure.

5.0 BMPS DURING CONSTRUCTION AND OPERATION

The Project will be constructed and operated on property leased by Gopher State Solar. The Project is located on farmland occupying flat to gently rolling till plain in Renville County, Minnesota (see Figures 1-4). Expected Project phasing is listed below.

Construction activities will be limited to the leased area; therefore, no direct impacts to adjacent land are expected. Because most of the Project Area is currently nearly level or has slightly rolling terrain (see Table 4.3-1), the amount of grading anticipated within the Preliminary Development Area is expected to be minimal. To the extent feasible, the PV arrays will be designed to follow the existing grade of the Project Site, minimizing the required earthmoving activities (see Figure 4).

The majority of the Project's topography will be left unchanged; however, some grading activities may be required to raise or lower certain areas within the Project site. Other earthmoving activities include work on the access roads, trenches for the DC and AC collector line system, and foundations for the Project Substation or other equipment, as necessary (see Figure 4). The following sections describe measures the Contractor will implement to minimize the impacts to the integrity of the topsoil and topography of the Project site.

Typical Project Construction Phasing:

- Prior to construction, identification of clearing and grading limits, and sensitive areas to be avoided;
- Installation of sediment and erosion controls outlined in project plans and approvals, including any necessary site-specific modifications that have been identified;
- Completion of earthwork, access road construction, drain tile adjustment, if needed, and initial stabilization of exposed soils;
- Construction of permanent stormwater treatment basins;
- Installation of the solar array and electrical components (may be concurrent with above);
- Application of prescribed seed mixes and temporary stabilization; and
- Cleanup and permanent stabilization of the site.

5.1 ENVIRONMENTAL MONITOR

In coordination with the MDA or other applicable agencies, Gopher State Solar will contract with a third-party environmental monitor (Monitor) to regularly observe earthmoving activities and construction to ensure appropriate measures are taken to segregate and handle the topsoil.

The Monitor's responsibilities may include:

- Conduct weekly inspections during Project construction. The Monitor will select a day of the week at random to inspect earthwork and perform the following duties:

- Observe construction crews' activities to ensure that topsoil is being segregated and managed appropriately;
- Monitor for potential soil compaction concerns (except within access roads); the inspection may focus on areas returning to agriculture use after construction and make specific recommendations for decompaction;
- Provide recommendations to Gopher State Solar's Contractor related to earthwork activities;
- Assist in determining if weather events have created "wet weather" conditions and make recommendations to the Contractor on the ability to proceed with construction;
- As needed, attend construction and safety meetings upon accessing the construction site.

The Monitor will report potential and/or actual issues with BMPs to Gopher State Solar and its Contractor. The Contractor will use discretion to either implement a corrective action or stop work, depending on the issue to be resolved.

5.2 SOIL SEGREGATION AND DECOMPACTION

One of the primary means to protect and preserve the topsoil during Project construction will be to separate the topsoil from the other subsoil materials when all earthmoving activities, excavation, or trenching are taking place. There may be limited situations where excavated subsoil will be temporarily stored on adjacent, undisturbed topsoil. In these situations, subsoil will be returned to the excavation with as little disturbance of the underlying topsoil as practicable. A thin layer of straw mulch may be placed as a buffer between the subsoil and undisturbed topsoil, where practicable, to provide separation of the subsoil and underlying topsoil during the excavation backfill process.

Based on SSURGO data, most of the Preliminary Development Area has relatively thick topsoil greater than 12 to 18 inches in depth (944 acres, 82 percent). Actual topsoil thickness will be confirmed with geotechnical soil tests prior to earthwork activities starting. Gopher State Solar will identify the appropriate depth of topsoil that should be removed and segregated from other subsoil materials during earthwork. This information will be provided to the Monitor, along with recommendations of specific segregation methods.

Gopher State Solar's preliminary recommendation is that topsoil be stripped up to 12 inches in thickness in areas of construction grading. Topsoil greater than 12 inches in depth will be treated similarly to the underlying subsoil. During the activities that require temporary excavations and backfilling (i.e., trenching for cable installation) the subgrade material will be replaced into the excavations first and compacted as necessary, followed by topsoil replaced to the approximate locations from which it was removed. Topsoil will then be graded to the approximate pre-construction contours. Gopher State Solar will strive to avoid compaction in other areas where it is not required by the design.

Following completion of earthwork activities that require topsoil and subsoil segregation, excess topsoil material will be re-spread on the Project site at pre-established locations to maintain the overall integrity and character of the pre-construction farmland. The location and amount of

topsoil will be documented to facilitate reallocating of topsoil during Project decommissioning. This practice is described in more detail below for each of the earthmoving activities that are anticipated for this Project.

5.3 WET WEATHER CONDITIONS

When periods of wet weather occur during Project construction, construction activities may be temporarily halted if significant adverse impacts to soil could occur. Gopher State Solar's Contractor will have responsibility for halting activities if weather conditions are such that heavy equipment would cause significant soil compaction or rutting of the Project site or pose a risk to worker safety.

Following initial grading at the site, activities that do not require heavy equipment could still proceed in wet weather conditions. The Contractor be responsible for ensuring that topsoil erosion, rutting, compaction, or damage to drain tiles is avoided to the extent possible. The Contractor will ensure that proper techniques and practices are used to loosen soil appropriately, when needed. Soil loosening with chisel plows prior to disking and planting is a typical method of soil preparation in areas proposed for seeding. Agricultural equipment capable of operating within the space between panel lines, when panels are oriented vertically, will be used to loosen soil, prepare a seedbed, and plant approved seed mixes.

5.4 ADAPTIVE MANAGEMENT DURING CONSTRUCTION

As with all forms of adaptive management and as outlined in the VSMP, changes may be made to the Plan during construction should unforeseeable conditions arise that render the Plan unworkable. Using this approach will allow the Project to continue despite potential barriers. Should weather or site conditions during construction require different BMPs than those that are described in this section, Gopher State Solar will work with the MDA and other appropriate agencies, as needed, to discuss and select potential new approaches to the specific conditions that are encountered.

Gopher State Solar will remain flexible and implement new procedures that will help maintain the quality of the Project land while protecting the safety of the workers.

5.5 INITIAL GRADING, ROAD CONSTRUCTION, AND ARRAY CONSTRUCTION

The first phase of Project construction will include general civil work where the Contractor will perform initial cut and fill activities. Gopher State Solar will identify the appropriate depth of topsoil, up to 12 inches, that should be stripped and segregated during initial grading activities. Based SSURGO data, the majority of topsoil in the Preliminary Development Area is 12 to 18 inches deep or greater than 18 inches deep; topsoil depth will be confirmed with field tests prior to grading activities. If needed, Gopher State Solar will provide field data and a recommendation on specific segregation methods to the MDA for review and input.

The Contractor will first level topsoil that sits higher than other areas to ensure that site topography falls within the tolerances allowed for by the solar array design. During this civil work, topsoil will be pushed outside of the graded areas and stored in pre-designated spots for later use. Once topsoil is removed from the graded areas, the subsoil materials will be removed from onsite high spots, as required, and relocated to low spots, where there is less potential for runoff and erosion. Prior to relocating subgrade materials to the low spots, topsoil in the low areas will be stripped and set aside before the fill is added, then re-spread over the new fill. Topsoil and subsoil will

remain segregated to avoid mixing and maintain the integrity of both soil types. The subsoil will be compacted in place. When compaction is complete, the topsoil will be spread over the reconditioned subsoil areas.

This newly spread topsoil will be loosely compacted or tracked to give a smooth-surface and employ the wind and stormwater erosion prevention BMPs.

After most of the initial earthwork activities are complete, the Contractor will construct the Project access road network. This work will start with stripping topsoil materials from the new roadbed areas to a depth of at least 12 inches. Topsoil will be windrowed, or placed into rows of stockpiles adjacent to the edge of the road, and loosely compacted or tracked. The Contractor will install stormwater and wind erosion BMPs. The Contractor will then compact the sub-grade materials. After gravel is installed and compacted to engineers' requirements, the Contractor will shape Project drainage ditches as identified on the final grading plan. Previously stripped and windrowed topsoil will be re-spread on previously designated areas throughout the Preliminary Development Area.

Following grading and road construction, the Contractor will install foundation piles for the solar PV array racking system and the inverters. Foundation piles will be driven directly into the soil with pile driving equipment. The installation vehicles will operate on the existing ground surface; impacts will be limited and similar to a vehicle driving over the soil surface. Only minor soil disturbance is expected from this activity. In the event that gravel and/or concrete pads are required as part of PV array or inverter installation, topsoil will be removed, set aside for temporary storage, and then spread into pre-designated locations for later use.

5.6 FOUNDATIONS

The Contractor will perform foundation work for the Project Substation and O&M Building. Where foundations are needed, the Contractor will strip topsoil, grade the site as needed, install the pile or similar foundations based on final specifications, compact sub-grade materials, regrade spoils around the area, and then install clean rock on the surface. Topsoil stripped from the Project Substation area will be temporarily stored outside of the substation area and collected into pre-designated locations for later use. These topsoil piles will be windrowed or piled and loosely compacted and/or "tracked" with stormwater and wind erosion BMPs in place. Once substation construction is sufficiently complete, the topsoil piles will be thinly distributed in designated areas adjacent to the substation and the topsoil revegetated with an appropriate seed mix.

5.7 TRENCHING

Trenching may be required for the installation of DC and AC collector lines across the Project Area. Where collector lines are buried, the Contractor will install cables in trenches approximately 4-feet deep using the "open trench" method. Topsoil and subsoil materials will be excavated from the trench using typical excavating equipment (i.e., backhoe or similar) and segregated, as previously described. Gopher State Solar anticipates that native subsoil will be relatively rock free (see Table 4.3-1) but will confirm this with field studies. If needed based on the results, the bottom of each trench may be lined with clean or foreign fill to surround the cables. After cables have been installed on top of bedding materials in the trench, 1 foot of screened, native backfill will be placed on the cables followed by unscreened native subsoil and topsoil. This material will be compacted as necessary. At minimum, the top 1 foot of each trench will be backfilled with topsoil to return the surface to its finished grade after settling.

5.8 TEMPORARY EROSION AND SEDIMENT CONTROL

By adhering to the Project-specific SWPPP required under the National Pollutant Discharge Elimination System (NPDES) permitting administered by the Minnesota Pollution Control Agency (MPCA), Gopher State Solar will minimize the risk of excessive soil erosion on lands disturbed by construction.

Prior to construction, Gopher State Solar will work with engineers and the Contractor to outline the reasonable methods for erosion control BMPs and prepare the SWPPP. These measures will primarily include:

- Implementing perimeter controls (i.e., silt fencing on the downside of all hills, near waterways, and near drain tile inlets); this silt fencing will control soil erosion via stormwater;
- Check dams and straw waddles may be used to slow water during rain events in areas that have the potential for high volume flow;
- Erosion control blankets may be installed on any steep slopes (given the relatively flat terrain of the Project this BMP may not be required); and,
- Topsoil and subsoil material will be piled and loosely compacted while stored. The BMPs employed to mitigate wind and stormwater erosion on soil stockpiles will also include installing silt fence on the downward side of the piles as needed and installation of straw waddles if these spoil piles are located near waterways.

The SWPPP will identify designated onsite SWPPP inspectors to be employed by the Contractor for routine inspections, as well as for inspections after storm events as outlined in the SWPPP.

5.9 DRAIN TILE IDENTIFICATION, AVOIDANCE, AND REPAIR

Gopher State Solar will avoid drain tiles and ditches, where feasible, through prudent design and construction practices. Where drain tiles and ditches need to be crossed by Project facilities (e.g., collector lines), Gopher State Solar will seek to avoid impacts to these tiles and ditches via construction methods like prompt repair of tiles after trenching or directional boring where trenching is not practicable. Based on current conditions, the Project Area appears to be adequately draining and discharging off site through the use of drain tiles and ditches. To minimize unforeseen repairs or damages to existing drain tile lines and/or drain tile systems, Gopher State Solar is committed to preserve soil drainage performance on neighboring, non-participating properties and restoring drain tile systems on participating properties as needed during operations, or upon decommissioning if tiles are not deemed necessary during solar operations.

5.10 PRE-CONSTRUCTION TILE MAPPING AND REPAIR

Prior to construction, Gopher State Solar will map existing drainage infrastructure to avoid or identify potential impacts. As part of these efforts, Gopher State Solar will reach out to all participating landowners to ask for their assistance in locating tile, requesting drain tile maps, personal knowledge of their property, and knowledge of existing tile that was placed without written record. Gopher State Solar will communicate with landowners on a parcel-by-parcel basis

as construction approaches. Field location services and historical satellite imagery may be used, if necessary, to identify drain tiles that have the potential to be impacted by construction activities.

Gopher State Solar will maintain or improve site drainage based on existing conditions. Drain tiles within the construction areas that service upstream properties will be maintained or relocated as needed to maintain drainage in the Project Area. In the event drain tile main damage is unavoidable, and such damage would create adverse effects to a participating or neighboring property, Gopher State Solar will relocate or repair the existing drain tile during construction. Construction personnel will visually identify damaged drain tile. New or modified drain tile systems installed by Gopher State Solar will be documented using global positioning system equipment and maintained in Project construction files and the decommissioning Plan. Tile repairs will be completed using industry accepted methods and will be repaired with materials of the same or better quality as that which was damaged; repairs may incorporate the use of a fabric and heavy walled portion of PVC pipe to connect non-damaged portions of the tile.

5.11 PROJECT DESIGN CONSIDERATIONS

Gopher State Solar will make reasonable efforts to prevent damage to drain tile mains through locating the mains and incorporating the identified locations into engineering designs. In the event damage to a drain tile main occurs and such damage would create adverse drainage effects to participating or neighboring property, Gopher State Solar will re-route or repair the existing drain tile main during the construction process.

5.12 CONSTRUCTION DEBRIS

Gopher State Solar and the Contractor will remove construction-related debris and unused material. Below-grade, unusable materials will be removed and loaded onto trucks for disposal at a designated off-site location. If feasible, the Contractor will use locally sourced dumpsters and removal services. To the extent practicable, recyclable materials will be sorted and recycled at a local facility.

Debris/trash collection points and/or dumpsters will be located in the laydown yards, as well as at strategically designated locations in proximity to where work is being performed. The Contractor will inspect and clear fence lines of loose or wind-blown debris on a daily basis to ensure that debris and trash does not leave the Project Area. In the unlikely event that contaminated materials are encountered during construction, specialized dumpsters and handling instructions specific to the type of contaminated materials discovered will be employed. If encountered, contaminated materials will be disposed of at an appropriate facility in accordance with applicable laws, ordinances, regulations, and standards.

6.0 DECOMMISSIONING

At the end of commercial operations, Gopher State Solar will be responsible for removing all of the solar arrays and other associated facilities. At the end of the Site Permit term, Gopher State Solar reserves the right to extend operations of the Project by applying for an extension of the Site Permit, if necessary, and continuing operation. Should Gopher State Solar decide to continue operation, a decision would be made as to whether the Project would continue with the existing equipment or to upgrade the facilities with newer technologies.

Decommissioning of the Project will include removing the solar arrays (modules, racking and foundation posts), inverters, fencing, access roads, cables and lines, and the O&M building.

Standard decommissioning practices will be used, including dismantling and repurposing, salvaging/recycling, or disposing of solar energy improvements, and restoration. A detailed Decommissioning Plan outlining the decommissioning process for the Project is provided in Appendix F of the Site Permit Application and is generally summarized below.

6.1 TIMELINE

Decommissioning is estimated to take approximately 40 weeks to complete, and the decommissioning crew will ensure that all equipment and materials are recycled or disposed of properly.

6.2 REMOVAL AND DISPOSAL OF PROJECT COMPONENTS

The removal and disposal details of the Project components are found below:

- Modules: Modules will be inspected for physical damage, tested for functionality, and disconnected and removed from racking. Functioning modules will be packed, palletized, and shipped to an offsite facility for reuse or resale. Non-functioning modules will be shipped to the manufacturer or a third party for recycling or disposal.

- Racking: Racking and racking components will be disassembled and removed from the steel foundation posts, processed to appropriate size, and sent to a metal recycling facility;

- Steel Foundation Posts: All structural foundation steel posts will be pulled out to full depth, removed, processed to appropriate size, and shipped to a recycling facility. The posts can be removed using back hoes or similar equipment. During decommissioning, the area around the foundation posts may be compacted by equipment and, if compacted, the area will be decompacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent for vegetation.

- Underground Cables and Lines: All underground cables and conduits will be removed to a depth of 4 feet so as to not impede the reintroduction of farming. If soil is excavated during decommissioning, Topsoil will be segregated and stockpiled for later use prior to any excavation and the subsurface soils will be staged next to the excavation. The subgrade will be compacted per AIMP standards. Topsoil will be redistributed across the disturbed area.

- Inverters, Transformers, and Ancillary Equipment: All electrical equipment will be disconnected and disassembled. All parts will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at Gopher State Solar's sole discretion, consistent with applicable regulations and industry standards.

- Equipment Foundation and Ancillary Foundations: The ancillary foundations are pile foundations for the equipment pads. Pads will be broken and removed. As with the solar array steel foundation posts, the foundation piles will be pulled out completely. All unexcavated areas compacted by equipment used in decommissioning will be decompacted pursuant to Section 4.6.1.4 of the AIMP in

a manner to adequately restore the topsoil and sub- grade material to a density similar to the surrounding soils. All materials will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at the Gopher State Solar's sole discretion, consistent with applicable regulations and industry standards.

- Fence: All fence parts and foundations will be removed from the site and reconditioned and reused, sold as scrap, recycled, or disposed of appropriately, at Gopher State Solar's sole discretion, consistent with applicable regulations and industry standards. The surrounding areas will be restored to pre-Project conditions to the extent feasible.

- Access Roads: Facility access roads will be used for decommissioning purposes, after which removal of such roads will be discussed with applicable landowners, using the following process:

    - After final clean-up, access roads may be left intact through mutual agreement of the landowner and Gopher State Solar unless otherwise restricted by federal, state, or local regulations; and

    - If an access road is to be removed, aggregate will be removed and shipped from the site to be reused, sold, or disposed of appropriately, at Gopher State Solar's sole discretion, consistent with applicable regulations and industry standards. Clean aggregate can often be used as "daily cover" at landfills for no disposal cost. All internal service roads are currently anticipated to be constructed with geotextile fabric and eight inches of aggregate over compacted subgrade. Any ditch crossing connecting an access road to public roads will be removed unless the landowner requests it remain. The subgrade will be de-compacted to a depth of approximately 18 inches using a chisel plow or other appropriate subsoiling equipment. All rocks larger than four inches will be removed. Topsoil that was stockpiled during the original construction will be distributed across the open area. The access roads and adjacent areas that are compacted by equipment will be de-compacted.

6.3 RESTORATION/RECLAMATION OF FACILITY SITE

After equipment removal, the Project Area could be restored to agricultural use (in accordance with this AIMP, Project lease and easement agreements, the VSMP and applicable portions of the SWPPP) or to another use, if conditions at that time indicate another use is appropriate for the site. Holes created by fence poles, concrete pads, re-claimed access road corridors and other equipment, as well as trenches/drains excavated by the Project, will be filled in with soil to existing conditions and seeded.

During decommissioning, grading and soil disturbing activities will be kept to the minimum necessary to effectively decommission the site to maintain the soil benefits realized during the long-term operation of the Project; such benefits include building topsoil through plant matter decay, carbon capture, and beneficial soil bacteria that are often absent from soil subject to row crop agriculture. Revegetation will be completed in accordance with the details of the Project VSMP. In accordance with the SWPPP, erosion and sediment control measures will be left in place, as needed, until the Project site is stabilized.

At the end of the Site Permit term, Gopher State Solar reserves the right to extend operations of the Project by applying for an extension of the Site Permit, if necessary, and continuing operation. Should Gopher State Solar decide to continue operation, a decision would be made as to whether the Project would continue with the existing equipment or to upgrade the facilities with newer technologies. If the decision is made to continue operations, Gopher State Solar would determine if any Project changes would require re-permitting of the facility. If a new Site Permit is required, Gopher State Solar would prepare an application and obtain this approval.

7.0 REFERENCES

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FIGURE 1

GOPHER STATE SOLAR PROJECT AREA

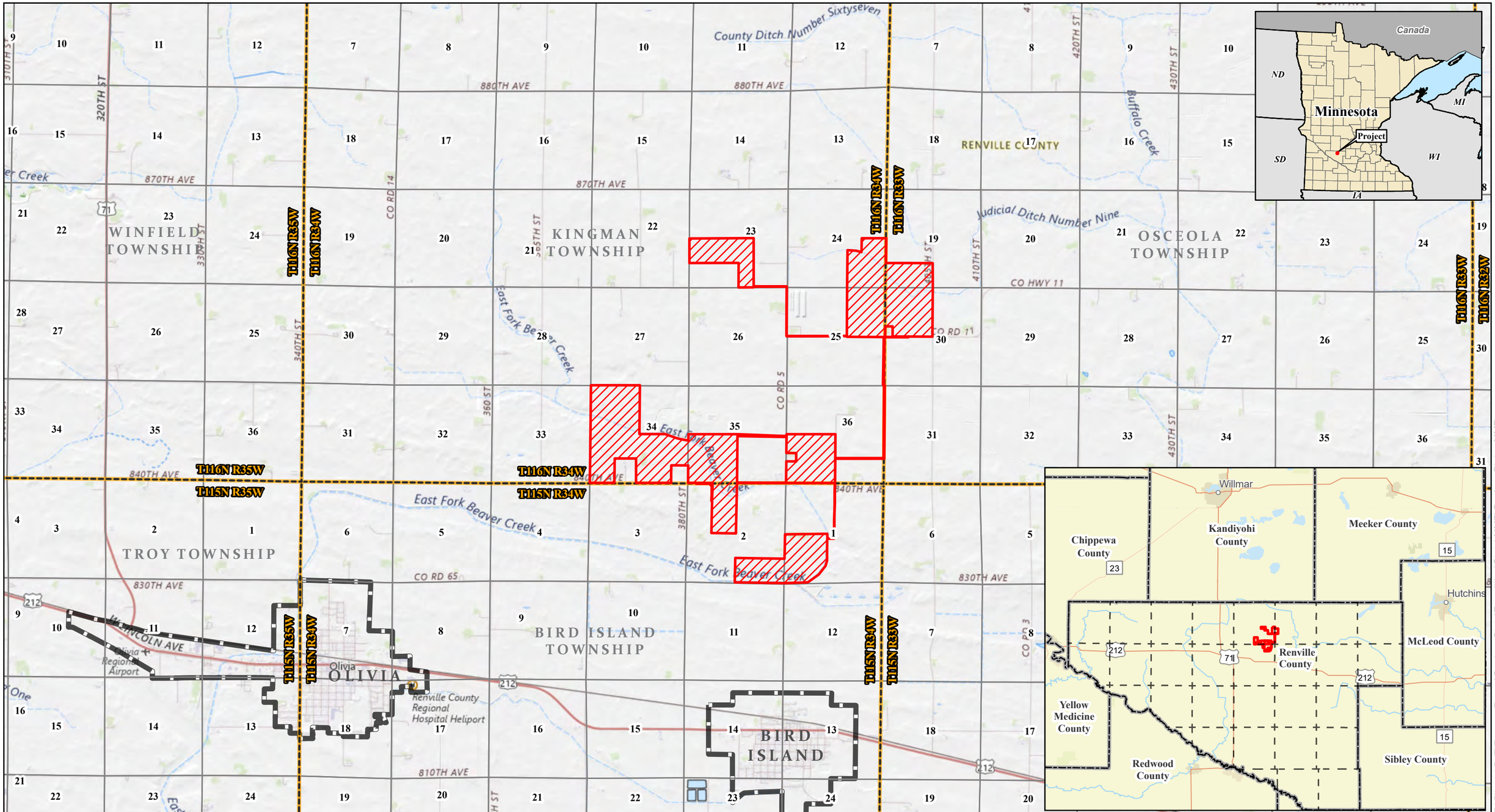

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Figure 1 - Project Location
Gopher State Solar Project

Ranger Power
Renville County, Minnesota

- Project Area
- Township Boundary
- Section Line
- Municipal Boundary

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Date: (6/3/2024)

FIGURE 2

GOPHER STATE SOLAR PANTHER SUBSTATION INTERCONNECT

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Figure 2 - Project Interconnect Facilities
Gopher State Solar Project

Ranger Power

Renville County, Minnesota

- Preliminary Development Area
- Project Area
- Proposed O&M Building
- Proposed Substation
- Proposed Solar Panel
- Fence Line
- Proposed Collector Line
- Proposed Access Road
- Proposed Inverter
- Point of Interconnect
- Bird Island to Lake Lillian 69kV
- Black Dog to Panther to Granite Falls 230kV
- Melville to Melville Tap 69kV

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FIGURE 3

GOPHER STATE SOLAR PRELIMINARY DEVELOPMENT AREA

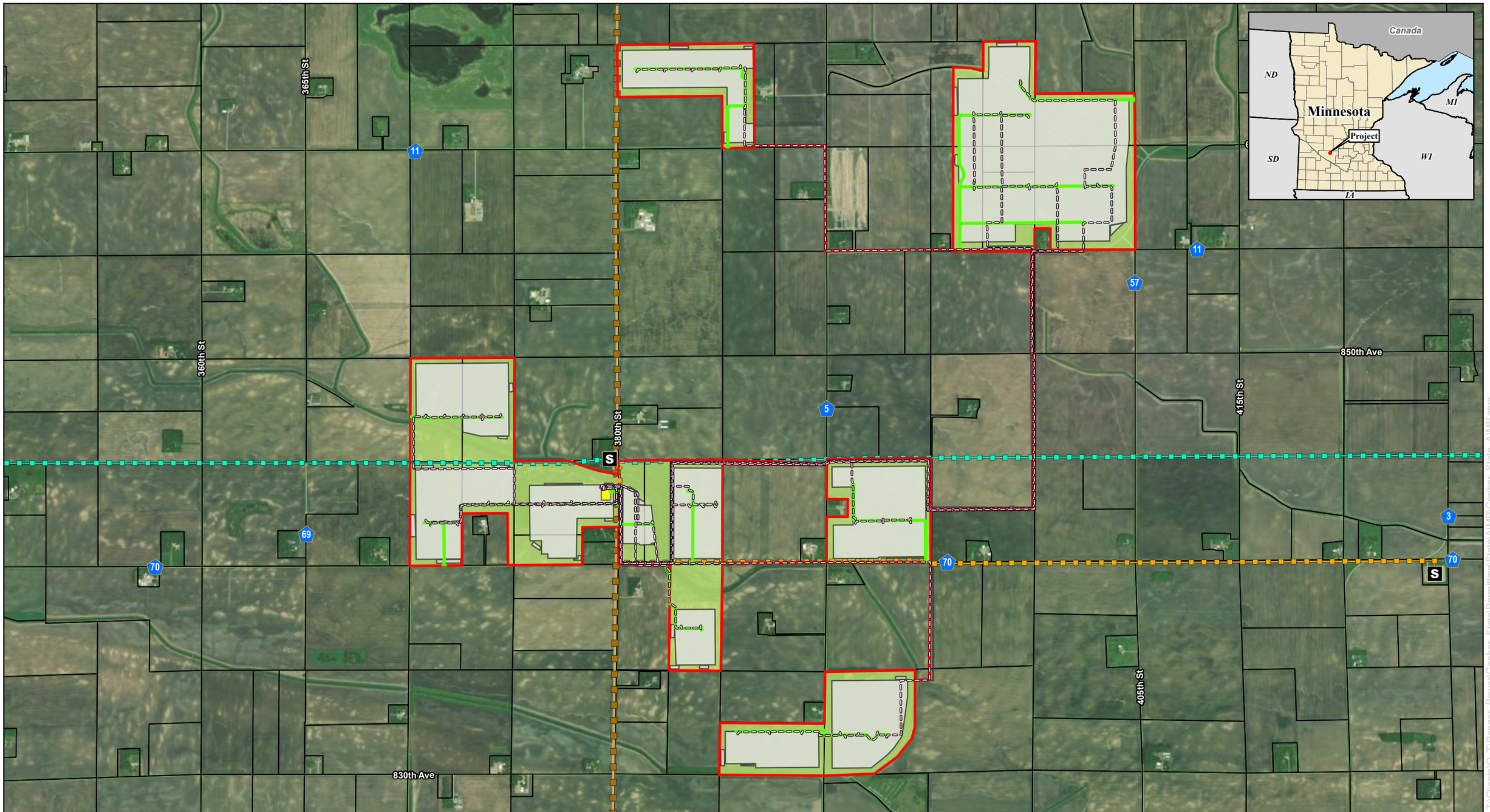

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Figure 3 - Preliminary Development Area
Gopher State Solar Project

Ranger Power

Renville County, Minnesota

- Project Area
- Preliminary Development Area
- Proposed Substation Proposed
- O&M Building
- Participating Land Owner
- Parcel Boundary
- Proposed Access Road
- Proposed Collector Line
- Existing Substation
- Bird Island to Lake Lillian 69kV
- Black Dog to Panther to Granite Falls 230kV
- Melville to Melville Tap 69kV

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FIGURE 4

GOPHER STATE SOLAR PRELIMINARY FACILITY DESIGN

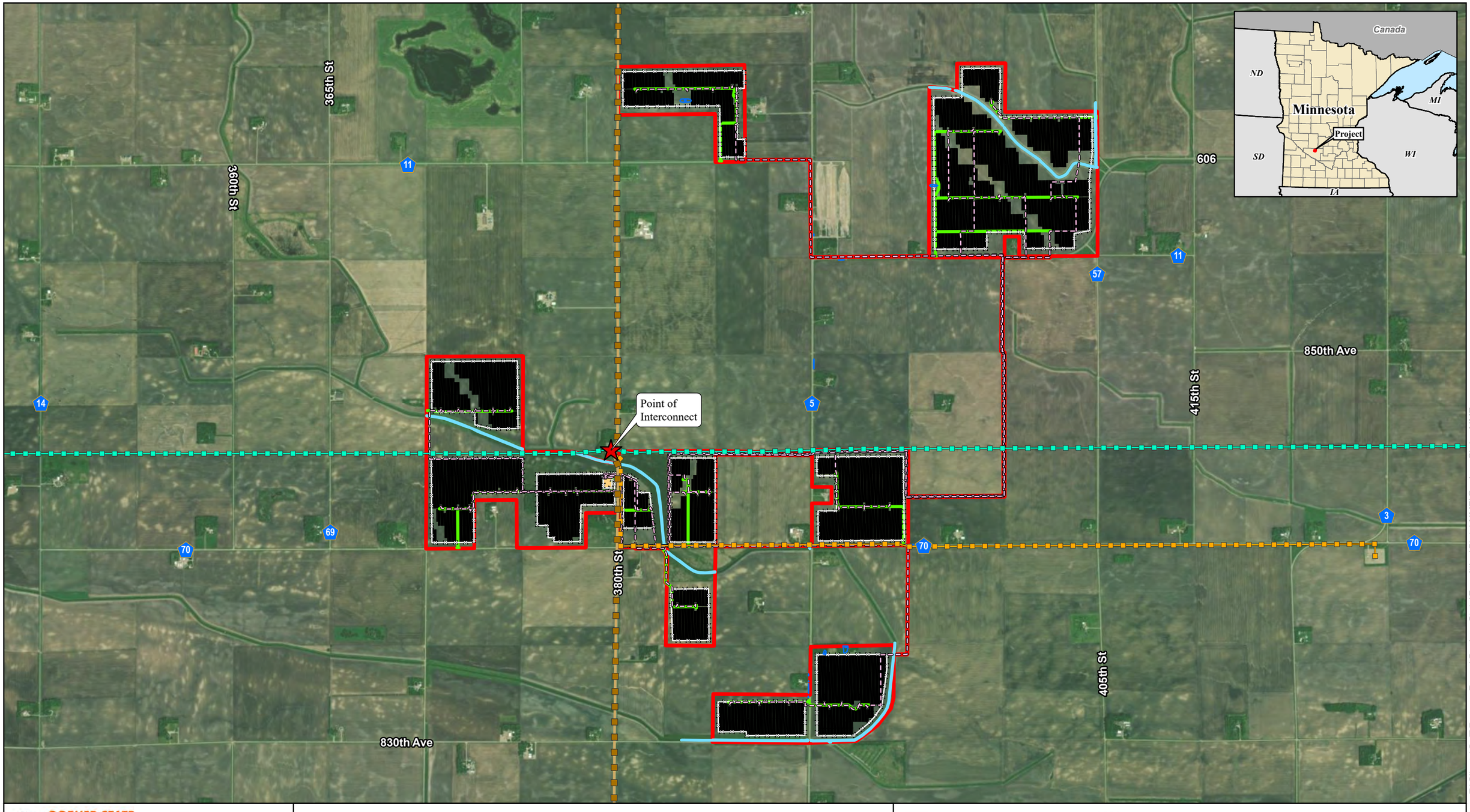

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Figure 4 - Preliminary Facility Design
Gopher State Solar Project

Ranger Power

Renville County, Minnesota

- Project Boundary
- Proposed Substation
- Proposed O&M Building
- Proposed Access Road
- Proposed Collector Line
- Proposed Solar Panel
- Point of Interconnect
- Fence Line
- BWSR CREP/RIM Easement
- Delineated Wetland
- Delineated Waterway
- Bird Island to Lake Lillian 69kV
- Black Dog to Panther to Granite Falls 230kV
- Melville to Melville Tap 69kV

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Date: (8/13/2024)

FIGURE 5

GOPHER STATE SOLAR PRIME FARMLAND

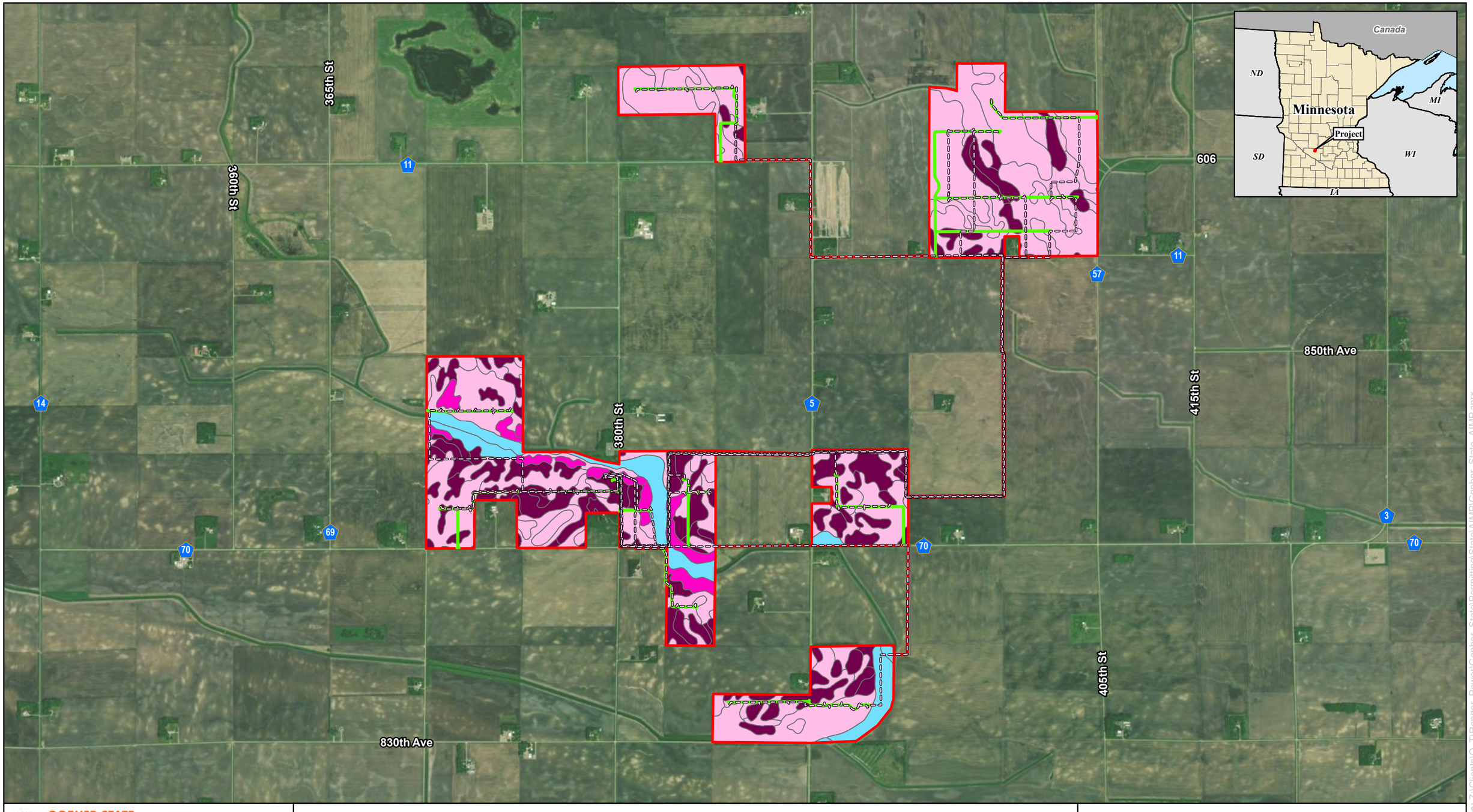

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Figure 5 - Prime Farmland
Gopher State Solar Project

Ranger Power

Renville County, Minnesota

- Project Area
- Proposed Collector Line
- Proposed Access Road

Prime Farmland Classification

- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season

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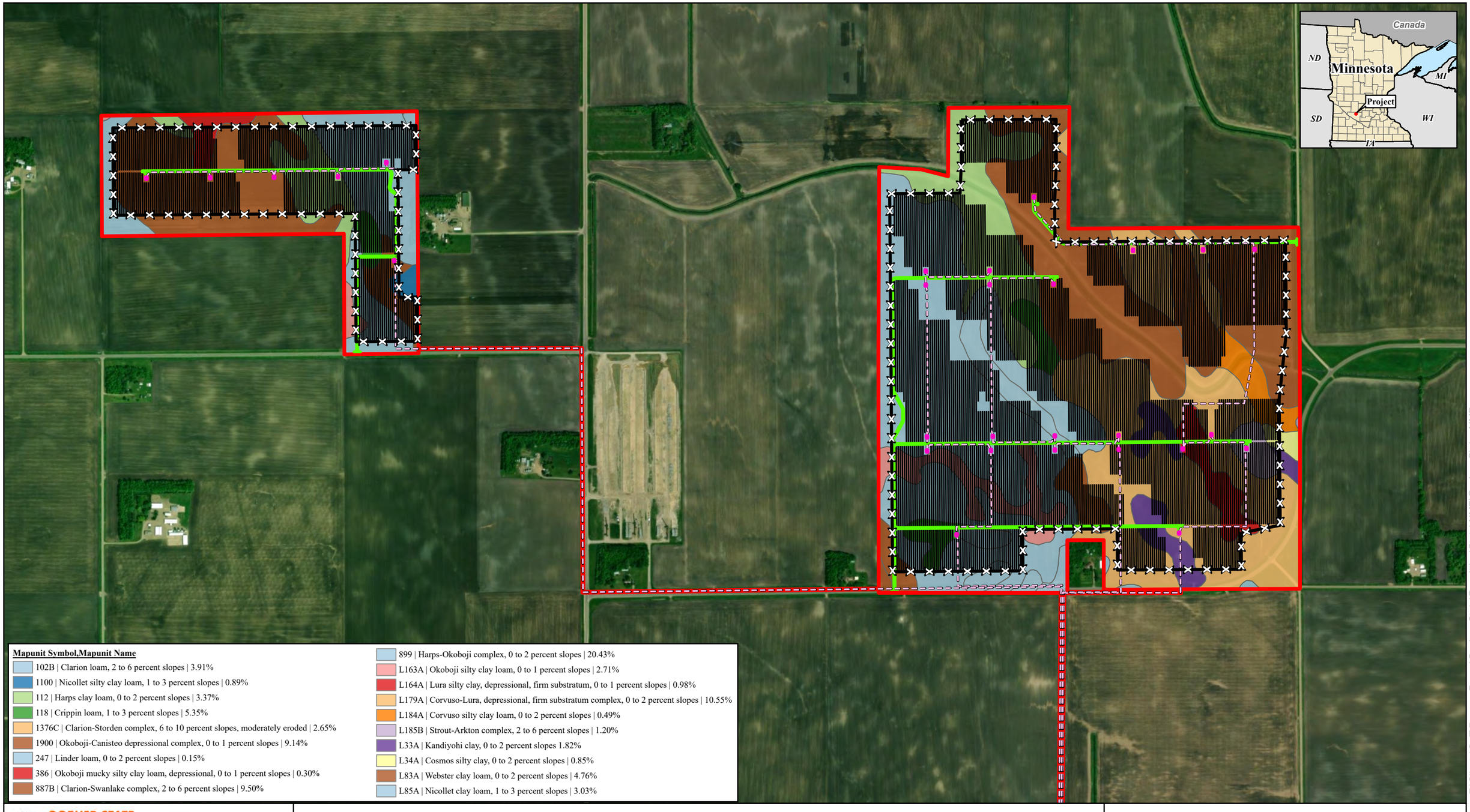
APPENDIX A

GOPHER STATE SOLAR PROJECT SOILS MAP



Mapunit Symbol,Mapunit Name

- 102B | Clarion loam, 2 to 6 percent slopes | 3.91%
- 1100 | Nicollet silty clay loam, 1 to 3 percent slopes | 0.89%
- 112 | Harps clay loam, 0 to 2 percent slopes | 3.37%
- 118 | Crippin loam, 1 to 3 percent slopes | 5.35%
- 1376C | Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded | 2.65%
- 1900 | Okoboji-Canisteo depressional complex, 0 to 1 percent slopes | 9.14%
- 247 | Linder loam, 0 to 2 percent slopes | 0.15%
- 386 | Okoboji mucky silty clay loam, depressional, 0 to 1 percent slopes | 0.30%
- 887B | Clarion-Swanlake complex, 2 to 6 percent slopes | 9.50%
- 899 | Harps-Okoboji complex, 0 to 2 percent slopes | 20.43%
- L163A | Okoboji silty clay loam, 0 to 1 percent slopes | 2.71%
- L164A | Lura silty clay, depressional, firm substratum, 0 to 1 percent slopes | 0.98%
- L179A | Corvuso-Lura, depressional, firm substratum complex, 0 to 2 percent slopes | 10.55%
- L184A | Corvuso silty clay loam, 0 to 2 percent slopes | 0.49%
- L185B | Strout-Arkton complex, 2 to 6 percent slopes | 1.20%
- L33A | Kandiyohi clay, 0 to 2 percent slopes 1.82%
- L34A | Cosmos silty clay, 0 to 2 percent slopes | 0.85%
- L83A | Webster clay loam, 0 to 2 percent slopes | 4.76%
- L85A | Nicollet clay loam, 1 to 3 percent slopes | 3.03%

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Appendix A - Soils in the Project and Development Area
Gopher State Solar Project

Ranger Power

Renville County, Minnesota

- Project Boundary
- Proposed O&M Building
- Proposed Substation
- Proposed Inverter
- Proposed Solar Panel
- Proposed Access Road
- Proposed Collector Line
- Fence Line

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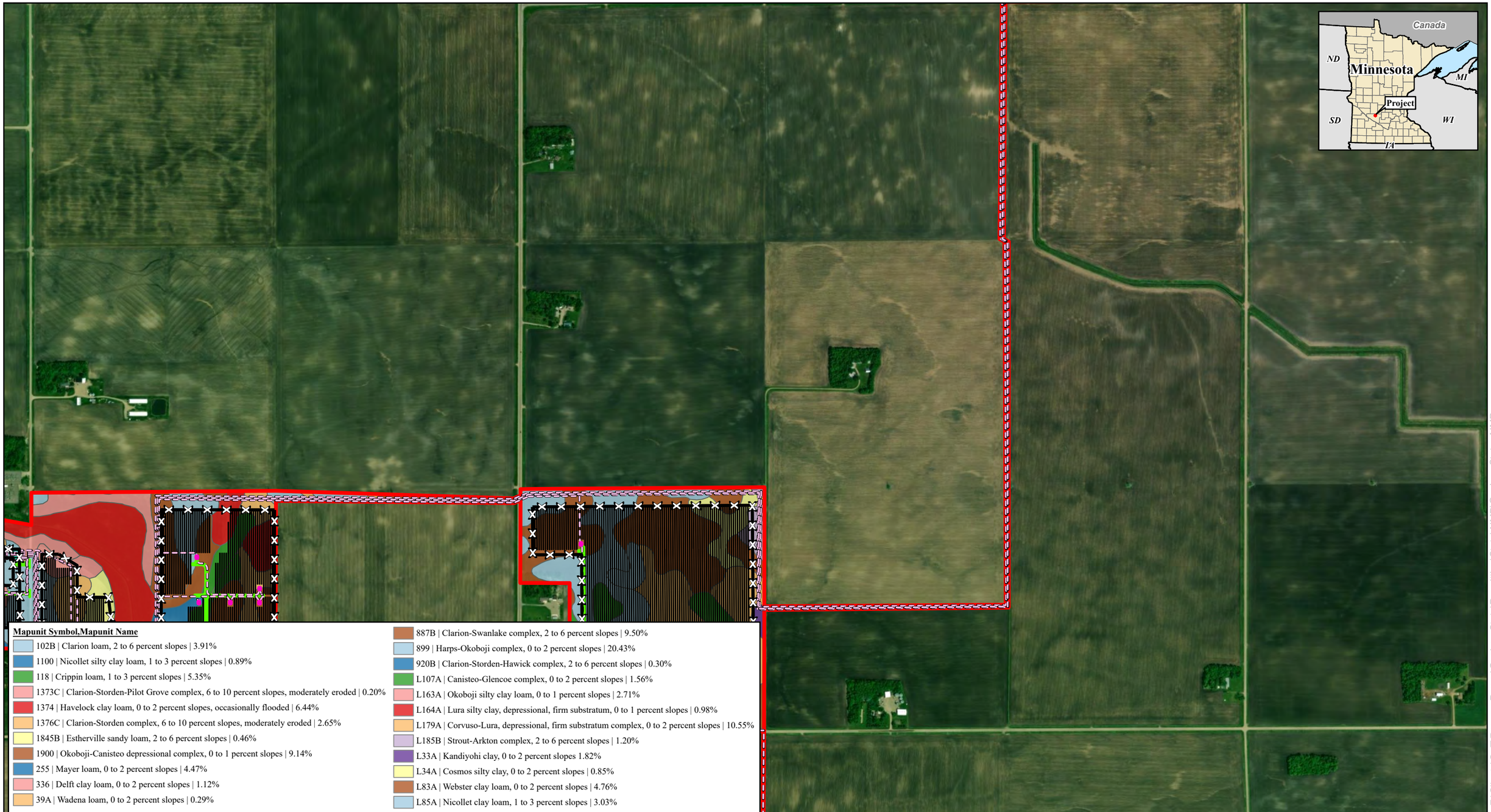

Mapunit Symbol,Mapunit Name

- 102B | Clarion loam, 2 to 6 percent slopes | 3.91%
- 1100 | Nicollet silty clay loam, 1 to 3 percent slopes | 0.89%
- 118 | Crippin loam, 1 to 3 percent slopes | 5.35%
- 1373C | Clarion-Storden-Pilot Grove complex, 6 to 10 percent slopes, moderately eroded | 0.20%
- 1374 | Havelock clay loam, 0 to 2 percent slopes, occasionally flooded | 6.44%
- 1376C | Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded | 2.65%
- 1845B | Estherville sandy loam, 2 to 6 percent slopes | 0.46%
- 1900 | Okoboji-Canisteo depressional complex, 0 to 1 percent slopes | 9.14%
- 255 | Mayer loam, 0 to 2 percent slopes | 4.47%
- 336 | Delft clay loam, 0 to 2 percent slopes | 1.12%
- 39A | Wadena loam, 0 to 2 percent slopes | 0.29%
- 887B | Clarion-Swanlake complex, 2 to 6 percent slopes | 9.50%
- 899 | Harps-Okoboji complex, 0 to 2 percent slopes | 20.43%
- 920B | Clarion-Storden-Hawick complex, 2 to 6 percent slopes | 0.30%
- L107A | Canisteo-Glencoe complex, 0 to 2 percent slopes | 1.56%
- L163A | Okoboji silty clay loam, 0 to 1 percent slopes | 2.71%
- L164A | Lura silty clay, depressional, firm substratum, 0 to 1 percent slopes | 0.98%
- L179A | Corvuso-Lura, depressional, firm substratum complex, 0 to 2 percent slopes | 10.55%
- L185B | Strout-Arkton complex, 2 to 6 percent slopes | 1.20%
- L33A | Kandiyohi clay, 0 to 2 percent slopes 1.82%
- L34A | Cosmos silty clay, 0 to 2 percent slopes | 0.85%
- L83A | Webster clay loam, 0 to 2 percent slopes | 4.76%
- L85A | Nicollet clay loam, 1 to 3 percent slopes | 3.03%

GOPHER STATE SOLAR
A RANGER POWER PROJECT

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For Environmental Review Purposes Only

Appendix A - Soils in the Project and Development Area
Gopher State Solar Project
Ranger Power
Renville County, Minnesota

- Project Boundary
- Proposed O&M Building
- Proposed Substation
- Proposed Inverter
- Proposed Solar Panel
- Proposed Access Road
- Proposed Collector Line
- Fence Line

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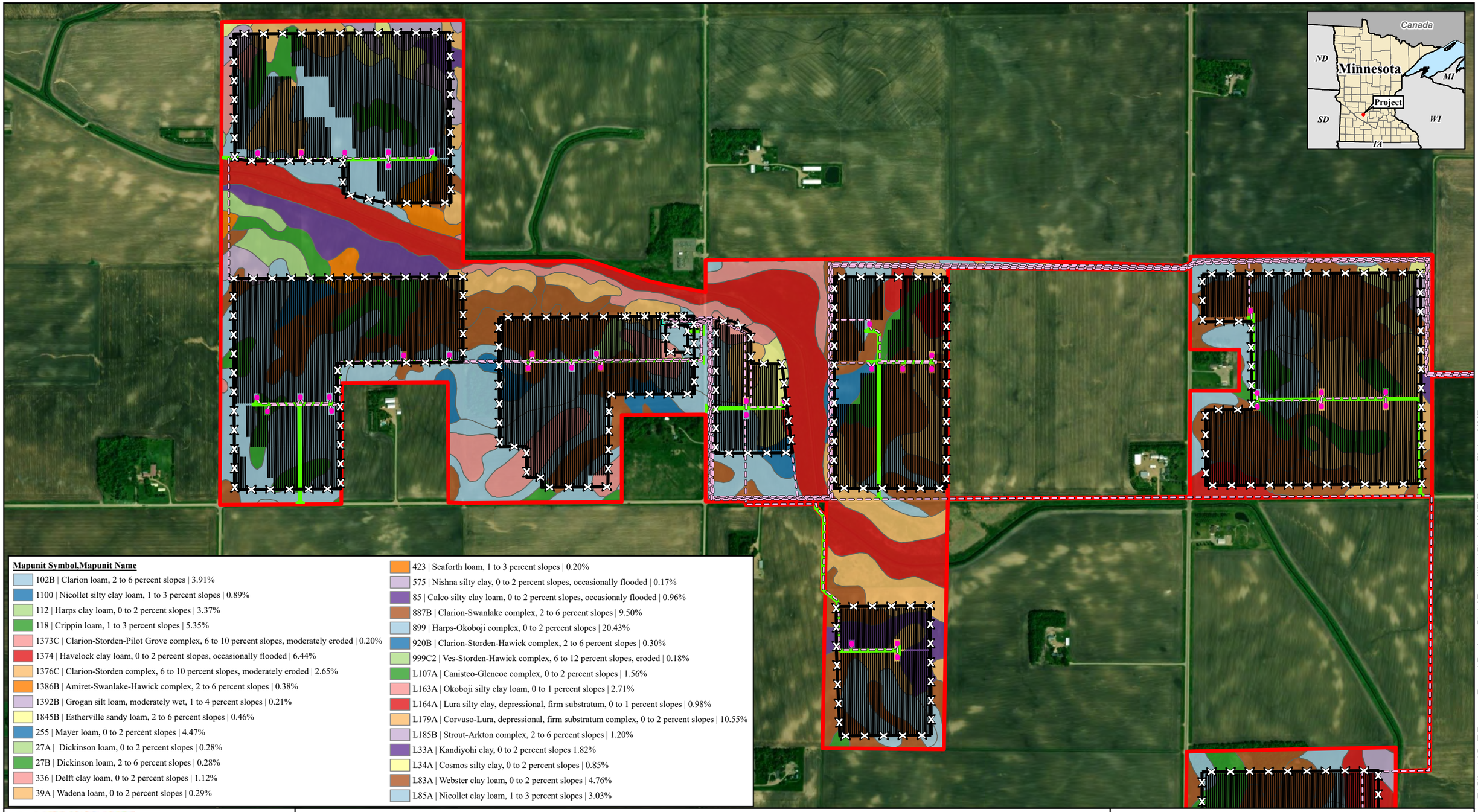


Mapunit Symbol,Mapunit Name

- 102B | Clarion loam, 2 to 6 percent slopes | 3.91%
- 1100 | Nicollet silty clay loam, 1 to 3 percent slopes | 0.89%
- 112 | Harps clay loam, 0 to 2 percent slopes | 3.37%
- 118 | Crippin loam, 1 to 3 percent slopes | 5.35%
- 1373C | Clarion-Storden-Pilot Grove complex, 6 to 10 percent slopes, moderately eroded | 0.20%
- 1374 | Havelock clay loam, 0 to 2 percent slopes, occasionally flooded | 6.44%
- 1376C | Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded | 2.65%
- 1386B | Amiret-Swanlake-Hawick complex, 2 to 6 percent slopes | 0.38%
- 1392B | Grogan silt loam, moderately wet, 1 to 4 percent slopes | 0.21%
- 1845B | Estherville sandy loam, 2 to 6 percent slopes | 0.46%
- 255 | Mayer loam, 0 to 2 percent slopes | 4.47%
- 27A | Dickinson loam, 0 to 2 percent slopes | 0.28%
- 27B | Dickinson loam, 2 to 6 percent slopes | 0.28%
- 336 | Delft clay loam, 0 to 2 percent slopes | 1.12%
- 39A | Wadena loam, 0 to 2 percent slopes | 0.29%
- 423 | Seaforth loam, 1 to 3 percent slopes | 0.20%
- 575 | Nishna silty clay, 0 to 2 percent slopes, occasionally flooded | 0.17%
- 85 | Calco silty clay loam, 0 to 2 percent slopes, occasionaly flooded | 0.96%
- 887B | Clarion-Swanlake complex, 2 to 6 percent slopes | 9.50%
- 899 | Harps-Okoboji complex, 0 to 2 percent slopes | 20.43%
- 920B | Clarion-Storden-Hawick complex, 2 to 6 percent slopes | 0.30%
- 999C2 | Ves-Storden-Hawick complex, 6 to 12 percent slopes, eroded | 0.18%
- L107A | Canisteo-Glencoe complex, 0 to 2 percent slopes | 1.56%
- L163A | Okoboji silty clay loam, 0 to 1 percent slopes | 2.71%
- L164A | Lura silty clay, depressional, firm substratum, 0 to 1 percent slopes | 0.98%
- L179A | Corvuso-Lura, depressional, firm substratum complex, 0 to 2 percent slopes | 10.55%
- L185B | Strout-Arkton complex, 2 to 6 percent slopes | 1.20%
- L33A | Kandiyohi clay, 0 to 2 percent slopes 1.82%
- L34A | Cosmos silty clay, 0 to 2 percent slopes | 0.85%
- L83A | Webster clay loam, 0 to 2 percent slopes | 4.76%
- L85A | Nicollet clay loam, 1 to 3 percent slopes | 3.03%

GOPHER STATE SOLAR
A RANGER POWER PROJECT

merjent

0 500 1,000 Feet

1:12,000

N W E S

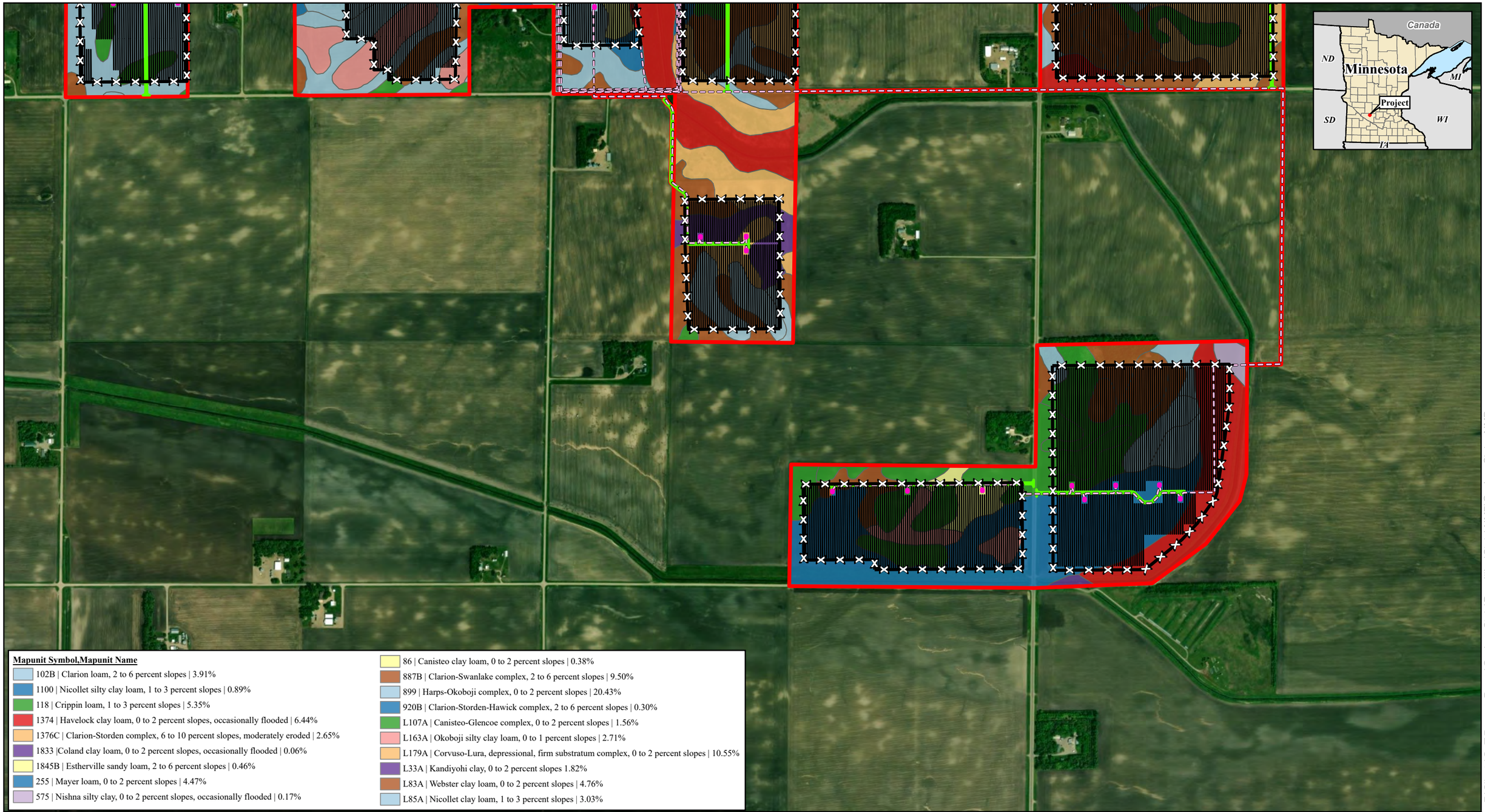
For Environmental Review Purposes Only

Appendix A - Soils in the Project and Development Area
Gopher State Solar Project
Ranger Power
Renville County, Minnesota

- Project Boundary
- Proposed O&M Building
- Proposed Substation
- Proposed Inverter
- Proposed Solar Panel
- Proposed Access Road
- Proposed Collector Line
- Fence Line

Source: Z:\Clients\Q_T\Ranger_Power\Gopher_State\Permitting\State\AIM\Gopher_State_AIMP.aprx

Date: (8/13/2024)



Mapunit Symbol,Mapunit Name

- 102B | Clarion loam, 2 to 6 percent slopes | 3.91%
- 1100 | Nicollet silty clay loam, 1 to 3 percent slopes | 0.89%
- 118 | Crippin loam, 1 to 3 percent slopes | 5.35%
- 1374 | Havelock clay loam, 0 to 2 percent slopes, occasionally flooded | 6.44%
- 1376C | Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded | 2.65%
- 1833 |Coland clay loam, 0 to 2 percent slopes, occasionally flooded | 0.06%
- 1845B | Estherville sandy loam, 2 to 6 percent slopes | 0.46%
- 255 | Mayer loam, 0 to 2 percent slopes | 4.47%
- 575 | Nishna silty clay, 0 to 2 percent slopes, occasionally flooded | 0.17%
- 86 | Canisteo clay loam, 0 to 2 percent slopes | 0.38%
- 887B | Clarion-Swanlake complex, 2 to 6 percent slopes | 9.50%
- 899 | Harps-Okoboji complex, 0 to 2 percent slopes | 20.43%
- 920B | Clarion-Storden-Hawick complex, 2 to 6 percent slopes | 0.30%
- L107A | Canisteo-Glencoe complex, 0 to 2 percent slopes | 1.56%
- L163A | Okoboji silty clay loam, 0 to 1 percent slopes | 2.71%
- L179A | Corvuso-Lura, depressional, firm substratum complex, 0 to 2 percent slopes | 10.55%
- L33A | Kandiyohi clay, 0 to 2 percent slopes 1.82%
- L83A | Webster clay loam, 0 to 2 percent slopes | 4.76%
- L85A | Nicollet clay loam, 1 to 3 percent slopes | 3.03%

GOPHER STATE SOLAR
A RANGER POWER PROJECT

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0 500 1,000 Feet

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N W E S

For Environmental Review Purposes Only

Appendix A - Soils in the Project and Development Area
Gopher State Solar Project

Ranger Power

Renville County, Minnesota

- Project Boundary
- Proposed O&M Building
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Source: Z:\Clients\Q_T\Ranger_Power\Gopher_State\Permitting\State\AIMP\Gopher_State_AIMP.aprx

Date: (8/13/2024)

Appendix A: Selected Soil Physical Features, Classifications, and Interpretations, and Limitations																	
Feature Type	Acres[1]	Map Unit Symbol[2]	Map Unit Name[2]	Select Soil Classification											Construction/Reclamation Interpretations and Limitations		
				Particle Size Family[2]	Slope Range (%)[3]	Drainage Class[2]	Topsoil Thickness (in.)[4]	Shallow Bedrock[2]	Parime Farmland[2]	Land Capability Classification[2]	Hydric Soil Rating[2]	Highly Erodible Water[5]	Highly Erodible Wind[6]	Compact Prone[7]	Rutting Hazard[8]	Drought Susceptible[9]
Access Road	0.76	102B	Clarion loam, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Access Road	0.52	112	Harps clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	1.14	118	Crippin loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	No	Severe	No
Access Road	0.16	1374	Havelock clay loam, 0 to 2 percent slopes, occasionally flooded	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	Yes	Severe	No
Access Road	0.14	1376C	Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded	fine-loamy	>5-8	Well drained	>6-12	No	Farmland of statewide importance	3e	No	Yes	No	No	Severe	No
Access Road	0.13	1845B	Estherville sandy loam, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	>12-18	No	Farmland of statewide importance	3s	No	No	No	No	Moderate	Yes
Access Road	1.47	1900	Okoboji-Canisteo depressional complex, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Access Road	0.08	247	Linder loam, 0 to 2 percent slopes	coarse-loamy	0-5	Somewhat poorly drained	>18	No	All areas are prime farmland	2s	No	No	No	No	Severe	No
Access Road	0.45	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Access Road	0.07	336	Delft clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	0.06	386	Okoboji mucky silty clay loam, depressional, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Access Road	0.19	86	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	1.35	887B	Clarion-Swanlake complex, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Access Road	5.43	899	Harps-Okoboji complex, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	0.04	920B	Clarion-Storden-Hawick complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	>12-18	No	Farmland of statewide importance	2e	No	No	No	No	Severe	No
Access Road	0.29	L107A	Canisteo-Glencoe complex, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	0.47	L163A	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Access Road	0.12	L164A	Lura silty clay, depressional, firm substratum, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Access Road	1.68	L179A	Corvuso-Lura, depressional, firm substratum complex, 0 to 2 percent slopes	fine	0-5	Poorly drained	>6-12	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	0.10	L185B	Strout-Arkton complex, 2 to 6 percent slopes	fine	0-5	Moderately well drained	>6-12	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Access Road	0.45	L33A	Kandiyohi clay, 0 to 2 percent slopes	fine	0-5	Somewhat poorly drained	>6-12	No	Prime farmland if drained	2w	No	No	No	Yes	Severe	No
Access Road	0.85	L83A	Webster clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Access Road	0.28	L85A	Nicollet clay loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Collection Line	4.8388	102B	Clarion loam, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Collection Line	0.4472	1100	Nicollet silty clay loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Collection Line	0.3678	112	Harps clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.6607	118	Crippin loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	No	Severe	No
Collection Line	0.2035	1373C	Clarion-Storden-Pilot Grove complex, 6 to 10 percent slopes, moderately eroded	fine-loamy	>5-8	Well drained	>6-12	No	Farmland of statewide importance	3e	No	Yes	No	No	Severe	No
Collection Line	1.8428	1374	Havelock clay loam, 0 to 2 percent slopes, occasionally flooded	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	Yes	Severe	No
Collection Line	1.3027	1376C	Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded	fine-loamy	>5-8	Well drained	>6-12	No	Farmland of statewide importance	3e	No	Yes	No	No	Severe	No
Collection Line	0.0503	1386B	Amiret-Swanlake-Hawick complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	>6-12	No	Farmland of statewide importance	2e	No	No	No	No	Severe	No
Collection Line	0.1290	1392B	Grogan silt loam, moderately wet, 1 to 4 percent slopes	coarse-silty	0-5	Well drained	>12-18	No	All areas are prime farmland	1	No	No	No	No	Severe	No
Collection Line	0.1171	1845B	Estherville sandy loam, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	>12-18	No	Farmland of statewide importance	3s	No	No	No	No	Moderate	Yes
Collection Line	2.5455	1900	Okoboji-Canisteo depressional complex, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	0.0401	247	Linder loam, 0 to 2 percent slopes	coarse-loamy	0-5	Somewhat poorly drained	>18	No	All areas are prime farmland	2s	No	No	No	No	Severe	No
Collection Line	0.4677	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Collection Line	0.0017	27A	Dickinson loam, 0 to 2 percent slopes	coarse-loamy	0-5	Well drained	>12-18	No	All areas are prime farmland	3s	No	No	No	No	Severe	No
Collection Line	0.0420	27B	Dickinson loam, 2 to 6 percent slopes	coarse-loamy	0-5	Well drained	>12-18	No	All areas are prime farmland	3e	No	No	No	No	Severe	No
Collection Line	0.3701	336	Delft clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.0338	386	Okoboji mucky silty clay loam, depressional, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	0.2840	39A	Wadena loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Well drained	>12-18	No	All areas are prime farmland	2s	No	No	No	No	Severe	No
Collection Line	0.0880	423	Seaforth loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	>6-12	No	All areas are prime farmland	2s	No	No	No	No	Severe	No
Collection Line	0.1748	575	Nishna silty clay, 0 to 2 percent slopes, occasionally flooded	fine	0-5	Poorly drained	>6-12	No	Prime farmland if protected from flooding or not frequently flooded during the growing season	3w	Yes	No	No	Yes	Severe	No
Collection Line	0.0507	85	Calco silty clay loam, 0 to 2 percent slopes, occasionaly flooded	fine-silty	0-5	Poorly drained	>18	No	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.1511	86	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	6.2558	887B	Clarion-Swanlake complex, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Collection Line	8.8419	899	Harps-Okoboji complex, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.7921	920B	Clarion-Storden-Hawick complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	>12-18	No	Farmland of statewide importance	2e	No	No	No	No	Severe	No
Collection Line	0.0516	999C2	Ves-Storden-Hawick complex, 6 to 12 percent slopes, eroded	fine-loamy	>8-15	Well drained	>6-12	No	Farmland of statewide importance	3e	No	Yes	No	No	Severe	No
Collection Line	0.1406	L107A	Canisteo-Glencoe complex, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	0.3334	L163A	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	0.5247	L164A	Lura silty clay, depressional, firm substratum, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Collection Line	7.1646	L179A	Corvuso-Lura, depressional, firm substratum complex, 0 to 2 percent slopes	fine	0-5	Poorly drained	>6-12	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No

Collection Line	0.0956	L184A	Corvuso silty clay loam, 0 to 2 percent slopes	fine	0-5	Poorly drained	>6-12	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	1.6397	L185B	Strout-Arkton complex, 2 to 6 percent slopes	fine	0-5	Moderately well drained	>6-12	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Collection Line	0.9595	L33A	Kandiyohi clay, 0 to 2 percent slopes	fine	0-5	Somewhat poorly drained	>6-12	No	Prime farmland if drained	2w	No	No	No	Yes	Severe	No
Collection Line	0.4208	L34A	Cosmos silty clay, 0 to 2 percent slopes	fine	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	1.7821	L83A	Webster clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Collection Line	1.3966	L85A	Nicollet clay loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Fence	40.27	102B	Clarion loam, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Fence	7.80	1100	Nicollet silty clay loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Fence	45.06	112	Harps clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	72.95	118	Crippin loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	No	Severe	No
Fence	1.66	1373C	Clarion-Storden-Pilot Grove complex, 6 to 10 percent slopes, moderately eroded	fine-loamy	>5-8	Well drained	>6-12	No	Farmland of statewide importance	3e	No	Yes	No	No	Severe	No
Fence	18.08	1374	Havelock clay loam, 0 to 2 percent slopes, occasionally flooded	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	Yes	Severe	No
Fence	12.48	1376C	Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded	fine-loamy	>5-8	Well drained	>6-12	No	Farmland of statewide importance	3e	No	Yes	No	No	Severe	No
Fence	2.14	1386B	Amiret-Swanlake-Hawick complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	>6-12	No	Farmland of statewide importance	2e	No	No	No	No	Severe	No
Fence	0.31	1392B	Grogan silt loam, moderately wet, 1 to 4 percent slopes	coarse-silty	0-5	Well drained	>12-18	No	All areas are prime farmland	1	No	No	No	No	Severe	No
Fence	6.06	1845B	Estherville sandy loam, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	>12-18	No	Farmland of statewide importance	3s	No	No	No	No	Moderate	Yes
Fence	117.37	1900	Okoboji-Canisteo depressional complex, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fence	2.53	247	Linder loam, 0 to 2 percent slopes	coarse-loamy	0-5	Somewhat poorly drained	>18	No	All areas are prime farmland	2s	No	No	No	No	Severe	No
Fence	48.72	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fence	0.02	27A	Dickinson loam, 0 to 2 percent slopes	coarse-loamy	0-5	Well drained	>12-18	No	All areas are prime farmland	3s	No	No	No	No	Severe	No
Fence	0.21	27B	Dickinson loam, 2 to 6 percent slopes	coarse-loamy	0-5	Well drained	>12-18	No	All areas are prime farmland	3e	No	No	No	No	Severe	No
Fence	1.67	336	Delft clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	2.67	386	Okoboji mucky silty clay loam, depressional, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fence	4.07	39A	Wadena loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Well drained	>12-18	No	All areas are prime farmland	2s	No	No	No	No	Severe	No
Fence	1.24	423	Seaforth loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	>6-12	No	All areas are prime farmland	2s	No	No	No	No	Severe	No
Fence	0.07	575	Nishna silty clay, 0 to 2 percent slopes, occasionally flooded	fine	0-5	Poorly drained	>6-12	No	Prime farmland if protected from flooding or not frequently flooded during the growing season	3w	Yes	No	No	Yes	Severe	No
Fence	0.06	85	Calco silty clay loam, 0 to 2 percent slopes, occasionaly flooded	fine-silty	0-5	Poorly drained	>18	No	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	Yes	Severe	No
Fence	5.09	86	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	106.88	887B	Clarion-Swanlake complex, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Fence	243.44	899	Harps-Okoboji complex, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	3.52	920B	Clarion-Storden-Hawick complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	>12-18	No	Farmland of statewide importance	2e	No	No	No	No	Severe	No
Fence	19.90	L107A	Canisteo-Glencoe complex, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	31.03	L163A	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fence	14.79	L164A	Lura silty clay, depressional, firm substratum, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Fence	133.14	L179A	Corvuso-Lura, depressional, firm substratum complex, 0 to 2 percent slopes	fine	0-5	Poorly drained	>6-12	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	6.76	L184A	Corvuso silty clay loam, 0 to 2 percent slopes	fine	0-5	Poorly drained	>6-12	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	11.17	L185B	Strout-Arkton complex, 2 to 6 percent slopes	fine	0-5	Moderately well drained	>6-12	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Fence	22.35	L33A	Kandiyohi clay, 0 to 2 percent slopes	fine	0-5	Somewhat poorly drained	>6-12	No	Prime farmland if drained	2w	No	No	No	Yes	Severe	No
Fence	9.87	L34A	Cosmos silty clay, 0 to 2 percent slopes	fine	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	56.17	L83A	Webster clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Fence	36.09	L85A	Nicollet clay loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
Inverter	0.02	102B	Clarion loam, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Inverter	0.01	112	Harps clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.03	118	Crippin loam, 1 to 3 percent slopes	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	No	Severe	No
Inverter	0.00	1374	Havelock clay loam, 0 to 2 percent slopes, occasionally flooded	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	Yes	Severe	No
Inverter	0.00	1376C	Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded	fine-loamy	>5-8	Well drained	>6-12	No	Farmland of statewide importance	3e	No	Yes	No	No	Severe	No
Inverter	0.03	1900	Okoboji-Canisteo depressional complex, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Inverter	0.02	255	Mayer loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Inverter	0.00	39A	Wadena loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Well drained	>12-18	No	All areas are prime farmland	2s	No	No	No	No	Severe	No
Inverter	0.00	86	Canisteo clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.02	887B	Clarion-Swanlake complex, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Inverter	0.08	899	Harps-Okoboji complex, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>12-18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.00	920B	Clarion-Storden-Hawick complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	>12-18	No	Farmland of statewide importance	2e	No	No	No	No	Severe	No
Inverter	0.00	L107A	Canisteo-Glencoe complex, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.00	L164A	Lura silty clay, depressional, firm substratum, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Inverter	0.05	L179A	Corvuso-Lura, depressional, firm substratum complex, 0 to 2 percent slopes	fine	0-5	Poorly drained	>6-12	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Inverter	0.00	L185B	Strout-Arkton complex, 2 to 6 percent slopes	fine	0-5	Moderately well drained	>6-12	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Inverter	0.00	L33A	Kandiyohi clay, 0 to 2 percent slopes	fine	0-5	Somewhat poorly drained	>6-12	No	Prime farmland if drained	2w	No	No	No	Yes	Severe	No
Inverter	0.03	L83A	Webster clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
O&M Building	0.53	102B	Clarion loam, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
O&M Building	0.12	1376C	Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded	fine-loamy	>5-8	Well drained	>6-12	No	Farmland of statewide importance	3e	No	Yes	No	No	Severe	No
O&M Building	0.02	336	Delft clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Substation	1.38	102B	Clarion loam, 2 to 6 percent slopes	fine-loamy	0-5	Moderately well drained	>12-18	No	All areas are prime farmland	2e	No	No	No	No	Severe	No
Substation	0.00	336	Delft clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	>18	No	Prime farmland if drained	2w	Yes	No	No	Yes	Severe	No
Substation	0.27	L163A	Okoboji silty clay loam, 0 to 1 percent slopes	fine	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No

1. Data obtained by merging facility polygons with the SSURGO spatial data in ArcGIS. Summations were performed in Microsoft Excel.
2. Data obtained from the SSURGO geospatial database.
3. Representative slope values are obtained from the SSURGO database, which provides representative slope values for all component soil series. Slope class grouping is the representative slope value for a major component soil series. For example, a soil mapped in the 2-6% slope class has an average slope of 4%, which is within the 0-5% slope range.
4. Topsoil thickness is the aggregate thickness of the A horizons described in the SSURGO database.
5. Includes soils in land capability classes 4e through 8e or that have a representative slope value greater than or equal to 9%.
6. Includes soils in wind erodibility groups 1 and 2.
7. Degree of soil compaction depends on moisture content and soil texture.
8. In general, soils on low slopes in wetter drainage classes, and comprised of sediments with low strength will have potential rutting hazards.
9. Drought susceptible soils have a surface texture of sandy loam or coarser and are moderately well to excessively drained.