Appendix E

Agricultural Impact Mitigation Plan

Lake Charlotte Solar Facility and Battery Energy Storage System
Joint Site Permits Application
June 2025
MPUC Docket Nos. IP-7159/GS-25-206 and IP-7159/ESS-25-205

Agricultural Impact Mitigation Plan for the Lake Charlotte Solar Energy Conversion Facility and Battery Energy Storage System Project

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ACRONYM LIST – Suzanne to alphabetize and check font/size

AC	alternating current
AIMP	Agricultural Impact Mitigation Plan
Applicant	Lake Charlotte Solar, LLC
BESS	battery energy storage system
BMP	best management practice
Commission	Minnesota Public Utilities Commission
Contractor	construction contractor
DC	direct current
gen-tie	generation interconnect
Geronimo Power	Geronimo Power, LLC
GIS	Geographic Information System
GPS	Global Positioning System
Joint Application	Joint Site Permits Application
kV	kilovolt
Lake Charlotte	Lake Charlotte Solar, LLC
Land Control Area	Approximately 1,276.7-acre area of privately-owned land for which Lake Charlotte Solar, LLC has leases and purchase options to allow siting and construction of the Project.
LCC	Land Capability Class
MDA	Minnesota Department of Agriculture
MDNR	Minnesota Department of Natural Resources
Monitor	environmental monitor
MPCA	Minnesota Pollution Control Agency
MW	megawatt
MWh	megawatt hour
NESC	National Electric Safety Code
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
O&M	operations and maintenance
Plan	Agricultural Impact Mitigation Plan
Preliminary Development Area	Approximately 1,004.0-acre area that falls entirely within the Land Control Area where Lake Charlotte Solar, LLC proposes to build the Lake Charlotte Solar Project facilities.
Project	Lake Charlotte Solar Project
Project Substation	collector station for the Solar Facility
PV	photovoltaic
SCADA	Supervisory Control and Data Acquisition

SMMPA	Southern Minnesota Municipal Power Agency
Solar Facility	Lake Charlotte Solar Facility
SSURGO	Soil Survey Geographic Database
SWPPP	Stormwater Pollution Prevention Plan
Tile Contractor	local agricultural drain tile contractor
USDA	U.S. Department of Agriculture
VMP	Vegetation Management Plan

1.0 PURPOSE AND APPLICABILITY OF PLAN

The objective of this Agricultural Impact Mitigation (the Plan or AIMP) and the Vegetation Management Plan (VMP) is to identify measures that Lake Charlotte Solar, LLC (Lake Charlotte or Applicant) and its contractors will take to avoid, and/or repair potential negative agricultural impacts that may result from the construction, operation, and eventual decommissioning of the Lake Charlotte Solar Facility (Solar Facility) and associated battery energy storage system (BESS), collectively the Project. Although Lake Charlotte will own or lease the property on which the Project is constructed, and would cease agricultural production on the land during the life of the Project, this Plan outlines measures to ensure the land may be returned to future agricultural usages 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 Lake Charlotte and the construction contractor (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.

In May 2025, Lake Charlotte submitted a Joint Site Permits Application (Joint Application) to the Minnesota Public Utilities Commission (Commission) for Site Permits for the Solar Facility and associated BESS. The Commission issued Orders approving the Site Permits on DATE, 2025, under Docket Nos. IP-7159/GS-25-206 and IP-7159/ESS-25-205, respectively. **[Highlighted information will be updated when available.]**

Lake Charlotte consulted with the Minnesota Department of Agriculture (MDA) in March 2025 to discuss the AIMP's contents and site-specific characteristics of the Solar Facility and BESS. MDA also reviewed and commented on draft version of the AIMP and provided comments on May 8, 2025.

The strategy outlined in this Plan consists of creating a native prairie habitat within the footprint of the Solar Facility while the Project is in operation. Typically, a solar site has a shorter prairie mix within the panel footprint, taller prairie plantings in the open space between the fence and array, and a wet seed mix for any wetlands or areas anticipated to hold water. The mixes are designed to be native and are developed with prairie specialists to design a mix that will achieve Lake Charlotte's goals for operating the Solar Facility, promote pollinator habitat, establish stable ground cover successfully, reduce erosion, reduce runoff, and improve infiltration. Additionally, the contracted restoration company will work with Lake Charlotte to develop implementation plans for maintenance of the prairie throughout the life of the Project. More information on maintenance of the prairie is outlined in the VMP.

This Plan is separated into several distinct sections: Section 2 provides an overview of the Project and its components, Section 3 addresses limitations and suitability of the soils at the Project area, Section 4 discusses the BMPs that will be used during construction and operation of the Project, and Section 5 outlines decommissioning.

2.0 PROJECT OVERVIEW

2.1 Background

Lake Charlotte Solar, LLC (Lake Charlotte or Applicant), a wholly owned subsidiary of Geronimo Power, LLC (Geronimo Power) proposes to construct the Lake Charlotte Solar Facility (Solar Facility) and associated battery energy storage system (BESS), collectively the Project, in Rutland Township, Martin County, Minnesota (see Figure 1). The Solar Facility is an up to 150 megawatt (MW) alternating current (AC) solar photovoltaic facility and a BESS with a 150 MW / 600 megawatt hour (MWh) nameplate capacity and ancillary support infrastructure. The BESS will be constructed directly adjacent to the collector substation for the Solar Facility (Project Substation) and will interconnect into the Southern Minnesota Municipal Power Agency (SMMPA) Rutland Substation (i.e., the Point of Interconnection for the Project), which is adjacent to the Project. Lake Charlotte plans to construct the Project on a schedule that facilitates an in-service date in the first quarter of 2029.

The Project will interconnect into the SMMPA Rutland Substation, the Point of Interconnection for the Project, which is adjacent to the Project Substation and BESS. Lake Charlotte selected this location based on a number of factors, but a key consideration in the selection process was the proximity to existing electrical and transportation infrastructure, including the SMMPA Rutland Substation and existing transmission lines. Existing infrastructure in the immediate vicinity allows Lake Charlotte to minimize the need to construct ancillary facilities beyond the immediate footprint of the Project. Existing infrastructure includes the SMMPA Rutland Substation and high voltage transmission lines that tie directly into the existing electrical grid.

Through the Ecological Classification System, the State of Minnesota is split into Ecological Provinces, Sections, and Subsections. The Project is located within the North Central Glaciated Plains Section of the Prairie Parkland Province (251B). The Project is in the Minnesota River Prairie ecological subsection (251Ba). The Minnesota River Prairie ecological subsection is characterized by large till plains (loamy ground moraine) flanking the Minnesota River and consists of gently rolling ground moraine about 60 miles wide. The till plain is the dominant landform. Most of the subsection is covered by 100 to 400 feet of glacial drift. Well- to moderately well-drained loamy soils are dominant. Land in this subsection is currently used for agricultural activity. Upland prairie species to be common throughout most of the subsection (based on herbarium records). Remnant stands of tallgrass prairie are rare (Minnesota Department of Natural Resources [MDNR], 2024).

The Project is located on approximately 1,276.7 acres of privately-owned land (Land Control Area). Based on preliminary design, the Project will cover approximately 1,004.0 acres of the Land Control Area (i.e., the Preliminary Development Area) (see Figure 2). There are up to 272.7 acres of the Land Control Area for which Lake Charlotte has site control but are not currently contemplated for occupation by the Solar Facility or BESS. Lake Charlotte has a combination of lease agreements and purchase options with the landowners for the Land Control Area. The portion of the Land Control Area that will not be utilized for the Project is currently under lease with the underlying landowner and may be excluded from the area leased by Lake Charlotte during operation of the Project. The underlying landowner may have the option to farm the area released from the lease for the life of the Project.

The Project will be constructed, owned, and operated by Lake Charlotte, a wholly owned subsidiary of Geronimo Power. After issuance of the Site Permits and prior to construction of the Project, Lake Charlotte will purchase a portion of the Land Control Area from the underlying landowners with whom purchase options have been negotiated, and land under lease will enter into the construction and operations terms. Land that is under a lease agreement that will not be utilized for Project operation will revert back to the underlying landowner for continued agricultural use.

2.2 Project Components

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

- Solar Facility
  - Solar panels, racking system, and inverters
  - Electrical collection and communication system (either below-ground or a hybrid of below-ground and above-ground)
- BESS
- Access Roads
- Permanent Fencing
- Associated Facilities
  - Project substation
  - Operations and maintenance (O&M) building
  - Parking
  - Up to six weather stations (up to 20 feet tall)
- Stormwater Ponds
- Temporary Laydown Areas
- Generation Tie Line (gen-tie line) to interconnect the Project Substation to the Point of Interconnection

Each of these components is described in more detail below.

2.2.1 Solar Facility

2.2.1.1 Configuration of Solar Panels, Arrays, and Racking

The Solar Facility will convert sunlight into direct current (DC) electrical energy within photovoltaic (PV) panels. For purposes of describing construction, the Solar Facility can be considered an aggregate of individual PV panel components interconnected by cabling and infrastructure at increasing scales. Solar panels collect and release energy as DC power at approximately 1,500 volts. Inverters, placed at the end of solar arrays, are required to convert the DC power generated by the solar panels to the AC power that is needed to transmit the energy through cabling into transformers, then the Project Substation and ultimately into the electrical grid. Transformers are used to step-up or step-down AC voltages. For the Solar Facility, a transformer will be used to step-up the voltage from the solar panels to 34.5 kilovolt (kV) before it is transmitted to the Project Substation. Another transformer will be located within the Project Substation that will further -step-up the AC voltage from 34.5 kV to 161 kV before it is transmitted to the SMMPA Rutland Substation via the 161 kV gen-tie line. The voltage is required to be at 161 kV to interconnect with the SMMPA Rutland Substation and the existing electrical grid. From smallest to largest scales Solar Facility components are described below and presented on Figure 4 (Detailed Preliminary Project Layout):

1. **Individual PV panels** are approximately 4 to 7 feet long by 2 to 4 feet wide by 1 to 2 inches thick and are installed on metal foundations that are driven or screwed into the ground.
2. **Lines** of interconnected PV panels consist of a line of short-edge butted panels approximately 370 feet long, with each line oriented to and rotating along a north-south axis to track the east-west movement of the sun and maximize the interception of solar energy. These lines represent the racking upon which the individual panels are mounted upon.
3. **Arrays** of north/south lines of PV panels organized in racks associated with an east/west oriented access road.
4. **Blocks** of PV panels typically consist of one or two arrays north, and one or two arrays south of a permanent access and maintenance road. Depending on site constraints, there may be fewer arrays associated with a specific block.

Lake Charlotte will use a linear axis tracking system that allows the PV panels to track the sun throughout the day. The panels and tracking rack system are generally aligned in rows north and south with the PV panels 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. The panels are rotated by a small motor connected to the tracking rack system to slowly track with the sun throughout the day. The tracking rack system allows the Solar Facility to optimize the angle of the panels in relation to the sun throughout the day thereby maximizing production of electricity and the capacity value. Panels can be manually oriented to the east or west at maximum tilt angle to facilitate maintenance access and vegetation management, if necessary, although spacing between the panel edges when at a horizontal position is typically 17 to 25 feet and sufficient for maintenance vehicles.

2.2.1.2 Inverters, Transformers, and Electrical Collections System

Electrical wiring will connect the panels to inverters, which will convert the power from DC to AC. The AC will be stepped up through a transformer from the inverter output voltage to 34.5 kV and brought via the collection cables to the Project Substation. The electrical collection system will be installed below-ground or a hybrid of below-ground and above-ground. For both options, the AC collection lines that would connect the solar arrays to each other and to the Project Substation will be installed at least four feet below-ground.

Final engineering and procurement will help determine the construction method for the electrical collection system. The electrical cables that would be used for each type of electrical collection system are described below.

2.2.1.3 Below-ground Electrical Collection System

Inverters convert approximately 1,500 volts of DC output of the PV panels to between 650 and 950 volts of AC. Then a step-up transformer converts the inverter AC voltage to an intermediate voltage of 34.5 kV. The panels deliver DC power to the inverters through cabling that will be located in a below-ground trench (up to four feet deep). Below-ground AC collection systems from the inverter skids to the substation will be installed in trenches or ploughed into place at a depth of approximately four feet below grade. During all trench excavations the topsoil and subsoil will be removed and stockpiled separately. Once the cables are laid in the trench, the area will be backfilled with subsoil followed by topsoil.

2.2.1.4 Hybrid Below-ground and Above-ground Electrical Collection System

A hybrid below-ground and above-ground electrical system is being considered for the Project for several reasons including ease of access for operations and maintenance, reduced ground disturbance, and cost considerations. If above-ground cabling is utilized, it will only be utilized to connect solar panels together within each solar array.

In the hybrid electrical collection system, DC collection cables will be strung under each row of panels on steel arms and a steel cable attached to the piles. At the end of each row, hanging brackets will connect several racks/rows of cables to a common collection point near their assigned inverter/transformer skid where the cables will then be routed below-ground to the inverter/transformer skid where the current is converted to AC and voltage is stepped up to 34.5 kV. From the inverter/transformer skid, the AC collection will be installed below ground to the Project Substation. The 34.5 kV collection and communication lines between solar arrays and the Project Substation will be routed below-ground at a minimum depth of four feet. Cables connecting each unit of solar arrays will be directionally bored under county roads.

2.2.1.5 Central Inverter/Transformer Skids

Regardless of the collection system configuration (below-ground or hybrid), the Solar Facility will utilize central inverter/transformer skids and include a transformer to which the inverters will feed electricity. The final number of inverters will depend on the inverter size, as well as inverter and panel availability. The preliminary design proposes up to 32 central inverter skids. These skids provide the foundation for the inverter, transformer, and Supervisory Control and Data Acquisition (SCADA) system. The skids will be placed atop a concrete slab or pier foundations and typically measure 10 feet wide by 25 feet long, with a structure height of approximately 12 feet above grade. Concrete foundations will be poured onsite or precast and assembled off-site. The inverter/transformer skids will be located in the interior of the Solar Facility along access roads.

2.2.2 Battery Energy Storage System

The BESS will aid with regulating power distribution by charging its batteries with power from the existing grid when demand is low and outputting electricity into the grid when demand is high. The BESS allows Lake Charlotte to maximize energy output and efficiently utilize interconnection customers and improve wholesale market competition.

Lake Charlotte proposes to locate the BESS within the southwestern portion of the Preliminary Development Area, adjacent to the Project Substation and the SMMPA Rutland Substation, and utilize an AC-coupled system (i.e., all batteries are in one location as opposed to being distributed throughout the Solar Facility). This type of system allows for efficient access, monitoring, and maintenance; has more flexible energy and power capacity sizing; and has more flexible dispatch capabilities. The preliminary design for the BESS incorporates a modular layout based on currently available technology.

The location of the BESS is planned for approximately 15.9 acres in the south-central portion of the Preliminary Project Development Area, adjacent to the west side of the Project Substation. The BESS will be a modular system comprised of lithium-ion batteries encased in stand-alone enclosures. Stand-alone enclosures are necessary, as opposed to a large warehouse or storage building, to ensure people cannot enter into the enclosures with the batteries for safety reasons as described in Section 2.2.4.

The BESS will include inverters, converters, and medium voltage transformers to deliver the energy to and from the batteries. Low voltage cables will connect the BESS to pad-mounted switchgear, step up transformer(s), and a power distribution system. Additionally, stabilized gravel access roads and perimeter fencing will be installed.

Lake Charlotte is committed to safety in all aspects of construction and operation of the BESS and plans to construct and operate the BESS in accordance with relevant safety codes, regulations, and industry best management practices.

Advances in technology, safety standards, and fire/building codes have and will continue to mitigate BESS fire safety risks. Strict adherence to National Fire Protection Association standard NFPA-855 shall be followed as related to electrical safety. Lake Charlotte proposes to use BESS modules for the Project from a BESS manufacturer that has incorporated all reasonable safety precautions into the design of the equipment. The lithium-ion batteries will be stored in weather-proof enclosures and each enclosure includes a fully integrated heating, ventilation, and air conditioning system for temperature control, sensors, and controls for remote monitoring, and built-in fire detection. No off-gassing or air emissions will be produced in day-to-day operations.

2.2.3 Access Roads

The Solar Facility will include approximately 8.2 miles of graveled access roads (16.3 acres of gravel). The BESS and Project Substation will share approximately 0.24 mile of graveled access roads (0.5 acre of gravel). Access roads will be used for O&M along with emergency access should any incidents occur. The final length of the access roads will depend on the equipment selected and final engineering design. Access roads will be up to 16 feet wide where straight and may widen to approximately 45 feet along curves and at internal road intersections. The preliminary Project design contemplates 6 access points to the Solar Facility from 210th Avenue and one access point to the BESS and Project Substation also from 210th Avenue to each facility. All entrances to the Solar Facility and BESS will be secured with locked gates.

Lake Charlotte has designed access roads for effective and efficient access for operations and maintenance and for safe ingress and egress of employees, visitors, and emergency responders.

Lake Charlotte has minimized the amount of access roads to only the number necessary for the Project. For example, access roads reach all portions of the site and every central inverter, but not every block of panels has access roads along the entire perimeter (i.e., along the perimeter fence). This design minimizes the amount of ground disturbance and new impervious surfaces while still providing effective and efficient site access.

Upgrades or changes to public roads may be required for construction or operation of the Project. Lake Charlotte will work with the appropriate government unit that has jurisdiction over the roads to facilitate required upgrades that meet the required public standards. Upgrades or changes may include, but are not limited to, road improvements, additional aggregate, and driveway changes. Road use and improvements will be incorporated into a Development Agreement with the appropriate governmental unit. Driveway changes will require a county entrance permit from Martin County, which will be obtained prior to construction.

2.2.4 Permanent Fencing

Permanent security fencing will be installed along the perimeter of the solar arrays within the Solar Facility and around the Project Substation and BESS. Fencing will be secured to posts which will be directly embedded in the soil or set in concrete foundations as required for structural integrity. The fencing around the Solar Facility will consist of an agricultural woven wire fence and will extend approximately seven feet above grade. As typically requested by the MDNR on other projects, barbed wire will not be used around the perimeter of the Solar Facility. In place of barbed wire, one foot of three to four strands of smooth wire will be placed atop of the woven wire fence for a total height of approximately eight feet above grade. Gates will be strategically installed at corners for deer egress and contact information for the site manager will be posted at the gates. The fencing around the Project Substation and BESS will be a 6-feet above grade chain-link fence and include one foot of barbed wire to comply with the National Electric Safety Code (NESC). This fencing will be designed to prevent the public from gaining access to electrical equipment which could cause injury. Additionally, the fencing will prevent larger wildlife from entering the facility.

2.2.5 Associated Facilities

2.2.5.1 Project Substation

The Project Substation will be a 34.5/161 kV step-up substation with metering and switching gear required to connect to the transmission grid. The Project Substation will be shared by the Solar Facility and BESS and will have separate bays for each facility. It will be designed according to regional utility practices, Midcontinent Independent System Operator, Inc. Standards, Midwest Reliability Organization Standards, NESC, and the Rural Utility Service Code. The area within the Project Substation footprint will be graveled to minimize vegetation growth in the area and reduce fire risk. The Project Substation will be fenced with a six-foot chain-link fence, topped with one foot of barbed wire in accordance with NESC standards. Based on the preliminary design, approximately 4.7 acres will be required to construct the Project Substation.

2.2.5.2 Operation and Maintenance Building

An O&M building will be shared by the Solar Facility and BESS. It will provide access and storage for maintenance and operations and will be located adjacent to the Project Substation. The O&M building will be made of metal, similar to a pole barn. It will contain an office for the onsite Plant Manager, a technician room, restroom, and storage area for equipment required for operations and maintenance. Equipment within the O&M building will include a SCADA cabinet, spare panels, spare parts for the Project Substation and BESS, and equipment to operate the Project Substation, as well as safety equipment for working with live electricity.

2.2.5.3 Parking

A parking lot will be located adjacent to the O&M building. The final size will be determined in accordance with the Martin County Planning and Zoning Ordinance. The parking lot will be gravel or paved depending on the size to comply with the county parking and loading regulations.

2.2.5.4 Weather Stations

The Solar Facility and BESS will have up to six weather stations that will each be up to 20 feet in height. Weather stations will be within the Preliminary Development Area; the final locations will be determined following final engineering.

2.2.6 Stormwater Ponds

The Preliminary Development Area includes 48 stormwater ponds that range in size from 0.12 to 0.78 acres (20.0 acres total). These stormwater basins are generally located in existing low areas. These areas, if integrated as a permanent feature, will be vegetated with a wet seed mix that will help stabilize soils after rain events in accordance with the Project VMP.

2.2.7 Transmission System

The Solar Facility and BESS will both be connected to the Project Substation in separate bays. The Project Substation will be a 34.5/161 kV step-up/step-down substation with metering and switching gear required to interconnect the Solar Facility and BESS into the existing SMMPA Rutland Substation via a shared 161 kV overhead gen-tie transmission line of approximately 365.4 feet, pending final engineering design. The gen-tie transmission line will be strung from a single dead-end structure located within the Project Substation to another dead-end structure within the SMMPA Rutland Substation. The structures will be made of wood or steel and will be less than 150 feet tall. The type of conductor will be determined following the completion of detailed electrical design.

Per Minnesota Statutes Section 216E.01 subdivision 4, the gen-tie transmission line does not meet the high voltage transmission line definition because the overall length is less than 1,500 feet. As such, a separate route permit from the Commission will not be required for the gen-tie line.

2.2.8 Temporary Facilities

Lake Charlotte will utilize eight temporary laydown yards within the Preliminary Development Area, totaling 5.5 acres. These areas will serve both as a parking area for construction personnel and staging areas for components during construction of the Solar Facility and BESS. These laydown areas have been sited to avoid any tree clearing. After construction, the laydown areas will be reseeded as described in the VMP.

2.3 Construction

2.3.1 Site Clearing and Vegetation Removal

Depending on timing of the start of construction, the Solar Facility may require the clearing of residual row-crop debris from the previous seasons. Alternatively, and depending on construction timing, Lake Charlotte may plant a cover crop that is compatible with the VMP. This cover crop will stabilize soils where row crops or other vegetation are not present.

2.3.2 Earthwork

The majority of soil disturbances will occur during the first phase of Project construction when the grading activities take place. The Preliminary Development Area for the Solar Facility (including the Project Substation) may require up to 1,004.0 acres of grading. Construction of the BESS will require approximately a total grading area of 15.9 acres. The Contractor may need to move some soils to "flatten" certain parts of the local terrain or, at the very least, to complete minor grading of topsoils. The earthwork activities will be completed using typical civil construction equipment – scrapers, bulldozers, front-end loaders, back-hoes or skid-steers. BMPs that will be used during these earthmoving activities are described in detail in Section 2.3.3 - Access Road Construction.

2.3.3 Access Road Construction

As a component of earthwork, permanent access roads and permanent turnouts will be developed. This work will start with the stripping and segregating of topsoil materials from the anticipated 16-foot-wide road width. The subgrade materials will be compacted 16-feet-wide to the specified compaction requirements as laid out by the civil and geotechnical engineer. After compaction is reached and verified, the road will be installed as designed, typically done with or without geo-fabric depending on the soil type, and then, with a surface of 4 to 12 inches of gravel. The gravel will be placed level with the existing grade to facilitate drainage and minimize ponding.

After gravel is installed and compacted to engineers' requirements, drainage ditches will be shaped as identified on the final grading plan. Finally, the previously stripped and windrowed topsoil material will be re-spread throughout Solar Facility.

Topsoil removed from permanent access roads will be removed to suitable locations near the site of removal and spread across existing topsoil for storage. Storage locations will be identified (Global Positioning System [GPS] boundary and depth) and recorded on site maps to facilitate final reclamation after decommissioning.

2.3.4 Solar Array Construction

Once grading activities are complete, the racking system supports will be constructed using steel piles driven into the ground. The solar facilities will be constructed in blocks, and multiple blocks could be constructed simultaneously. Construction of the blocks will include pre-positioning and driving piles, mounting the tracking rack system to the piles, pre-positioning of panel pallets, mounting panels to the tracking rack system, the completion of electrical connections, terminations and grounding, and installation of cable management systems. In some situations where soils are low strength or consist of loose, non-cohesive sand, helical screw or auger-type foundation posts may be used. Foundations are typically galvanized steel and used where high load bearing capacities are required. The pile is driven using a hydraulic ram that moves along tracks and is operated by two workers. Soil disturbance will be restricted to the hydraulic ram/screw machinery, about the size of a small tractor, temporarily disturbing soil at each pile insertion location and while driving between drilling locations.

The remainder of the tracking rack system will be installed by construction crews using hand tools and all-terrain tracked equipment to distribute materials. Array racking will be bolted on top of the foundation piling to create a “rack” to which the solar panels can be fastened.

During array and racking 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; however, vehicular traffic will occur off of roads throughout the Project during construction. These vehicles include flatbed trucks for transporting array components, small all-terrain vehicles, rough-terrain forklifts and skid-steers, as well as pick-up trucks for transporting equipment and workers throughout the Preliminary Development Area. Panels will be staged in advance throughout the Preliminary Development Area and brought to specific work areas for installation by wagon-type trailers pulled by small tractors or by all-terrain tracked equipment. The solar panels will be installed by multiple crews using hand tools. Installation crews will proceed in serpentine fashion along staked temporary access roads in a pre-established route to minimize off-road traffic.

2.3.5 Electrical Collection System

As noted in Section 2.2.1.2, the collection system will either be installed as a below-ground system or hybrid above-ground/below-ground system. This technology is rapidly evolving and may be site-specific depending on geotechnical analysis, constructability, and availability of materials. Final engineering and procurement will help determine the construction method for the electrical collection system.

Below-ground AC collection systems will be installed in trenches or ploughed into place at a depth of at least four feet below grade. Topsoil will be stripped from the trenched area up to a maximum depth of 12 inches using a small backhoe and will be temporarily stored adjacent to the trench. Similar to the pile drivers used to install the racking, the soil disturbance from the trenching machines will be restricted to the trenching machine tracks only. This machine is the size of a small tractor. Once cables are installed, the trenches will be backfilled using a small, rubber tire or tracked backhoe and compaction equipment. Topsoil will be replaced to the restored trench line, and the pre-construction contour will be re-established using a small front-end loader.

If a hybrid option is selected and above-ground cabling is utilized, the DC collection cables will be strung under each row of panels on steel arms and a steel cable attached to the piles. At the end of each row, hanging brackets will connect several racks/rows of cables to a common collection point near their assigned inverter/transformer skid where the cables will be routed below-ground at a minimum depth of at least four feet below grade to the inverter/transformer skid where the current is converted to AC and voltage is stepped up to 34.5 kV. From the inverter/transformer skid, the AC collection will be installed below ground to the Project Substation, as described above for the below-ground collection system.

BMPs that will be used during these earthmoving activities are described in detail in Section 4.

2.3.6 Inverter Installation

The inverters units will be placed on frost-footing supported concrete pads or driven/helical screw pier foundations that will be designed to specifications necessary to meet the local geotechnical conditions. Topsoil will be removed and will be stored at suitable pre-established locations and graded to facilitate revegetation. Underground conduit and junction boxes will be installed throughout the Project to facilitate the required cabling connecting equipment. Premanufactured skids with inverter, transformer and SCADA equipment may be used. These will arrive by typical flat-bed trailer and truck and will be set in place by a rough-terrain hydraulic crane.

2.3.7 Project Substation Construction

Construction work within the substation site will include site preparation and installation of substructures and electrical equipment. Installation of concrete foundations and embedment for equipment will require the use of trenching machines, concrete trucks and pumpers, vibrators, forklifts, boom trucks, and large cranes. Above-ground and below-ground conduits from this equipment will run to a control enclosure that will house the protection, control, and automation relay panels. A station service transformer will be installed for primary AC power requirements. Batteries and battery chargers will be installed inside the enclosure for auxiliary power to the switchyard's control system. Crushed rock will cover the area of the substation and adequate lighting will be installed around the substation for worker safety during construction and operation.

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

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

2.3.8 BESS Facility Construction

Construction for the BESS will begin with grading and site leveling. Topsoil will be segregated and placed in a designated location. As noted in Section 2.3.2 Earthwork, above, construction of the BESS will require approximately a total grading area of 15.9 acres. Lake Charlotte does not anticipate soil removal for construction of the BESS. Additional site preparation will include installation of substructures and electrical equipment. Installation of concrete foundations and embedment for equipment will require the use of trenching machines, concrete trucks, pumpers and vibrators, forklifts, boom trucks, and cranes. Medium-voltage cables will be installed below ground between the power conversion systems and the Project Substation. The BESS will include individual BESS containers, inverters (or power conversion systems), switchboards, low voltage cabling, medium voltage switchgear, a junction box, and medium voltage transformers. Crushed rock will be placed between and among installed BESS equipment and adequate lighting will be installed around the BESS site for worker safety during construction and operation.

BESS foundations will typically be installed using one of the two methods as follows: Method 1 would be to use a small rubber tire backhoe to excavate major foundations prior to pouring the concrete slabs, and Method 2 would use an auger/drill type machine for minor foundations.

2.3.9 Stormwater Drainage Basins

The Preliminary Development Area includes 48 stormwater Ponds that range in size from 0.12 to 0.78 acres (20.0 acres total). These stormwater basins are generally located in existing low areas. These areas, if integrated as a permanent feature, will be vegetated with a wet seed mix that will help stabilize soils after rain events in accordance with the Project VMP.

2.3.10 Transmission System Construction

The Solar Facility and BESS will both be connected to the Project Substation in separate bays. The Project Substation will interconnect the Solar Facility and BESS into the existing SMMPA Rutland Substation via a shared 161 kV overhead gen-tie transmission line of approximately 365.4 feet, pending final engineering design. The gen-tie transmission line will be strung from a single dead-end structure located within the Project Substation to another dead-end structure within the SMMPA Rutland Substation. The structures will be made of wood or steel and will be less than 150 feet tall. Structure foundations will either be direct embed or concrete foundations will be poured.

2.3.11 Project Fencing Installation

A fencing company will be contracted to construct the perimeter fencing around the Solar Facility (including the Project Substation) and BESS. The fencing will consist of an agricultural woven wire fence and will extend approximately 7 feet above grade. As typically requested by the MDNR on other Projects, barbed wire will not be used around the perimeter of the Solar Facility. In place of barbed wire, one foot of 3 to 4 strands of smooth wire will be placed atop of the woven wire fence for a total height of approximately 8 feet above grade. Additional gates will be strategically installed at corners for deer egress and contact information for the site manager will be posted at the gates. The fencing around the Project Substation and BESS will be a 6-feet above grade chain-link fence and include one foot of barbed wire to comply with the NESC. The wooden posts for the agricultural fence will be augured or directly embedded, set in place, and backfilled with the soil that was displaced by the auger, if necessary. Chain link posts around the Project Substation and BESS will be spaced at 8 to 10 feet on center. Corner posts and gate posts will be augured and embedded in concrete for structural support. All tangent posts will be direct buried similar to corner posts. Man doors and gates will be installed, as needed.

3.0 LIMITATIONS AND SUITABILITY OF SITE SOILS

Soil varies considerably in its physical and chemical characteristics that strongly influence the suitability and limitations that soil has for construction, reclamation, and restoration. Major soil properties include:

- soil texture;
- drainage and wetness;
- presence of stones, rocks, and shallow bedrock;
- fertility and topsoil characteristics; and
- soil 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.

3.1 Land Use Considerations

Based on an aerial photo history, virtually all of the Land Control Area has been in agriculture starting prior to 1938, with several hundred acres of wet areas converted to agriculture by subsurface tile drainage. Most of the agricultural land is prime farmland or prime farmland if drained. Typically, high value crops such as corn, forage crops, and soybean rotations are grown in the area. Lake Charlotte assumes that all subsurface and surface drainage systems will be maintained during Project operation, and that upon decommissioning, all surface infrastructure will be removed, and the land will be restored to agriculture.

3.2 Important Soil Characteristics

The Soil Survey Geographic Database (SSURGO) is the digitized county soil survey and provides a Geographic Information System (GIS)-relating soil map unit polygons to component soil characteristics and interpretations. Soil map unit polygons in the SSURGO database were clipped to the Project and internal infrastructure boundaries, including the following major pieces of infrastructure:

- fenced area hosting solar panels, racks, and arrays;
- inverter locations;

- access roads;
- laydown areas;
- Project Substation and O&M building; and
- BESS.

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 the GIS data. Soils within the 1,276.7-acre Land Control Area but not anticipated to be affected by construction or operations are indicated in tables but not included in the following analysis, which only includes the 1,004.0 acres that will be affected by construction (i.e., the Preliminary Development Area).

A soil map of the Land Control Area is provided along with a table of selected characteristics of site soils including physical properties, classifications, and construction-related limitations in Appendices A and B.

3.2.1 Selected Physical Characteristics: Texture, Slope, Drainage and Wetness, Topsoil Depth, Bedrock and Presence of Stones and Rocks

There are approximately 1,276.7 acres within the Land Control Area. Selected physical characteristics of site soils are broken down by acreage within the 1,004.0-acre Preliminary Development Area and the 272.7-acre undisturbed area are in Table 3.2.1-1.

Soil texture affects water infiltration and percolation, drought tolerance, compaction, rutting and revegetation, among other things. Soil texture is described by the soil textural family, which indicates the range of soil particle sizes averaged for the whole soil. All of the soils within the Preliminary Development Area (1,004.0 acres) are in the Fine Loamy textural family, indicating medium-textured soils dominated by soil particles in the loam and silt fractions (between 0.002 and 3 millimeters) with fewer particles in the clay (less than 0.002 millimeters) and sand (greater than 2 millimeters) fractions. Medium-textured soils typically have good physical and available-water characteristics to support plant growth if not in excessively steep or wet conditions. They have high water-holding capacity, with most of the water being readily available for plant growth.

Slope affects constructability, water erosion, revegetation, compaction and rutting, among other properties. Nearly all of the soils (976.9 acres, 97.3 percent) within the Preliminary Development Area are nearly level soils with representative slopes falling within the 0 to 5 percent slope range. Of the remaining soils within the Preliminary Development Area, 23.9 acres (2.4 percent) have a representative slope of 5 to 8 percent and 3.2 acres (0.3 percent) have a representative slope of 8 to 15 percent.

Soil drainage indicates the wetness in the soil profile along with the speed at which internal water moves. Soil drainage affects constructability, erosion by wind and water, and revegetation success. Most of the soils within the Preliminary Development Area are in the Moderately Well, Somewhat Poor, and Poor drainage classes (172.9, 145.1, and 640.9 acres, respectively, cumulatively 95.5 percent of the Preliminary Development Area acreage), with smaller areas mapped into Well (27.1 acres, 2.7 percent) and Very Poorly (17.9 acres, 1.8 percent) drainage classes. None of the soils are excessively drained that would be subject to drought. Soils in Somewhat Poor and Poor drainage classes are highly productive when drained and are frequently converted to agriculture by the installation of subsurface drain tile. Virtually all of the soils in Somewhat Poor and Poor drainage classes in the Preliminary Development Area have been drained. Moderately Well and Somewhat Poorly drained soils typically are not droughty or wet and are typically well suited to intensive agriculture.

Topsoil depth affects soil plant nutrition and surface soil structure. To maintain soil productivity, soils with thick topsoil will require larger areas for storage of larger volume of topsoil stripped from permanent infrastructure footprints such as permanent access roads, inverters, BESS facilities and the Project Substation. All of the soils within the Preliminary Development Area are Mollisols and are characterized by the presence of relatively thick topsoil greater than 12 inches in depth (976.9 acres, 97.3 percent).

The presence of bedrock near the soil surface and rocks and stones in the soil profile affects constructability and revegetation. No soils in the Preliminary Development Area are shallow to bedrock or have stones at the soil surface or within the soil profile.

Table 3.2.1-1: Acreage of Soils with Selected Physical Characteristics by Project Feature within the Land Control Area

Project Feature	Total Acres [1]	Textural Family [2]	Slope Range [3]			Drainage Class [4]					Topsoil Thickness [5]			Shallow Bedrock/ Stony [6]
		Fine-Loamy	0-5	>5-8	>8-15	W	MW	SWP	P	VPD	>6 -12	>12 -18	>18	
	Acres													
PRELIMINARY DEVELOPMENT AREA (POTENTIAL DISTURBANCE)														
Fence Area/Arrays	940.4	940.4	915.9	21.6	2.9	24.6	160.2	139.7	599.1	16.9	24.6	306.2	609.7	--
Access Roads	16.3	16.3	15.3	0.8	0.2	0.9	3.2	2.0	9.7	0.4	0.9	5.3	10.0	--
Inverters	0.2	0.2	0.2	0.0	--	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.2	--
Laydown Yards	5.5	5.5	5.5	--	--	--	0.2	1.1	3.7	0.4	--	1.3	4.2	--
O&M / Substation	5.0	5.0	5.0	--	--	--	--	--	5.0	--	--	--	5.0	--
BESS Facilities	15.9	15.9	15.0	0.9	--	0.9	6.8	0.9	7.2	--	0.9	7.8	7.2	--
Collection	0.7	0.7	0.7	0.0	--	0.0	0.2	0.0	0.5	--	0.0	0.2	0.5	--
Stormwater Basins	20.0	20.0	19.4	0.5	0.1	0.6	2.3	1.4	15.5	0.2	0.6	3.7	15.7	--
Subtotal	**1,004.0**	**1,004.0**	**976.9**	**23.9**	**3.2**	**27.1**	**172.9**	**145.1**	**640.9**	**17.9**	**27.1**	**324.5**	**652.4**	**0.0**
LAND UNDER CONTROL BUT NOT CURRENTLY PLANNED FOR DEVELOPMENT														
Undisturbed	272.7	272.7	266.2	6.4	0.1	6.5	37.4	33.7	189.3	5.8	6.5	71.1	195.1	--
TOTAL PROJECT														
Grand Total	**1,276.7**	**1,276.7**	**1,243.1**	**30.2**	**3.4**	**33.6**	**210.4**	**178.8**	**830.2**	**23.7**	**33.6**	**395.6**	**847.5**	**0.0**

Note: Totals may not add up due to rounding.

[1] 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.

[2] Data available directly from the Natural Resources Conservation Service (NRCS) SSURGO spatial or attribute database via geospatial query of the spatial or attribute data.

[3] 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.

[4] Drainage class as taken directly from the SSURGO database. (SWE – Somewhat excessively drained; W – Well drained; MW – Moderately well drained; SWP – Somewhat poorly drained; P – Poorly drained; VPD – Very poorly drained)

[5] Topsoil thickness is the aggregate thickness of the A horizons described in the SSURGO database.

[6] Depth to bedrock taken directly from the SSURGO database. Stony/Rocky soils are those soils that have either a cobbley, stony, boulder, shaly, very gravelly or extremely gravelly modifier to the textural class of the surface layer or that have a surface layer with > 5% stones or rocks > 3 inches in any dimension.

Source: Soil Survey Staff, 2025.

3.2.2 Selected Classification Data: Prime Farmland, Land Capability Classification, Hydric Soils

Selected classification information for site soils is broken down by acreage within the 1,004.0-acre Preliminary Development Area and the 272.7-acre undisturbed area in Table 3.2.2-1.

Natural Resources Conservation Service (NRCS)-designated prime farmland soils have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are also available for these uses.[1] Nearly all soils in the Preliminary Development Area are classified as prime farmland or prime farmland if drained (318.1 and 658.8 acres respectively; cumulatively 97.3 percent).

The NRCS also recognizes farmlands of statewide importance, which are defined as lands other than prime farmland that are used for production of specific high-value food and fiber crops (e.g., citrus, tree nuts, olives, fruits, and vegetables). Farmlands of statewide importance have the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Farmland of statewide importance is similar to prime farmland but with minor shortcomings such as greater slopes or less ability to store soil moisture. 23.9 acres (2.4 percent) of soils within the Preliminary Development Area are classified as farmland of statewide importance.

Land Capability Class (LCC) is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over a long period of time. Soils within the Preliminary Development Area are in LCC 1, 2e, 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 moderate management; a numerical value of 3 indicates soils with severe limitations that reduce the choice of plants or require special conservation practices, or both; a numerical value of 4 indicates soils with very severe limitations that restrict the choice of plants, require very careful management, or both; a numerical value of 5 indicates soils with little or no hazard of erosion, but that have other limitations that are impractical to remove (U.S. Department of Agriculture [USDA], NRCS, 2025). Soils in LCC classes 1 and 2e are typically considered prime farmland and soils in LCC class 2w are considered prime farmland if drained. Most of the soils in the Preliminary Development Area (959.0 acres, 95.5 percent) are in LCC 1, 2e, and 2w. Those soils with wetness limitations have been converted to prime farmland status by drainage.

Hydric soils are generally described as soils in poorly drained to very poorly drained drainage classes. Hydric soils are formally a component of regulated wetlands and can be used to indicate areas with potential jurisdictional wetlands. Most of the soils within the Preliminary Development Area are hydric (658.8 acres, 65.6 percent), with 345.2 acres (34.4 percent) being considered non-

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[1] [prime farmland] has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding (USDA, NRCS, 2025).

hydric soils. Virtually all of the hydric soils that were historic wetlands have been legally converted to non-wetland by subsurface tile drainage.

Table 3.2.2-1: Acreage of Soils with Selected Classification Data by Project Feature Within the Land Control Area

Project Feature	Total Acres [1]	Prime Farmland [2]		Farmland of Statewide Importance	Land Capability Class [2]							Hydric Soil[2]
		All Soils	If Drained		1	2e	2w	3e	3w	4e	5w	
		Acres										
PRELIMINARY DEVELOPMENT AREA (POTENTIAL DISTURBANCE)												
Fence Area/Arrays	940.4	299.9	616.0	21.6	139.7	160.2	599.1	21.6	16.9	2.9	--	616.0
Access Roads	16.3	5.2	10.1	0.8	2.0	3.2	9.7	0.8	0.4	0.2	--	10.1
Inverters	0.2	0.1	0.2	0.0	0.0	0.1	0.1	0.0	0.0	--	--	0.2
Laydown Yards	5.5	1.3	4.2	--	1.1	0.2	3.7	--	0.4	--	--	4.2
O&M/Substation	5.0	--	5.0	--	--	--	5.0	--	--	--	--	5.0
BESS Facilities	15.9	7.8	7.2	0.9	0.9	6.8	7.2	0.9	--	--	--	7.2
Collection	0.7	0.2	0.5	0.0	0.0	0.2	0.5	0.0	--	--	--	0.5
Stormwater Basins	20.0	3.7	15.7	0.5	1.4	2.3	15.5	0.5	0.2	0.1	--	15.7
Sub-Total	**1,004.0**	**318.1**	**658.8**	**23.9**	**145.1**	**172.9**	**640.9**	**23.9**	**17.9**	**3.2**	**0.0**	**658.8**
LAND UNDER CONTROL BUT NOT CURRENTLY PLANNED FOR DEVELOPMENT												
Undisturbed	272.7	71.1	194.9	6.4	33.7	37.4	189.1	6.4	5.8	0.1	0.2	195.1
TOTAL PROJECT												
Grand Total	**1,276.7**	**389.2**	**853.7**	**30.2**	**178.8**	**210.4**	**830.0**	**30.2**	**23.7**	**3.4**	**0.2**	**853.9**

Note: Totals may not add up due to rounding.

[1] 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.

[2] Data available directly from the NRCS SSURGO spatial or attribute database via geospatial query of the spatial or attribute data.

Source: Soil Survey Staff, 2025.

3.2.3 Construction-Related Interpretations: Highly Erodible Land (Wind and Water), Compaction Prone, Rutting Prone, and Drought Susceptible with Poor Revegetation Potential

Selected construction-related interpretative data for site soils are broken down by acreage within the 1,004.0-acre Preliminary Development Area and the 272.7-acre undisturbed area in Table 3.2.3-1.

Table 3.2.3-1: Acreage of Soils in Selected Construction-related Interpretations by Project Feature Within the Land Control Area

Project Feature	Total [1]	Highly Erodible [2]		Compact. Prone [3]	Rutting Hazard[4]	Drought Susceptible [5]
		Water	Wind		Severe	
	Acres					
PRELIMINARY DEVELOPMENT AREA (POTENTIAL DISTURBANCE)						
Fence Area/Arrays	940.4	--	--	639.3	940.4	--
Access Roads	16.3	--	--	10.3	16.3	--
Inverters	0.2	--	--	0.2	0.2	--
Laydown Yards	5.5	--	--	5.0	5.5	--
O&M/Substation	5.0	--	--	5.0	5.0	--
BESS Facilities	15.9	--	--	8.2	15.9	--
Collection	0.7	--	--	0.5	0.7	--
Stormwater Basins	20.0	--	--	16.0	20.0	--
Subtotal	**1,004.0**	**0.0**	**0.0**	**684.4**	**1,004.0**	**0.0**
LAND UNDER CONTROL BUT NOT CURRENTLY PLANNED FOR DEVELOPMENT						
Undisturbed	272.7	--	--	197.8	272.7	--
TOTAL PROJECT						
	1,276.7	**0.0**	**0.0**	**882.2**	**1,276.7**	**0.0**

Note: Totals may not add up due to rounding.

1 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.

2 Highly Erodible Water includes soils with a slope >15 percent or soils with a K value of >0.35 and slopes greater >5 percent. Highly Erodible Wind Includes soils in wind erodibility groups 1 and 2.

3 Includes soils that are somewhat poorly drained to very poorly drained soils in loamy sands and finer textural classes.

4 Ratings are based on depth to a water table, rock fragments on or below the surface, the Unified classification of the soil, depth to a restrictive layer, and slope. The hazard is described as slight, moderate, or severe. A rating of "slight" indicates that the soil is subject to little or no rutting. "Moderate" indicates that rutting is likely. "Severe" indicates that ruts form readily.

5 Includes soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained.

Source: Soil Survey Staff, 2025.

Highly erodible land is identified as being susceptible to water and wind erosion. The majority of soils in the Preliminary Development Area are low relief, medium-textured soils with intermediate water infiltration characteristics that limit soil erosion by the agent of water. None of the soils within the Land Control Area are considered highly water erodible.

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 soil surfaces dominated by particles that can be dislodged and carried by the wind. None of the soils within the Land Control Area are considered highly wind erodible.

Soils prone to compaction and rutting are subject to dramatic and adverse changes in soil porosity and structure as a result of mechanical deformation caused loading by equipment during construction. 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. Compaction and rutting are anticipated on 684.4 acres (68.2 percent) and 1,004.0 acres (100 percent), respectively, if soils are trafficked when wet. Lake Charlotte will develop prescriptions that avoid trafficking soils when wet to avoid and 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 droughty soils. None of the soils within the Preliminary Development Area are susceptible to drought.

3.2.4 Summary of Major Soil Limitations

3.2.4.1 Prime Farmland

Nearly all of the soils within the Land Control Area are prime farmland. The primary limitations for the soils during construction, operations and maintenance, and decommissioning include compaction and rutting that may occur when the soils are trafficked when wet, and the need to reserve and store large volumes of topsoil.

While soils classified as prime farmland will be impacted by the solar facility, Lake Charlotte will implement BMPs during construction as detailed in Section 4.0 including soil segregation and decompaction, wet weather conditions, erosion and sediment control. After construction, and for the life of the Project, soils will be stabilized and soils given an opportunity to rest, as the site is revegetated with a permanent cover of prairie grasses according to seeding and management specifications agreed to between Lake Charlotte and the Minnesota Interagency Working Group to the benefit of wildlife and the soil. Upon decommissioning, the land could be returned to its pre-construction agricultural use or to another use if the economic conditions at that time indicated another use is an appropriate use for the site. Lake Charlotte anticipates that the property will be restored to agricultural use on decommissioning of the Project.

Initial post-construction revegetation efforts and maintenance of vegetation during operations and maintenance will consider selecting suited plants, managing seeding times for late spring early summer when soil moisture is optimum for germination, use of mulch and other BMPs. The only impact to prime farmland is that the land will not be farmed for the life of the Project, approximately 30 years.

3.2.4.2 Topsoil Storage

Topsoils in the Preliminary Development Area are generally thick, ranging from 12 to greater than 18 inches, relatively high in organic matter, and fertile. Storing topsoil in relatively sterile, large piles that are not active plant growth media is not recommended as the storage conditions may adversely influence soil flora and fauna affecting soil quality when topsoils are restored to areas from which the topsoil was taken. To the extent practicable, topsoil should be conserved by preselecting areas to receive excess topsoil from nearby areas, grading and seed bed preparation as appropriate, and revegetation to maintain a rhizosphere suitable for plant growth.

3.2.4.3 Compaction and Rutting

Compaction and rutting are potential limitations in the Preliminary Development Area. Lake Charlotte will design construction access and manage construction passes to minimize the number of trips occurring on a given soil and will implement wet weather procedures any time that rutting is observed. Deep compaction is not anticipated to be a significant problem as the number of construction equipment passes over a given area is limited, and construction equipment consists of smaller, low-ground-pressure tracked vehicles.

4.0 BMPS DURING CONSTRUCTION AND OPERATION

The Project will be constructed and operated on property owned or leased by Lake Charlotte. As stated above, the Project is located on highly productive farmland occupying a flat to gently rolling glaciated till plain in southwestern Minnesota.

Because all construction activities will be limited to land owned or leased by Lake Charlotte, no direct impacts to adjacent land are expected. Additionally, the technology to be deployed at this facility does not require that the entire Land Control Area be completely flat or a uniform grade. As described in Section 2.3.2 above, construction of the Solar Facility may require up to 1,004.0 acres of grading. Construction of the BESS will require approximately 15.9 acres of grading. The PV arrays can be designed to follow the existing grade of the Preliminary Development Area within certain tolerances, which allows the designer of the facility to minimize the amount of earthmoving activities that are required (refer to Figures 3 and 4).

The remainder of earthmoving activities will consist of work on the interior access roads, trenches for the DC and AC collection system, and foundational work for the Project Substation, BESS, and inverter skids, as necessary. The sections below describe the measures that the Contractor will implement to minimize the physical impacts to the integrity of the topsoils and topography of the Preliminary Development Area.

4.1 Environmental Monitor

Lake Charlotte will contract with a third party to monitor earthmoving and trenching activities during the initial phase of Project construction to ensure appropriate measures are taken to properly segregate and handle the topsoils. Lake Charlotte will coordinate with MDA to identify a suitable environmental monitor (Monitor). The Monitor will have a variety of duties, including but not limited to:

- Perform weekly inspections during the major earthmoving phase of Project construction;
- observe construction crews and activities to ensure that topsoil is being segregated and managed appropriately;
- monitor the site for areas of potential soil compaction (except within access roads) and make specific recommendations for decompaction;
- make recommendations to Lake Charlotte's construction manager;
- assist in determining if weather events have created "wet weather" conditions and provide recommendations to the construction manager on the ability to proceed with construction; and
- submit a report of Lake Charlotte's adherence to soil BMPs to MDA on a weekly basis during the major earthmoving phase of Project construction and upon completion of earthmoving activities.

Potential issues with BMPs will be reported to Lake Charlotte's construction manager and to MDA. The construction manager will use discretion to either correct the activity or stop work.

4.2 Soil Segregation and Decompaction

During construction, one of the primary means to protect and preserve the topsoil within the Preliminary Development Area will be to separate the topsoil from the other subgrade/subsoil materials when earthmoving activities or excavation are taking place during grading, road construction, cable installation, foundation installation, etc. There may be limited situations where excavated subsoil must be 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. Laying down a thin straw mulch layer as a buffer between the subsoil and topsoil may be used as practicable to facilitate more effective separation of the subsoil and underlying topsoil during the excavation backfill process.

Based on SSURGO data, topsoil thickness is typically over 12 inches. This will be confirmed with tests by a Minnesota Licensed Professional Soil Scientist prior to earthwork activities on the site. Lake Charlotte will work with the soil scientist to identify the appropriate depth of topsoil that should be stripped and segregated from other subsoil materials during earthwork activities. Lake Charlotte will provide this information and a recommendation on specific segregation methods/techniques to the Monitor for review and input. As an interim recommendation, Lake Charlotte suggests that the full depth of topsoil be stripped up to 12 inches in thickness. Topsoil greater than 12 inches from the soil surface will be treated similarly to the underlying subsoil. During the activities that require temporary excavations and backfilling (i.e., trenching activities), the subgrade material will be replaced into the excavations first and compacted as necessary, followed by replacement of topsoil to the approximate locations from which it was removed. Topsoil will then be graded to the approximate pre-construction contour.[2] Lake Charlotte will strive to avoid compaction in other areas where it is not required by the design.

Following earthwork activities that require segregation of topsoils/subsoils, topsoil materials will be re-spread on top of the backfilled and disturbed areas to maintain the overall integrity and character of the pre-construction farmland. Any excess topsoil material will be re-spread on the Preliminary Development Area at pre-established locations on the site. The location and amount of topsoil will be documented to facilitate re-spreading of topsoil after decommissioning. This practice is described in more detail below for each of the earthmoving activities that are anticipated for this Project.

4.3 Wet Weather Conditions

During the construction of the Project, it is likely that there will be periods of wet weather that may necessitate a temporary halt of construction activities. The Lake Charlotte Construction Manager will have responsibility for halting activities if weather conditions pose a risk to worker safety or if conditions are such that heavy equipment would cause severe rutting of the Preliminary Development Area. Following initial grading at the site, many activities could still proceed in wet

2 Lake Charlotte recognizes that topsoil mixing is both an aesthetic and crop-productivity issue and will strive to minimize to the extent practicable topsoil and subsoil mixing during initial construction, operations, and decommissioning/reclamation. For the purpose of identifying areas where topsoil mixing is a problem, the Environmental Monitor will consider topsoil storage piles, restored trench excavations, and post-closure restored areas with greater than 5 percent area of the soil surface as obvious subsoil inclusions to be out of compliance. Remediation may consist of removal of subsoil and replacement with acceptable topsoil.

weather given the lack of heavy equipment required for those tasks. However, Lake Charlotte's Construction Manager will be responsible for ensuring that topsoil erosion, rutting, compaction, or damage to drain tiles (as present) is avoided or minimized to the extent possible. Because compaction of soils can become problematic during wet weather conditions, as stated above, the Construction Manager will work with the soil scientist and the Monitor to ensure that techniques/practices are employed to decompact soils appropriately following wet weather conditions. Decompaction with chisel plows prior to disking and planting will typically be a standard method of soil preparation in areas proposed for seeding to native grasses, forbs, and pollinator species. Agricultural equipment capable of operating within the approximate 20-foot-wide space between panel lines when panels are oriented vertically will be used to decompact, prepare a seedbed, and plant suited seed mixes.

4.4 Adaptive Management During Construction

Should weather or site conditions during construction require different BMPs than those that are described in this section, Lake Charlotte will work with the Monitor, MDA and other appropriate agencies to discuss potential new approaches to the specific conditions that are encountered.

Lake Charlotte will remain flexible and implement new practices/procedures that will help ensure the quality of the land while maintaining the safety of the workers.

4.5 Initial Grading/Road Construction/Array Construction

The first phase of Project construction will be the general civil works within the Preliminary Development Area where all major cut and fill activities will be performed by the Contractor. As stated above, Lake Charlotte will consult with a qualified soil scientist to identify the appropriate depth of topsoil up to 12 inches that should be stripped and segregated from other materials during initial grading activities. Based on SSURGO data, topsoils in Martin County are commonly greater than 12 inches in depth. This will be confirmed with tests by the soil scientist prior to grading activities. Lake Charlotte will provide this information and a recommendation on specific segregation methods/techniques to the MDA for review and input.

The Contractor will first strip topsoil around the few selected hills/valleys on site. This will ensure that the topography falls within the tolerances allowed for by the solar array design. During this civil work, topsoil will be pushed outside of the cut/fill areas and collected into designated spots for later use. Once topsoil is removed from the cut/fill areas, the sub-grade materials will be removed as required from on-site hills and relocated to on-site low spots. Prior to relocating sub-grade materials to the low spots, topsoil in the low areas will be stripped and set aside before the fill is added, then respread over the new fill. The sub-grade materials will be compacted in place. When compaction is complete, the topsoil spoil piles will be re-spread over the reconditioned sub-grade areas. See footnote 2 for information on identifying topsoil/subsoil mixing when and where it occurs.

This newly spread topsoil will be loosely compacted and/or "tracked" and employ the wind and stormwater erosion prevention BMPs described below in Section 4.8.

After the majority of the major earthwork activities have been completed, the Contractor will start construction of the internal road network. This work will start with the stripping of topsoil materials from the 16-foot-wide roadbeds to a depth of at least 12 inches. Topsoil will be windrowed to the edges of each roadbed. Windrowing will consist of pushing materials into rows of spoil piles adjacent to the road which will be loosely compacted and/or "tracked" with stormwater and wind erosion BMPs in place. The Contractor will then compact the sub-grade materials. As discussed in Section 2.3.3, after gravel is installed and compacted to engineers' requirements, the Contractor will shape Project drainage ditches as identified on the final grading plan. Finally, the previously stripped and windrowed topsoil material will be re-spread throughout the Preliminary Development Area.

Once grading and road construction is complete, the Contractor can begin the installation of foundation piles for the PV array racking system. This work will consist of directly driving the pile into the soil with pile hammers. These vehicles will operate on the existing surface of the ground and impacts will be limited to what is typical when vehicles drive over the soil surface. Very little soil disturbance is expected from this activity.

4.6 Foundations

The Contractor will also perform foundation work for the Project Substation. BESS, and inverters. For the Project Substation and BESS, the Contractor will strip topsoil off the substation and BESS areas, respectively, install the pier-type foundations, compact sub-grade materials, re-grade spoils around the substation or BESS yard, and then install clean washed rock on the surface. All topsoil stripped from the substation and BESS areas will be pushed outside of the substation area and collected into designated spots 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 and BESS construction is advanced, the topsoil piles will be distributed in a thin layer adjacent to the substation or BESS area.

For the inverters, topsoil will again be stripped and placed adjacent to the inverter. Afterwards, the foundations will be dug using a rubber-tire backhoe and then rebar and concrete installed and left to cure. After cure and testing of concrete strength is completed, the subgrade spoils will be compacted around the inverters. After the inverter is set, the adjacent topsoil will be re-spread around the inverter.

4.7 Trenching

Construction of the Project may require trenching for the installation of both DC and AC collection lines across the Preliminary Development Area. If the collection lines are buried, the Contractor will be installing AC and DC collection cables in trenches of up to 4 feet deep using the "open trench" method. Topsoil and subgrade materials will be excavated from the trench using typical excavating equipment or backhoes and segregated as described above. The bottom of each trench may be lined with clean fill to surround the cables. Lake Charlotte anticipates that native subsoil will be rock free (refer to Table 3.2.1-1), and that no foreign fill will be necessary. 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 additional 2 feet of unscreened native backfill trench spoil. This material will be compacted as necessary. The last 1 foot of each trench will then be backfilled with topsoil material only to return the surface to its finished grade. See footnote 2 for information on identifying topsoil/subsoil mixing when and where it occurs.

4.8 Temporary Erosion and Sediment Control

Lake Charlotte will prevent excessive soil erosion on lands disturbed by construction by adhering to a Stormwater Pollution Prevention Plan (SWPPP) required under the National Pollutant Discharge Elimination System (NPDES) permitting requirement that will be administered by the Minnesota Pollution Control Agency (MPCA).

Prior to construction, Lake Charlotte will work with engineers or the Contractor to outline the reasonable methods for erosion control and prepare the SWPPP.

These measures will primarily include 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 will also be used to slow water during rain events in areas that have the potential for high volume flow. In addition, the Contractor can use erosion control blankets on any steep slopes, although given the site topography, this BMP will not likely be required. Lastly, as outlined above, topsoil and sub-grade material will be piled and loosely compacted and / or "tracked" while stored. The BMPs employed to mitigate wind and stormwater erosion on these soil stockpiles will 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 per the plan outlined in the SWPPP.

4.9 Drain Tile Identification, Avoidance and Repair

Based on preliminary discussions with Martin County, Lake Charlotte is aware of county-owned and operated drain tile that is present in the northeast portion of the Land Control Area. With the support of the affected landowners, Lake Charlotte is discussing the process for abandoning the drain tile in this location with the county. If the county approves the drain tile abandonment, Lake Charlotte proposes to adjust the layout of the solar arrays to place solar arrays and associated infrastructure in the northeastern portion of the Preliminary Development Area. If alternate solar arrays in the northeast portion of the Preliminary Development Area are utilized, an equal amount of array would not be necessary to meet the Project's nameplate capacity. To provide flexibility while Lake Charlotte's coordination with Martin County regarding the drain tile progresses, Lake Charlotte is including both the currently contemplated solar array layout and the potential alternate array layout in the Preliminary Development Area described throughout this Joint Application. As such, the total acres of the Preliminary Development Area are overstated by approximately 58.0 acres.

To minimize unforeseen repairs or damages to existing drain tile and/or drain tile systems, Lake Charlotte has developed a comprehensive plan to address the presence and treatment of this tile before, during, and after construction. The plan consists of the following components and each component is discussed in detail below:

- pre-construction tile mapping and repair;
- project design considerations;
- construction mitigation measures; and
- repair/remediation of damaged tile.

4.9.1 Pre-Construction Tile Mapping and Repair

Based on preliminary discussions with Martin County, Lake Charlotte is aware of county-owned and operated drain tile that is present in the northeast portion of the Land Control Area. In the event drain tile mapping cannot be identified for the entire Land Control Area, Lake Charlotte will use other sources, including infrared aerial photographs, ground penetrating radar, and, if necessary, a site-specific tile locate survey with a local agricultural drain tile contractor (Tile Contractor). These features will be incorporated into the design of the Solar Facility and BESS. If damage occurs to drain tile or private ditches as a result of construction activities or operation of the Project, Lake Charlotte will repair any damages.

If necessary, physical location of drain tile will be performed by using a small excavator to dig a shallow trench perpendicular to and at varying intervals across areas where research indicated tile could be found.

Visible surface inlets will be identified, and a tile probe will be inserted to locate the tile line and determine its direction from the inlet. Using an excavator, a shallow trench will be dug to confirm the presence of the tile. Once confirmed, a tile probe will locate the tile line to determine the direction of the tile. As necessary, appropriate tile lines will be exposed to determine size, type, flow direction, and condition. Any damaged tile encountered in the tile location process will be repaired or replaced to its original size and capacity.

Clogged tiles found during the location process will be assessed. Clogged tile is often an indication of a failing line tile. However, cleaning clogged tile is not usually cost effective and may lead to future problems, so a remediation plan is being developed to address clogged tile locations during the construction process. Remediation may involve replacing the clogged portion of tile or replacing the line completely.

In some locations within the Preliminary Development Area, Lake Charlotte may make changes to the Project layout to avoid existing county drainages or existing tile lines may need to be relocated to avoid damage from Project facilities. Lake Charlotte will coordinate with Martin County to identify ways to allow the Project and the existing drain tiles to coexist for the life of the Project. In the event a tile line requires replacement, the new tile will have the capacity, depth, and appropriate slope to ensure the new tile line performs adequately for the line it is replacing. All replacement or rerouting of tile will take place proactively during construction or as it is identified in order to maintain the integrity of the drainage lines during construction. This practice should minimize interruption of any drainage on site or on any neighboring farms that may drain through the property.

Repairs or rerouting will be performed using a small- to mid-sized excavator. Laser equipment will be used to ensure proper grading of the pipe. In the event a line of significant size and length needs to be rerouted or installed, a commercial drainage plow could be used.

The drainage plow typically utilizes GPS-grade control to ensure pipe is installed to specified slopes. The following considerations will also apply:

- Tiles will be repaired with materials of the same or better quality as that which was damaged.
- Tile repairs will be conducted in a manner consistent with industry-accepted methods.
- Before completing permanent tile repairs, tiles will be examined within the work area to check for tile that might have been damaged by construction equipment. If tiles are found to be damaged, they will be repaired so they operate as well after construction as before construction began.

Lake Charlotte will make efforts to complete permanent tile repairs within a reasonable timeframe, taking into account weather and soil conditions.

4.9.2 Project Design Considerations

By establishing an accurate assessment of the drain tile in the Land Control Area prior to construction, Lake Charlotte can overlay the location of the tile lines on their construction plans and identify any conflicts with the drainage lines. Following the location process, GIS layers and computer aided design files of tile locations will be generated and provided to the solar array design engineer. The engineers will design around the tiles to ensure placement of the solar racking systems do not damage the tile to the extent feasible. In some areas, re-routing of the tile is necessary and this re-routing work will take place immediately prior to or during construction.

4.9.3 Construction Measures

In areas where it will be impossible to design solar arrays around tile locations, steps will be taken to ensure the integrity of the drainage system will remain intact both during and after construction. Tile lines that are in direct conflict with solar array installation or trenches (i.e., collection lines) will be rerouted around the conflict area. Tile lines that have the potential to be damaged by construction traffic will be bridged or reinforced to maintain integrity.

4.9.4 Operational Measures

Following completion of construction, Lake Charlotte will inspect the Land Control Area after significant snow melt or rainfall events for evidence that tile systems are functioning adequately. If localized wet areas or standing water are observed, it is likely the tile system is not operating as anticipated. In this situation, the Tile Contractor will be reengaged to pinpoint any damaged tile that may have been missed during construction. Tile would be repaired following the process outlines above.

4.10 Construction Debris

Construction-related debris and unused material will be removed by Lake Charlotte and the Contractor. Any below-grade, unusable materials will be removed and loaded immediately onto trucks for subsequent disposal at a designated off-site location. The Contractor will use locally sourced dumpsters and removal services to regularly check and schedule pick-ups for full dumpsters which will be switched out for empty ones. To the extent practicable, recyclable materials (i.e., cardboard) will be sorted and recycled at a local facility.

Debris/trash collection points and dumpsters will be located both in the laydown yards as well as at strategically designated locations close to where actual work is being performed. If loose debris fails to be deposited into dumpsters or if it becomes wind-blown, the Contractor will inspect and clear fence lines of debris on a daily basis to ensure that debris and trash does not leave the Land Control Area. Contaminated materials are not expected; however, if any such materials are encountered during construction, specialized dumpsters and handling instructions will be employed to suit the types of contaminated materials that are discovered. Contaminated materials will be disposed of at the nearest appropriate facility in accordance with applicable laws, ordinances, regulations, and standards.

5.0 DECOMMISSIONING

At the end of commercial operation, Lake Charlotte will be responsible for removing all solar modules and other associated facilities. At the end of the term for each Site Permit, Lake Charlotte reserves the right to extend operations by applying for an extension of the Site Permits and continuing operation. Should Lake Charlotte decide to continue operation, a decision would be made as to whether operations would continue with the existing equipment or to upgrade the facilities with newer technologies. Decommissioning activities will include:

- Removing the solar modules, tracker system, inverters, fencing, access roads, above-ground portions of the electrical collection system, lighting, Project Substation, gen-tie line, BESS, and the O&M facility;
- Removal of below-ground electrical cables to a depth of four feet (cables buried below four feet may be left in place);
- Removal of buildings and ancillary equipment to a depth of four feet;
- Removal of surface road material and restoration of the roads to substantially the same physical condition that existed immediately before construction. If the Project is decommissioned and the land sold to a new owner, Lake Charlotte would retain any access roads the new landowner requested be retained;
- Grading, adding or re-spreading topsoil, and reseeding according to the NRCS technical guide recommendations and other agency recommendations. In areas disturbed by the construction of the facility or decommissioning activities, grading and soil disturbance activities will be kept to the minimum necessary to restore areas where topsoil was stripped in construction;
- Perform decompaction primarily in areas that were compacted during decommissioning activities so that the benefits to the soil that were achieved over the life of the Project are not counteracted by decommissioning; and
- Standard decommissioning practices would be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the solar energy and battery improvements, and restoration.

5.1 Timeline

Decommissioning is estimated to take twelve to eighteen weeks to complete, and the decommissioning crew will ensure that all equipment is recycled or disposed of properly.

5.2 Removal and Disposal of Project Components

The removal and disposal details of the Solar Facility and BESS components are found below:

- **PV Panels and Battery Modules:** PV panels and battery modules will be inspected for physical damage, tested for functionality, and disconnected and removed from racking. Functioning PV panels and battery modules will be packed and shipped to an offsite facility for reuse or resale. Non-functioning PV panels and battery modules will be packed, palletized and 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 metal recycling facility. The posts can be removed using backhoes or similar equipment. During decommissioning, the area around the foundation posts may be compacted by equipment and, if compacted, the area will be de- compacted in a manner to adequately restore the topsoil and sub-grade material to a density consistent to promote plant growth.
- **Overhead and Underground Cables and Lines:** All underground cables and conduits will be removed to a depth of 48 inches. Facilities deeper than 48 inches may remain in place. Underground cables around equipment pads will be completely removed up to a length of 25 feet around the perimeter of pads. 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 standards. Topsoil will be redistributed across the disturbed area. The steel transmission poles will be felled within the transmission line right of way and any hardware, bracing, and attachments will be transported along with the poles to a recycling facility. Removed poles locations will be revegetated with a seed mix specified in the approved SWPPP and VMP.
- **BESS Facility:** The BESS containers will be disconnected from electric ports prior to removal. The lithium-ion batteries will be transported to a recycling facility. The containers can be resold, reused, or recycled. Gravel aggregate will be removed and shipped from the Land Control Area to be reused, sold, or disposed of appropriately, at Lake Charlotte'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 constructed with geotextile fabric and a minimum of eight inches of aggregate over compacted subgrade. All pile foundations will be pulled out completely. Underground cables and duct banks will be removed to a depth of four feet. Topsoil will be reapplied to the disturbed area. Soil and topsoil will be de-compacted, and the site will be restored to the pre-construction condition and re-vegetated.
- **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 Lake Charlotte's sole discretion, consistent with applicable regulations and industry standards.
- **Equipment Foundation and Ancillary Foundations:** The ancillary foundation for the Project are pile foundations for both equipment skids and meteorological stations. As described for the solar array steel foundation posts, the foundation piles will be pulled out completely. Duct banks will be excavated to a depth of at least four feet. All unexcavated areas compacted by equipment used for decommissioning will be de-compacted 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 Lake Charlotte'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 Lake Charlotte's sole discretion, consistent with applicable regulations and industry standards. Fence posts can be pulled out using skid-steer loaders or other light equipment. The surrounding areas will be restored to pre-construction conditions to the extent feasible.
- **Access Roads:** Facility access roads will be used for decommissioning purposes, after which removal of roads will be discussed with the landowner, using the following process:
  - After final clean-up, roads may be left intact through mutual agreement of the landowner and Lake Charlotte unless otherwise restricted by federal, state, or local regulations; and
  - If a road is removed, aggregate will be excavated and loaded in dump trucks using front loaders, backhoes, or other suitable excavation equipment, and shipped from the site to be reused, sold, or disposed of appropriately at the Owner'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. Another disposal option is to provide the aggregate to local landowners as clean fill. All internal service roads are constructed with geotextile fabric and a minimum of eight inches of aggregate over compacted subgrade. Any ditch crossing connecting access road to public roads will be removed unless the landowner requests it remain. The subgrade will be de-compacted using a chisel plow or other appropriate subsoiling equipment. All large rocks will be removed. Topsoil that was stockpiled during the original construction will be distributed across the road corridor.

5.3 Restoration/Reclamation of Facility Site

Lake Charlotte will restore and reclaim the Solar Facility, BESS Facility, and associated equipment and facilities to pre-construction conditions consistent with the requirements of the lease agreements, AIMP, and VMP, and Decommissioning Plan as applicable. Lake Charlotte assumes that most of the site will be returned to farmland and/or pasture after decommissioning and will implement appropriate measures to facilitate such uses. If no specific use is identified, Lake Charlotte will plant unvegetated portions of the site with a seed mix specified in the approved SWPPP, AIMP, and VMP, as applicable.

Grading and other soil disturbing activities during decommissioning 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 rowcrop agriculture. This will include the revegetation.

6.0 REFERENCES

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Figures

Appendix A

Selected Soil Physical Features, Classifications, and Interpretations and Limitations

Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations

				Selected Soil Physical Features					Selected Soil Classifications			Construction/Reclamation Interpretations and Limitations				
Feature Type [1]	Acres [2]	Map Unit Symbol [3]	Map Unit Name [3]	Particle Size Family [3]	Slope Range [4]	Drainage Class [5]	Topsoil Thickness [6]	Shallow Bedrock/ Stony and Rocky [7]	Prime Farmland [3]	Land Capability Classification [3]	Hydric Soil Rating [3]	Highly Erodible Water [8]	Highly Erodible Wind [9]	Compaction Prone [10]	Rutting Potential [11]	Droughty [12]
Preliminary Development Area (Potential Disturbance)																
Fence Area/Arrays	6.3	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
	116.4	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
	7.3	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
	14.0	886	Nicollet-Crippin complex	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
	160.2	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
	21.6	921C2	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	No	No	No	Severe	No
	2.9	960D2	Omsrud-Storden complex, 10 to 16 percent slopes, moderately eroded	fine-loamy	>8-15	Well drained	>6-12	No	Not prime farmland	4e	No	No	No	No	Severe	No
	585.5	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
	16.9	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
	9.3	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
Access Roads	0.1	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
	1.8	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
	0.0	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
	0.2	886	Nicollet-Crippin complex	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
	3.2	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
	0.8	921C2	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	No	No	No	Severe	No
	0.2	960D2	Omsrud-Storden complex, 10 to 16 percent slopes, moderately eroded	fine-loamy	>8-15	Well drained	>6-12	No	Not prime farmland	4e	No	No	No	No	Severe	No
	9.6	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
	0.4	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Inverters	0.0	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
	0.1	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
	0.0	921C2	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	No	No	No	Severe	No
	0.1	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
	0.0	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Laydown Yards	0.3	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
	0.8	886	Nicollet-Crippin complex	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
	0.2	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
	3.7	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
	0.4	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
O&M/Substation	5.0	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
BESS Facilities	6.8	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
	0.9	921C2	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	No	No	No	Severe	No

Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations

Feature Type [1]	Acres [2]	Map Unit Symbol [3]	Map Unit Name [3]	Selected Soil Physical Features					Selected Soil Classifications			Construction/Reclamation Interpretations and Limitations				
				Particle Size Family [3]	Slope Range [4]	Drainage Class [5]	Topsoil Thickness [6]	Shallow Bedrock/ Stony and Rocky [7]	Prime Farmland [3]	Land Capability Classification [3]	Hydric Soil Rating [3]	Highly Erodible Water [8]	Highly Erodible Wind [9]	Compaction Prone [10]	Rutting Potential [11]	Droughty [12]
BESS Facilities	7.2	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
	0.9	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 and Communication Line	0.0	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
	0.2	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
	0.0	921C2	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	No	No	No	Severe	No
	0.5	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
	0.0	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
Stormwater Basins	1.1	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
	0.3	886	Nicollet-Crippin complex	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
	2.3	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
	0.5	921C2	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	No	No	No	Severe	No
	0.1	960D2	Omsrud-Storden complex, 10 to 16 percent slopes, moderately eroded	fine-loamy	>8-15	Well drained	>6-12	No	Not prime farmland	4e	No	No	No	No	Severe	No
	15.5	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
	0.2	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
Land Under Control but Not Currently Planned for Development																
Undisturbed	0.4	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
	31.0	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
	0.2	1834	Coland clay loam, 0 to 2 percent slopes, frequently flooded	fine-loamy	0-5	Poorly drained	>18	No	Not prime farmland	5w	Yes	No	No	Yes	Severe	No
	0.4	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
	0.8	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
	1.6	886	Nicollet-Crippin complex	fine-loamy	0-5	Somewhat poorly drained	>12-18	No	All areas are prime farmland	1	No	No	No	Yes	Severe	No
	37.0	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
	6.4	921C2	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	No	No	No	Severe	No
	0.1	960D2	Omsrud-Storden complex, 10 to 16 percent slopes, moderately eroded	fine-loamy	>8-15	Well drained	>6-12	No	Not prime farmland	4e	No	No	No	No	Severe	No
	187.8	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
	5.8	L84A	Glencoe clay loam, 0 to 1 percent slopes	fine-loamy	0-5	Very poorly drained	>18	No	Prime farmland if drained	3w	Yes	No	No	Yes	Severe	No
	1.1	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

1 Project Area (Undisturbed) includes soils under Lake Charlotte lease but that are not anticipated to be disturbed during construction or operations.
2 Data obtained by merging facility polygons with the SSURGO spatial data in ArcGIS.
3 Obtained directly by query of the SSURGO geospatial database for Martin County, MN (MN091).
4 Representative slope values are taken directly from the SSURGO database. The SSURGO2 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.
5 Drainage class as taken directly from the SSURGO database.
6 Topsoil thickness is the aggregate thickness of the A horizons described in the SSURGO database.
7 Shallow Bedrock taken directly from the SSURGO database. Stony/Rocky soils are those soils that have either a cobbley, stony, boulder, shaly, very gravelly or extremely gravelly modifier to the textural class of the surface layer or that have a surface layer with > 5% stones or rocks > 3 inches in any dimension.
8 Includes soils with a slope >15 percent or soils with a K value of >0.35 and slopes greater >5 percent.

Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations

				Selected Soil Physical Features					Selected Soil Classifications			Construction/Reclamation Interpretations and Limitations				
Feature Type [1]	Acres [2]	Map Unit Symbol [3]	Map Unit Name [3]	Particle Size Family [3]	Slope Range [4]	Drainage Class [5]	Topsoil Thickness [6]	Shallow Bedrock/ Stony and Rocky [7]	Prime Farmland [3]	Land Capability Classification [3]	Hydric Soil Rating [3]	Highly Erodible Water [8]	Highly Erodible Wind[9]	Compaction Prone [10]	Rutting Potential [11]	Droughty [12]

9 Includes soils in wind erodibility groups 1 and 2.
10 Includes soils that are somewhat poorly drained to very poorly drained soils in loamy sands and finer textural classes.
11 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 comprised of sediments with low strength will have potential rutting hazards.
12 Includes soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained.
Source: Soil Survey Staff, 2025.

Appendix B

NRCS Soil Map for the Lake Charlotte Solar Energy Conversion Facility and Battery Energy Storage System