Appendix G
Vegetation Management Plan

Xcel Energy
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Vegetation Management Plan

Sherco Solar Project

Prepared for
Xcel Energy
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APPLIED ECOLOGICAL SERVICES

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Executive Summary

Northern States Power Company, doing business as Xcel Energy, is developing a 460 megawatt ("MW") solar project on approximately 3,480 acres in Sherburne County, MN ("Sherco Solar Project" or "Project;" Figure 1). The Project size makes this the largest solar generation facility in Minnesota and one of the largest facilities in the United States. The Project represents a joint development between Xcel Energy and National Grid Renewables Development, LLC (NG Renewables). The Project will be constructed, owned, and operated by Xcel Energy.

Xcel Energy has developed this Vegetation Management Plan ("Plan") to guide site preparation, installation of prescribed seed mixes, management of invasive species and noxious weeds, and control of erosion/sedimentation. The overall goal of this Plan is to establish a sustainable, diverse, perennial pollinator friendly ground cover throughout the solar Project. Xcel Energy has developed this Plan to meet the standards of the Minnesota Board of Soil and Water Resources ("BWSR") Habitat Friendly Solar Program. Achieving Habit Friendly Solar status at this site would make it the first utility-scale solar site to achieve this standard; approximately 25 times larger than the largest site currently certified. Xcel Energy's goal is to reach the scorecard threshold to achieve solar pollinator re-certification at year 3 of operations. The Plan also references, when practicable, the *Guidance for Developing a Vegetation Establishment and Management Plan for Solar Facilities (March 2021)* (Minnesota Department of Commerce, Energy Environmental Review and Analysis, 2021).

The strategy outlined in this Plan consists of creating a pollinator-friendly ground cover that will provide beneficial habitat within the footprint of the solar Project while the Project is in operation. Typically, a solar site has a shorter growing mix to accommodate the primary goal of solar panel energy production, and a wet seed mix for any wetlands or areas anticipated to hold water. The mixes were designed to include both native grasses and wildflowers and will be revised in coordination with the Minnesota Department of Natural Resources ("MNDNR") and BWSR. These mixes will achieve Xcel Energy's goal for operating a certified pollinator-friendly solar facility, based on BWSR's Minnesota Habitat Friendly Solar Program guidance available as of February of 2021. Implementation of this plan will provide native perennial vegetation and foraging habitat beneficial to game birds, songbirds, and pollinators. The implementation of this plan will result in established stable ground cover, reduced erosion, reduced runoff, improved infiltration, and increased soil carbon.

1. Vegetation Management Goals and Objectives

Xcel Energy has developed this Plan to establish and maintain vegetation at the Sherco Solar Project in a manner that supports the Company's Pollinator Program, which seeks to develop pollinator-friendly habitats on Xcel Energy owned and managed lands. In support of the Pollinator Program, Xcel Energy has chosen to design this plan to meet Minnesota Board of Water and Soil Resources ("BWSR") Habitat Friendly Solar standards, described in more detail below (BWSR, 2020). To carry out this Plan, Xcel Energy has established short- and long-term goals as well as objectives for vegetation management for the Project.

This document is intended to be a working and "living" document. Revisions will be made as new information is obtained with respect to vegetation management, site characteristics, and availability of management practices at the time of procurement of services. The document will continue to be updated as more information is obtained throughout the Site Permit process, and in coordination with applicable agencies. As more detailed engineering steps are undertaken and information is gathered leading up to development, this document and its appendices will be further updated as the information comes available.

1.1 Goals

1.1.1 Short-Term Goals

Establish a cost effective, sustainable, diverse, perennial pollinator-friendly ground cover throughout the solar Project based on the BWSR Habitat Friendly Solar Program (BWSR, 2020). Xcel Energy will strive to meet the highest standard, the "gold standard," established by the BWSR Habitat Friendly Solar Site Assessment Form ("scorecard"). As of March 2021, the largest solar facility to achieve BWSR's Habitat Friendly Solar status is a 120-acre site and the average site size was approximately 27 acres. Achieving Habit Friendly Solar status at the Sherco Solar Project would make it 25 times larger than the largest solar site to achieve this standard as of March 2021, and would provide a significant block of native habitat adjacent to the Mississippi River in an area that has traditionally consisted of heavy agricultural use and ongoing urbanization (BWSR, 2021). The plan also reflects Xcel Energy's goal to reach the scorecard threshold to achieve solar pollinator re-certification at year 3 of operations. A draft of the scorecard for planning purposes, based on current plans and seed mixes, is provided as Appendix 8. Xcel Energy will also establish operations, maintenance, and inspections that comply with all permits and regulations pertaining to the Project. In addition to the pollinator friendly ground cover, a landscape screen will be planted in targeted locations. The landscaping/screening area should be established, with limited ongoing plant mortality, within one year of installation.

Xcel Energy considered agricultural uses within the fenced area of the Project After review of Project plans, Xcel Energy determined that haying and or grazing activities on the site would inhibit the primary vegetation management goal of establishing a "gold standard" pollinator certified site. Effectively haying a site would require more simplified seed mixes that would prohibit the use of certain species in a mix. For example, species such as milkweed could not be hayed due to their potential toxicity to certain livestock species, including sheep and cattle.

Additionally, specialized haying equipment would be necessary for the site to due to the placement of panels and inverters throughout the Solar Project Area. Finally, the safety and liability considerations necessary to partner with local landowners and provide access for agricultural operations, either haying or grazing, in a power generating facility pose significant challenges for Xcel Energy. For these reasons, agricultural management goals were considered, but will not be pursued further for the Solar Project.

1.1.2 Long-Term Goals

Implement adaptive management of vegetation cover, guided by strategic integration of site-specific environmental conditions, to cost-effectively maintain a pollinator friendly ground cover that provides beneficial wildlife habitat, maintains soil stability on the site, and preserves the site for agricultural use in the future. Landscape screens should develop in a manner to provide some visual screening to the adjoining landowner consisting of mature plants as prescribed by the Plan.

- Comply with permit conditions for site revegetation, per the Minnesota Pollution Control Agency Construction Stormwater General Permit. Within two years, achieve cover of uniform perennial vegetation at 70 percent of the native vegetative cover. On sandy sites, historic native vegetative cover is lower than on loamy sites and the vegetation target should be adjusted accordingly.
- Achieve the native vegetation targets outlined in Section 6.2.1 of this Plan.
- Prioritize the implementation of all required vegetation management activities for safe and efficient operations support:
    - Woody species and weed control in herbaceous plantings
    - Height control of herbaceous species
    - Wet area management
    - Landscape screen plantings management.
- Manage noxious weeds per Minn. Stat., Sections 18.75 to 18.78, and 18.86.
- Achieve noxious weed and problem plant control as outlined in Section 6.2.2 of this Plan.
- Establish a mature landscape screen that minimizes views of the solar array from adjacent target parcels.

2. Site Description

As noted above, this document is a living document that will continue to be refined as new information comes available. This document was first developed to support Xcel Energy's Site Permit Application for the Project. Information continues to be collected and agencies consulted as the Project progresses through permitting and leading up to construction. As more information comes available based on field assessment and design measures, Section 2 will continue to be populated with pertinent information and details to inform Project plans.

2.1 Project Location and Size

Xcel Energy is proposing to build the Project in Clear Lake Township, Becker Township and the City of Becker in Sherburne County, Minnesota. The Solar Project is proposed in two distinct blocks, which collectively create the Project Area. The Solar Project Area covers 3,479.4 acres and is comprised of the West Block (1,653.7 acres), which is located on the west side of the Sherco Generating Plant and the East Block (1,825.7 acres), which is located on the east side of the Sherco Generating Plant ("Project Area" or "Project Site"). Based on preliminary design, Project facilities will cover approximately 3,013.5 acres of the Solar Project Area ("Project Footprint"). The Solar Project is located within agricultural fields between U.S. Highway 10 and the Mississippi River, and on the east and west sides of the existing Sherco Generating Plant.

2.2 Existing Vegetation

Based on the 2016 National Land Cover Data, the Project would affect predominately agricultural cultivated cropland (96.3 percent; Figure 2). Hay/pasture, developed land, wetlands, and open water within the Project Footprint total 3.7 percent. Trees are present as windrows between agricultural fields and along some roads; there are no large tracts of forested land in the Project Area. There are 15 wetlands in the Project Area.

2.3 Existing Land Use

Based on an air photo history, virtually all the Project Area has been in agriculture since before 1938 (Figures 3a and 3b). None of the soils in the Project Area are classified as prime farmland. Typically, high value crops such as corn and potatoes are grown in the area. Due to the sandy soils, discussions with landowners have confirmed there are no known drain tiles in the Project Area. There are several center-pivot irrigation systems in the Project Area that are anticipated to be decommissioned during the Project's operation.

2.4 Soils

The Soil Survey Geographic Database ("SSURGO") is the digitized county soil survey and provides Geographic Information System data 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 major pieces of infrastructure:

- Fenced area hosting solar panels, racks, and arrays
- Inverter locations
- Access roads
- Laydown areas
- Collector substations.

A soil map of the Sherco Solar Project Area is provided in Appendix 1. The vast majority of the site consists of Hubbard-Mosford complex, a sandy soil that is excessively drained to very well drained. Much cropland on this soil series is irrigated.

2.5 Topography

The Project will be constructed on a sandy glacial river floodplain terrace along the Mississippi River. The topography of the Solar Project Area is generally flat with elevations ranging from 925 to 985 feet above sea level and a depth to bedrock of typically less than 200 feet (Figure 4). The nearly-level topography combined with acceptable soil conditions, favorable moisture holding characteristics, and usually adequate supplies of moisture from precipitation are well suited to agriculture (although irrigation is a common practice), which is currently the dominant land use for the Project Area.

2.6 Hydrology

The Project is located in the Upper Mississippi-Crow-Rum- Watershed (Figure 5). The potential for wetlands within the Project Area was identified by reviewing desktop resources data followed by a formal wetland delineation within the Solar Project in Fall 2020 (Figure 6). The wetland delineation identified 10 wetlands in the West Block and five wetlands in the East Block. Wetland complexes consisted of small and large isolated wetlands scattered throughout the Solar Project Area. Wetlands within West Block are primarily located within the northwest corner of the Project Area and are associated with adjacent waterbodies, with a few small, isolated wetlands in other parts of the West Block. Wetlands within the East Block can be found in the center of the Solar Project Area and primarily consist of isolated basins. There are 3.6 acres of delineated wetlands in the West Block and 35.6 acres of delineated wetlands in the East Block. There are no streams in the Project Area.

3. Vegetation Establishment and Management During Construction

Xcel Energy has established practices for vegetation management during construction. These management activities can vary based on many variables and may be adjusted based on unforeseen circumstances or adjustments in overall Project schedule.

3.1 Project Site Preparation, Clearing and Vegetation Removal

Depending on timing of the start of construction, the Project may require the clearing of residual row-crop debris from the 2021 harvest season. Additionally, when agricultural land is taken out of cropping, annual weeds present in the existing seed bank and introduced from neighboring properties may establish on site. Xcel Energy hopes to time Project construction early enough in the growing season to prevent establishment of weeds onsite. If necessary and practicable, in the time between assuming control of the property and initiating construction activities, broadcast herbicide may be applied to treat annual weeds. For annual weeds, the essential treatment window is usually between mid-May and mid-June to prevent seed set for the most common problem species.

Alternatively, depending on construction timing, Xcel Energy may plant a cover crop prior to construction activities. If there is not adequate time for the cover crop to grow prior to construction, then the cover crop would be of limited value to controlling erosion during construction of the Project. Should it be determined that a cover crop will meet construction

timing and assist with site stabilization during construction, the cover crop would be applied at a level prescribed by a trained professional in order to better stabilize soils. A cover crop will not be planted prior to construction unless there is adequate time between the start of the growing season and the start of construction for the cover crop to grow to a sufficient height to provide soil surface protection during construction.

Most of the soil and vegetation disturbances will occur during the first phase of Project construction when the grading activities take place. The grading Contractor may need to move some soils to create a level grade across the site, typically the highest parts of the local terrain. To stabilize the soils, existing vegetation or plant material will be retained on the surface in areas that do not need to be graded. Any topsoil that is stripped or otherwise stockpiled during construction will be replaced and spread or otherwise stockpiled prior to seed bed preparation activities for the duration of the Project.

3.2 Noxious Weed and Problem Plant Management During Construction

During the growing season (May to September) portions of the construction period, monthly evaluations of the Project Area will be implemented to determine if noxious weeds or problem plants develop during construction. The appropriate treatment techniques to use and the timing of those treatments will be determined based on the plants that need to be treated, the construction activities occurring in the area to be treated, and the length of time between the inspection and when seed bed preparation and other restoration activities will occur. If required, treatment for noxious weeds will be incorporated into other restoration activities as quickly as is feasible. Management techniques for five categories of weeds are described below in Section 5.1.2 of this Plan.

4. Vegetation Installation Plan

After the solar panels and other infrastructure are installed, native seed mixes developed for the Project (Appendix 2) will be installed as shown in the proposed planting plan for the Project Site (Appendix 3). These plans may be adjusted as additional site details are obtained throughout the project planning and development processes. These seed mixes were developed to meet the overall Project goal to meet, at a minimum, the scorecard threshold established for pollinator friendly ground cover.

Based on the information gathered from desktop analysis, three native mixes were designed for the site: a low growing mix for upland areas throughout the site, a wet mix for areas with hydric soils and/or susceptible to holding water based on field reviews and hydraulic modeling of the site, and a wet mix specific to wet areas such as stormwater basins. These seed mixes are designed to be used with a vegetation management practice of traditional mowing. In addition to the native seed mixes, three landscape screening areas consisting of trees and shrubs will also be installed in accordance with the proposed landscape screening plan for the site (Appendix 4).

The seed mixes designed for the Project Site include species targeted to the mesic or wet portions of the moisture gradient but also include species that extend into adjacent soil moisture categories. The overlap in the distribution of the seed mix species along a soil gradient allows the

Contractor to seed at a location that is the average boundary between the two soil units, rather than follow the mapped boundary. While soil mapping indicates the general location of different soil types, it is most accurate at a soil unit's center and least accurate at its boundaries. Soil units can be used to guide the planting of seed mixes, in this case related to soil moisture conditions in the different soil types. At the edges of the soil unit, however, microtopography and past land uses increase the variability in the location of the soil unit boundary. In drained agricultural landscapes, the soil unit boundary from hydric to non-hydric often shifts slightly downhill in unpredictable ways. Even in undisturbed settings, there is not an exact correspondence between the edge of a soil unit and the edge of a plant community. Moreover, the distribution along moisture gradients of plant species in a seed mix is highly variable. Some species reach peak abundance in the mesic portion of the soil moisture gradient, some in the wet-mesic portion, and some in the wet portion—but in all cases the distribution of species in the mixes extends into adjacent soil moisture categories.

Seeding by following the mapped soil unit boundary will not increase in a measurable way the success of a seed mix installation and, moreover, is not a cost-effective method to install seed in any restoration project, regulated or not. Adding costs to seed installation where that affords no measurable benefit in outcomes is a disincentive to using native seed and establishing beneficial habitat plantings at solar energy facilities.

4.1 Seed Bed Preparation

Prior to application of the seed mixes to the Project Site, the seed bed will be prepared to ensure successful propagation and survival of the desired plants on the Project Site. Seeding of permanent vegetation can only occur after all grading, construction activities, and Project Site preparations are completed.

To prepare the site for effective native seeding, any listed weeds (Appendices 5 and 6) located within the area to be seeded should be treated with an approved herbicide (see Section 5.1.2). Areas planned to be planted with the Wet Mix are primarily comprised of the invasive reed canary grass (*Phalaris arundinacea*). To ensure success of the newly planted wet areas, reed canary grass would ideally be sprayed with herbicide, then mowed to remove existing dead biomass. A second herbicide treatment would occur in these areas after mowing to ensure all reed canary grass is killed prior to seeding. Soil disturbance activities in these wet areas should also be avoided after the spraying to minimize creating root-cuttings of the reed canary grass rhizomes or otherwise bringing reed canary grass seeds to the surface to germinate.

Following soil disturbing activities, any compacted areas, such as the laydown areas, or heavily travelled corridors and portions of the access road corridors that were used as temporary roadbeds will be decompacted. Decompaction should be performed with chisel plows, rippers, or tillers depending on the depth and severity of the compaction. When necessary, decompaction should be followed by disking to prepare a smooth, moist, and evenly textured soil surface. Areas that are not compacted and areas that will be planted with the wet seed mix should be avoided during decompaction activities to preserve the soil structure and biology and prevent re-planting weed seeds that remain on the soil surface.

4.2 Site Seeding

4.2.1 Array and Border Areas

Xcel Energy has developed seed mixes that can be utilized for the shaded array area and the open border area. Utilizing a single mix will significantly simplify the seeding process for the Contractor on a large site, and will also help to simplify long term monitoring goals for the Project—as opposed to using separate mixes for the array and Project periphery—while still providing significant pollinator benefits. A practicable effort will be made for genetic source origin of all native seed to be local, ideally from within a 200-mile radius of the Project Site, and plant species should be native to Sherburne County (considerations of range shifts due to climate change may modify this guidance). Species will be true to their scientific name as specified in Appendix 2. Any species eliminations, substitutions, or source origin exceptions must be approved by Xcel Energy prior to installation. If planted in the spring, seeds will have been properly stratified and/or scarified to break seed dormancy. All legumes will be inoculated with proper rhizobia at the appropriate time prior to planting.

The protocol for installing the native seed mixes is dependent on the time of the completion of construction. The following recommendations should be considered before planting occurs. Alternative plans that still meet vegetative cover requirements per National Pollutant Discharge Elimination System ("NPDES") rules and Xcel Energy's pollinator scorecard goals may also be considered and approved between Xcel Energy and the Contractor. Guidance is provided below on the timing of seeding and cover cropping. Pounds per acre may be adjusted based on soil conditions and site assessments at the time of planting.

- The best method for establishment of native seed mixes is fall dormant seeding (approximately after November 1 but before the soil starts to freeze) with no additional cover crop added. It is recommended that native seed mixes should include 30 pounds per acre pure live seed ("PLS") winter wheat to provide a cover crop for the following year. MNDNR recommends that a fall dormant seeding occur after soil temperatures fall below 50 degrees Fahrenheit for a consistent period of time.
- If construction is completed in spring, and with sufficient time for seeding to occur from the time when the soil is free of frost and in a workable condition to June 30, it is recommended that native seed mixes should include 20 pounds per acre PLS of oats (*Avena sativa*) as a cover crop. MNDNR recommends that a spring seeding occur after the soil temperature is 60 degrees Fahrenheit or higher.
- If construction is completed in summer, allowing for seeding between July 1 and August 15, it is recommended that the Project Site should be seeded immediately with 15 pounds per acre PLS of oats and 15 pounds per acre PLS of spring wheat (*Triticum aestivum*) to stabilize the soil and prevent erosion.
- If construction is completed in late summer or early fall, with sufficient time for seeding between August 16 and October 31, it is recommended the Project Site should be seeded immediately with 20 pounds per acre PLS of winter wheat to stabilize the soil and prevent erosion.

- The challenges of a large solar site may require that the seeding windows and cover crops described above be adjusted to achieve the desired planted acreage at the correct time relative to the construction schedule.
- In the same year as construction is completed, if it was necessary to stabilize the site with a cover crop, the native seed mixes will be installed as a fall dormant seeding with no additional cover crop added.
- Alternatively, a spring seeding can be carried out in the year after a late fall completion of construction. If a cover crop was installed during the growing season once construction was completed, native seed mixes must be installed that same year in a fall dormant seeding.

Seeding may be conducted with a seed drill and/or by broadcast seeding; the Contractor will evaluate the site and determine which technique will produce the best results given site conditions and the timing of seeding relative to the construction schedule. If broadcast seeding is used, the Contractor is responsible for ensuring good seed-to-soil contact.

4.3 Stormwater Basins

Xcel Energy will install stormwater basins as needed to meet stormwater best management practice requirements per NPDES regulations for the Project. Once constructed, these basins will be vegetated in order to help control erosion, following the same timing protocol as described above. Dry stormwater basins will be seeded throughout the basin using the Mesic or Wet-Mesic Mix, depending on the predicted volume of water and length of inundation expected for the basin. Wet stormwater basins will be seeded from the top of the basin to one foot below the anticipated water line using the Wet Mix. In most cases, it is recommended that stormwater basins will be installed with a seed drill. If broadcast seeding is used, the Contractor is responsible for ensuring good seed to soil contact and timing the seeding so that the seed is not washed away by precipitation events. Remediation seeding may be required if the seeding is compromised by unexpected precipitation. Visual Screening Area Plantings

4.4 Pesticide Drift

During the establishment phase, Xcel Energy will contact each owner of land surrounding the Project Area that is not separated from the Project Area by a public road right-of-way to inform them of the native plants planted pursuant to this Plan, the likely use of the vegetation by wildlife and pollinators and the need to avoid and minimize pesticide drift from adjacent land on the Project Area.

5. Vegetation Management Tasks

After the land is cleared and the panels are installed, a range of invasive plants are anticipated to take advantage of the open soil and abundant light and germinate across the Project Site. For the purpose of this Plan, “invasive plants” refers to both non-native species and native species that grow in an invasive manner or have the potential to negatively affect the success of the Project (Appendices 5 and 6). This list also includes noxious weeds designated in statute by the State of

Minnesota. These invasive plants must be managed effectively during the establishment phase to ensure that the planted native species are given the opportunity to flourish. The initial period of work onsite is referred to as the "establishment phase," while management after that period is called the "perpetual maintenance phase."

5.1 Establishment Phase

The first approximately three years of vegetation management will require a concerted effort to remove invasive vegetation from the Project Site while also helping the planted native vegetation to establish. General tasks described below are recommended, while other management techniques will be used only if required by the unique conditions at the Sherco Solar facility. Alternative methods may be employed, and this plan updated, should Xcel Energy and the Contractor mutually agree that the methods will successfully meet NPDES, pollinator scorecard goals, and weed control.

5.1.1 General Tasks for Managing Vegetation

Establishment Year 1. The first year of establishment is focused on consistent invasive plant control on a site-wide basis. Mowing during the first year should prevent invasive plants from adding new seeds to the soil and begin to exhaust the soil seed bank (a process that often requires several years to complete). Beginning June 1 of the first establishment year, it is recommended that developing vegetation be mowed to a height of 6-9 inches when vegetation reaches a height of approximately 18-24 inches. Mowing in wet areas will also be limited to periods when the wet areas are not susceptible to rutting or compaction. Spot-spraying, use of a swing arm, brush saws, weed whips or similar equipment may be used in wet areas as necessary to prevent soil damage when the soils are wet.

It is recommended that weeds in the landscape screening areas be spot sprayed, weed whipped or hand weeded during the establishment phase to control invasive plants because attempting to mow between the landscaping plants will likely be difficult and may lead to unanticipated damages to the new plants.

Regular evaluations of the plantings will be conducted during the growing season (May to September) to determine the appropriate treatment techniques to use and the timing of those treatments . Invasive species should be treated prior to such plants flowering or seeding.

Repeated mowing may produce a buildup of organic thatch, which discourages the development and persistence of diverse native vegetation. To help prevent thatch buildup onsite, mowing may be conducted with a flail-type mower to mulch the cut vegetation, or the Project Site may be hayed so that cut vegetation is removed. A swing arm specifically designed for mowing under solar panels can make for efficient mowing of the site. Spot-mowing with brush saws, weed whips, and similar equipment could also be successfully implemented. Alternative mowing techniques may also be approved by Xcel Energy prior to the start of work if they also minimize thatch buildup. Mowing equipment will be cleaned prior to use onsite to prevent the introduction and spread of invasive and non-native species.

Establishment Year 2. The second year of establishment continues invasive plant control but generally employs more targeted techniques. It is recommended that vegetation be mowed to a height of 6-9 inches occur when vegetation height reaches approximately 18-24 inches.

Spot-mowing may also be employed to treat specific problem areas as needed. Noxious and perennial weeds will be treated with spot-herbicides necessary to achieve performance standards. It is recommended that mowing in wet areas be limited to those periods of time when the areas are not susceptible to rutting or compaction. Spot-spraying, use of a swing arm, brush saws, weed whips or similar equipment may be used in wet areas as necessary to prevent soil damage when the soils are wet.

Regular evaluation of vegetation will be conducted during the growing season (May to September) to determine the appropriate treatment techniques to use and the timing of those treatments. In any event, invasive species should be treated prior to such plants flowering or producing seeds.

The landscape screening areas may be spot sprayed, weed whipped or hand weeded during the establishment phase to control invasive plants because mowing between the landscaping plants will likely be difficult and may lead to unanticipated damages to the new screening.

Establishment Year 3. In the third year of the establishment phase, invasive plant control should consist of spot-herbicide treatment to control the remaining small patches of persistent weeds. Efforts should be focused on achieving the required performance standards (described below). Additional onsite treatment with spot-mowing or hand weeding may be employed at the discretion of the Contractor.

Mowing to a height of 6-9 inches is recommended in fall when native plants have gone dormant. Mowed vegetation may be raked, baled, and removed to prevent the buildup of organic thatch, which will discourage the development and persistence of diverse native vegetation. If vegetation removal is not achievable, mowing should be conducted with a flail-type mower to finely chop plant material and accelerate decomposition.

5.1.2 Prescribed Treatment for Common Invasive Species

Invasive plant species may be present based on the makeup of the seed bank and the seed inputs from the surrounding environment, so management must be flexible and respond to the specific needs of the Project Site. This Plan describes common techniques to manage a variety of invasive plants and common weeds growing in Minnesota, but not every technique will be required. In the establishment period, regular evaluations of the plantings will be conducted, during the growing season (May to September) to determine the appropriate treatment techniques prior to such plants flowering or producing seeds. Management techniques for five categories of weeds are described below.

The Contractor is required to have the botanical expertise to correctly identify plant species and know the difference between species that must be removed, and similar native species being established.

5.1.2.1 Annual Weeds

Annual weeds include all unwanted species that grow for a single year, set seed, and die. Common annual weeds include grasses like barnyard grass (*Echinochloa crus-galli*), witchgrass (*Panicum capillare*), fall panicum (*P. dichotomiflorum*), and foxtails (*Setaria* spp.), and broadleaf weeds like lambsquarters (*Chenopodium* spp.), velvetleaf (*Abutilon theophrasti*), Pennsylvania smartweed (*Polygonum pensylvanicum*), and black nightshade (*Solanum nigrum*) (University of Minnesota, 2018).

Mowing and treatment techniques recommended under Section 5.1.1 can be successfully utilized to slow annual weed growth.

5.1.2.2 Minnesota Department of Agriculture Noxious Weeds

The Minnesota Department of Agriculture ("MDA") maintains a list of noxious weeds in the state which must be controlled (Appendix 5; MDA, 2021). All species of noxious weeds present at Xcel Energy will be treated by mowing, herbicide, or a combination of both methods, with the intention of preventing the weeds from setting seed or spreading by rhizomes, stolons, or other vegetative means.

5.1.2.3 Perennial Weeds

Perennial weeds include all unwanted species that persist for two or more years after germination, from biennials to those that live for many years. Many of these weeds greatly diminish during the establishment phase with proper maintenance, but several require special attention due to their highly competitive behavior. These include grasses like Kentucky bluegrass (*Poa pratensis*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), and several species of bromes, especially smooth brome (*Bromus inermis*). Broadleaf weeds in this category include sweet clovers (*Melilotus alba, M. officinalis*), crown vetch (*Securigera varia*), birdsfoot trefoil (*Lotus corniculatus*), Canada thistle (*Cirsium arvense*), and spotted knapweed (*Centaurea stoebe*). A list of common Minnesota perennial weeds that colonize former cropland and compete with native vegetation (in addition to the listed noxious weeds) is provided in Appendix 6.

Mowing and treatment techniques recommended under Section 5.1.1 can be successfully utilized to slow annual weed growth.

5.1.2.4 Problematic Native Plants

Several native species that are present in the soil seed bank or enter the Project Site by seed rain from neighboring properties have the potential to interfere with the functioning of the solar panels. The following techniques are recommended for their removal:

- Giant ragweed (*Ambrosia trifida*) grows tall enough to shade the panels. Several native vines have the potential to overgrow installations, including wild grape (*Vitis riparia*), wild cucumber (*Echinocystis lobata*), bur cucumber (*Sicyos angulatus*), and woodbine/Virginia

creeper (*Parthenocissus* spp.). Giant ragweed, or any other native species shading the arrays, should be controlled by mowing (see above).

- If growing under or near the solar panels, wild cucumber and bur cucumber can be pulled and removed manually.
- Woody vines such as wild grape and woodbine/Virginia creeper should be cut to within one inch of the ground and the stump treated with glyphosate, triclopyr, or a comparable herbicide by a licensed applicator, following instructions provided by the manufacturer.

5.1.2.5 Woody Species

Almost all woody species on a solar project site can shade or otherwise interfere with the operation of solar panels. During the establishment phase, all woody plants potentially interfering with solar energy generation will be removed. Recommended removal techniques include mowing, applying herbicide, or a combination of both methods. All pertinent woody plants over 0.5 inches diameter at breast height ("DBH;" about 4.5 feet) will be cut to within 1 inch of the ground and the stump treated with triclopyr or a comparable herbicide by a licensed applicator, following instructions provided by the manufacturer. Cut brush will be removed from the Project site.

5.1.3 Herbicide Specifications

All herbicide treatments will be restricted to those pesticides and methods of application approved by the MDA, MNDNR, and the U.S. Environmental Protection Agency. Spraying will be conducted by certified applicators holding all necessary permits and licenses. All herbicides will be applied in accordance with the applicable regulations and the label requirements in a safe and cautious manner to avoid damaging adjacent properties. Herbicide will be applied selectively where applicable in order to avoid damaging existing native vegetation. Pre-emergent herbicides include indaziflam (trade name Esplanade) and aminopyralid/metsulfuron-methyl (trade name Opensight) or equivalent. Additionally, pre-emergent formulations are recommended to include an adjuvant such as trade name Grounded or equivalent. Approved foliar herbicides include glyphosate (trade name Aquaneat), triclopyr (trade name Garlon), and aminopyralid (trade name Milestone) or equivalent.

Pre-emergent herbicides are recommended to be applied in the spring once the temperature is above 55˚F. Foliar herbicides will be applied during the growing season as a control measure to prevent noxious weeds and invasive species from flowering or setting seed. The Contractor will have knowledge of the phenology of species to treat on site to conduct herbicide treatments at the appropriate time and will submit a schedule of planned visits each year prior to May 1.

5.1.4 Re-seeding Bare Soil

Areas of bare soil are detrimental to the successful establishment of native vegetation. Bare soil provides opportunities for the common invasive species described above to colonize and spread. Bare soil also contributes to soil loss by sheet erosion and may prevent Xcel Energy from discharging its Stormwater Pollution Prevention Plan ("SWPPP") permit in a timely fashion. If

areas of bare soil greater than 75 square feet are found onsite, re-seeding with the same seed mix as previously installed will be utilized with appropriate techniques.

5.2 Perpetual Maintenance Phase

Following the end of the Establishment Phase of vegetation management, yearly management is still necessary to promote and maintain the desired vegetation community, control the re-establishment and spread of invasive species, combat the establishment of undesirable and invading trees and shrubs, and reduce biomass/fuel load onsite. The primary tool for this management will be annual mowing. Some degree of hand weeding, spot-mowing, and/or spot-herbicide treatment may be warranted thereafter to maintain vegetation quality and achieve the Project goals (see Section 6).

The landscape screening portion of the Project will be managed separately from the general mowing areas. To keep invasive plants under control and ensure the full development of the landscape screen, inspections should be made (see Section 6) to identify the presence of noxious weeds and invasive plant species, and those species will be controlled using standard weed control techniques described in Section 5.

Landscape screens will be monitored for indications of stress and, if necessary, actions will be taken to increase the vigor of the planted trees and shrubs. This may include hand-mowing competing herbaceous vegetation within the drip line of a stressed woody plant, replenishing mulch, and watering.

5.2.1 Mowing for Perpetual Maintenance

Annual mowing to a height of 6-9 inches is recommended each fall when native plants have gone dormant. Mowed vegetation may be raked, baled, and removed to prevent the buildup of organic thatch, which will discourage the development and persistence of diverse native vegetation. If vegetation removal is not achievable, mowing should be conducted with a flail-type mower to finely chop plant material and accelerate decomposition. At the discretion of Xcel Energy, each solar array may be subdivided into management units that will be mowed on a rotational basis to allow overwintering insects to complete their life cycles and provide winter cover for other wildlife. Implementation of rotational mowing will depend on the rate of weed and woody plant invasion detected during annual inspections.

6. Monitoring and Adaptive Management

6.1 Monitoring Protocol

In order to ensure that the native plantings persist for the Project lifetime, vegetation monitoring at Sherco Solar will occur regularly during the establishment phase (Years 1-3) and annually thereafter over the lifetime of the Project. Prior to planting, the necessary duration for the establishment and perpetual maintenance phases of the Project will be determined with the Contractor.

The monitoring protocol will be developed to meet the reporting necessary for the Project to remain certified in terms of the BWSR scorecard. Survey protocol will be established in coordination between Xcel Energy and a qualified monitor and in accordance with best practices at the time of the survey.

6.2 Targets and Projected Outcomes

Vegetation management should result in a diverse plant community dominated by native species, as envisioned in the planting plans. Permits and regulations impose additional requirements on the final quality and performance of native plantings.

6.2.1 Native Vegetation Targets

By the end of the first growing season of the vegetation establishment phase, at least 80 percent of the Project Site will be vegetated. In order to discharge the SWPPP permit for the Project Site, the Project Site must be covered with uniform perennial vegetation at 70 percent of the historic native vegetative cover. On sandy sites, native vegetative cover is lower than on loamy sites and the vegetation target should be adjusted accordingly. The Contractor will endeavor to achieve this by the end of the first growing season and must achieve this in the second growing season. By the end of the third growing season following vegetation installation, the groundcover must meet the BWSR scorecard requirements to be re-certified as solar pollinator friendly. In the visual screening area, woody plant survival at the end of the establishment phase will be at least 80 percent.

6.2.2 Noxious Weeds and Problem Plants

All Minnesota prohibited noxious weeds and other problem plants (Appendices 5 and 6) will be treated repeatedly with herbicide and mowed where appropriate at a frequency sufficient to prevent seed set and remove target weeds over time. Each treatment will show evidence of at least 90 percent of the target vegetation having been affected by herbicide or removed. Two weeks after treatment, at least 95 percent of all herbicide treated plants will be dead or dying within any 100 square foot area.

By the end of the vegetation establishment phase (approximately 36 months after vegetation installation), all prohibited noxious and other problem plants will not exceed 5 percent aerial cover within any 100 square foot area across the Project Site.

6.3 Reporting

Since the Project is committed to achieving Habitat Friendly Solar status, specific reporting requirements are necessary to maintain project compliance. At the end of the third year of vegetation establishment (by December 31) for the Project, and every three years afterwards, a qualified professional with sufficient botanical experience identifying native plants, native plant communities, invasive species, and non-native species typical of Minnesota, must complete the *Established Project Assessment Form (updated 05-2020).* The form, along with photo-point records (site images showing the current vegetation take at fixed points and revisited throughout the duration of the Project), will be submitted to local government staff who have approval

responsibilities for the project or other BWSR-designated representatives. By submitting these materials, the Project will stay on the list of projects meeting habitat friendly solar requirements and enables the Project to be promoted as such. If the Project has significant issues, Xcel Energy will coordinate with BWSR to ensure the Project can remain on the list of projects meeting the standards.

The Habitat Friendly Solar reporting will include:

- A summary of site conditions and management activities to meet management objectives by management area/unit.
- Description of adaptive management actions implemented to meet management objectives.
- Description of management challenges (inclement weather events, staffing, etc.) and how these management challenges hindered establishment of the species in the seed mix for the site.
- Description of any barriers or challenges that may influence success.

6.4 Adaptive Management

The monitor responsible for achieving and maintaining BWSR habitat friendly certification will produce a report for Xcel Energy at iterations that align with submittal of the Established Project Assessment Form. A report will also be generated for each of the first three years of operation. The report will summarize the status of the vegetation established on site and should identify hazards encountered during the year. This report will address problem areas and plan targeted remediation efforts for the upcoming growing season, including altering the timing or extent of mowing or herbicide application, adjusting the rate or formulation of herbicide applied, or conducting targeted overseeding of appropriate seed mixes as needed. The report will also record the presence and location of any noxious or invasive weeds to be treated, which will both guide the Contractor and document changes in the vegetation establishment and management approach over time. This protocol will ensure that timely management activities reflect reporting from the previous growing season and address small issues before they become more serious or extensive.

6.5 Project Administration

Administrative responsibilities under this Plan will be undertaken by the following individuals and companies. Contact information for each person and entity will be updated prior to initiation of this Plan and will be revised, as necessary. The Field Representative for Xcel Energy has primary responsibility for the activities associated with this Plan. All communications associated with this Plan should be directed to the Field Representative. The qualified inspector is solely serving the role of a monitor and reporter under this Plan and has no authority to direct the work of the Contractor or any others working on the Project. Any issues or concerns noted by the inspector should be directed to the Field Representative and the Contractor.

The Field Representative for Xcel Energy is:

Name: _____

Title: _____

Phone: _____

Address: _____

_____

E-mail: _____

The Contractor that will complete and oversee the installation and management activities prescribed in this Plan is: _____ and its Project manager is:

Name: _____

Title: _____

Phone: _____

Address: _____

_____

E-mail: _____

The Qualified Inspector that will conduct monitoring activities in accordance with this Plan is:

Name: _____

Title: _____

Phone: _____

Address: _____

_____

E-mail: _____

6.6 Construction Plan Specifications.

Detailed civil construction plans are attached to this Plan as Appendix 7.

7. References

Minnesota Board of Water and Soil Resources ("BWSR"). 2020. Minnesota Habitat Friendly Solar Program. Accessed March 2021 at https://bwsr.state.mn.us/minnesota-habitat-friendly-solar-program.

BWSR. 2021. Minnesota Habitat Friendly Solar Program, List of Project that Meet the Standards, March 2021. Accessed March 2021 at List of HFS Sites 2_25_2021.pdf (state.mn.us).

Minnesota Department of Agriculture ("MDA"). 2021. Minnesota Noxious Weed List. Accessed March 2021 at https://www.mda.state.mn.us/sites/default/files/docs/2021-02/2021NoxiousWeedListFactsheetV2.pdf.

Minnesota Department of Commerce, Division of Energy Resources, Energy Environmental Review and Analysis. 2021. Guidance for Developing a Vegetation Establishment and management Plan for Solar Facilities. Accessed March 2021 at https://mn.gov/eera/web/project-file/11702/.

University of Minnesota. 2018. Common annual weeds. Accessed February 2021 at https://extension.umn.edu/weed-management/weed-identification

Figures

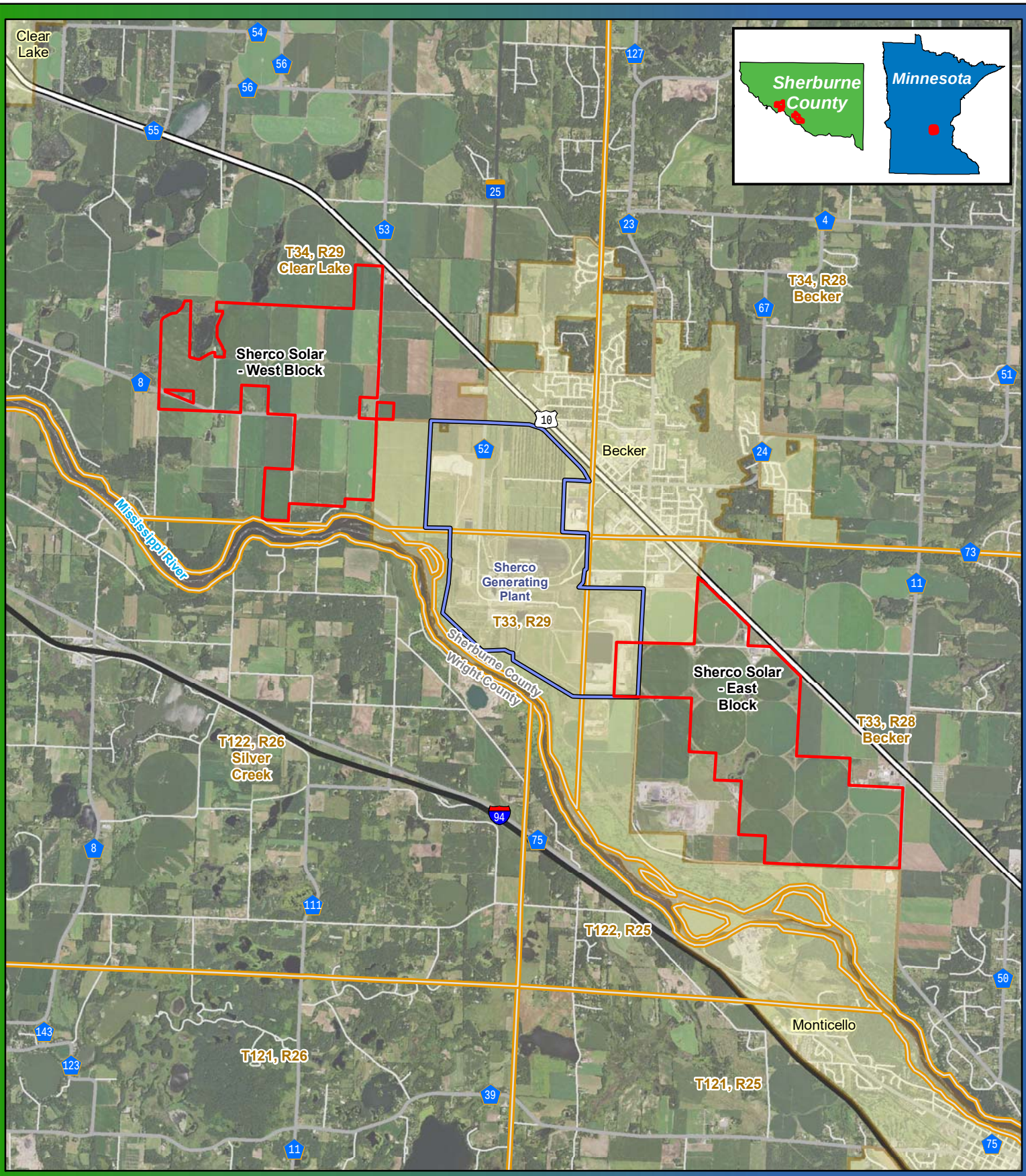

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Figure 1
Solar Project Location
Sherco Solar Project
Sherburne County, MN

- Solar Project Area
- Sherco Generating Plant
- City/Town
- PLSS Township

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brian.schreurs Date: 4/13/2021

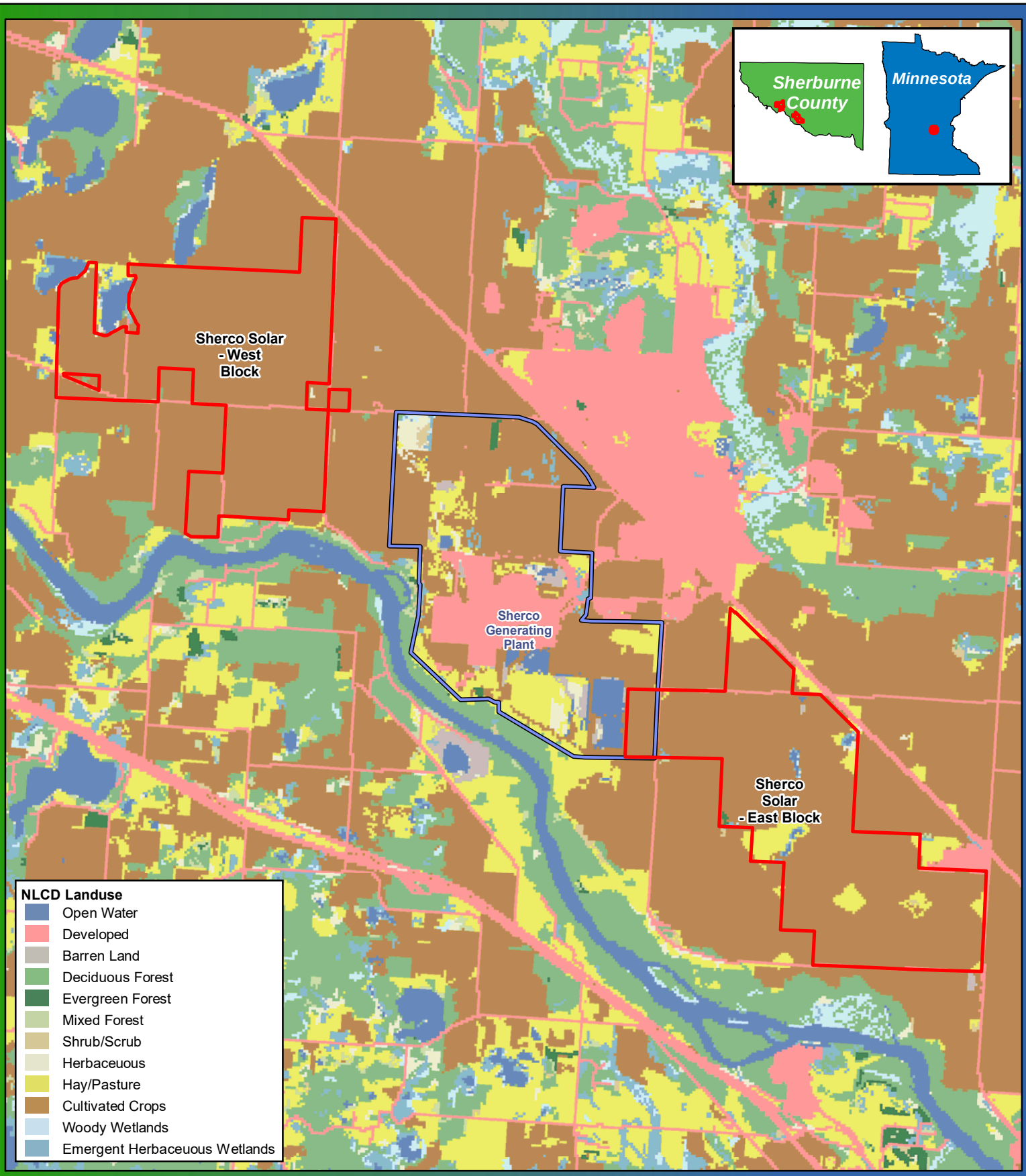

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Figure 2
Existing Conditions - Vegetation and Land Use
Sherco Solar Project
Sherburne County, MN

Solar Project Area
Sherco Generating Plant

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Date: 4/13/2021

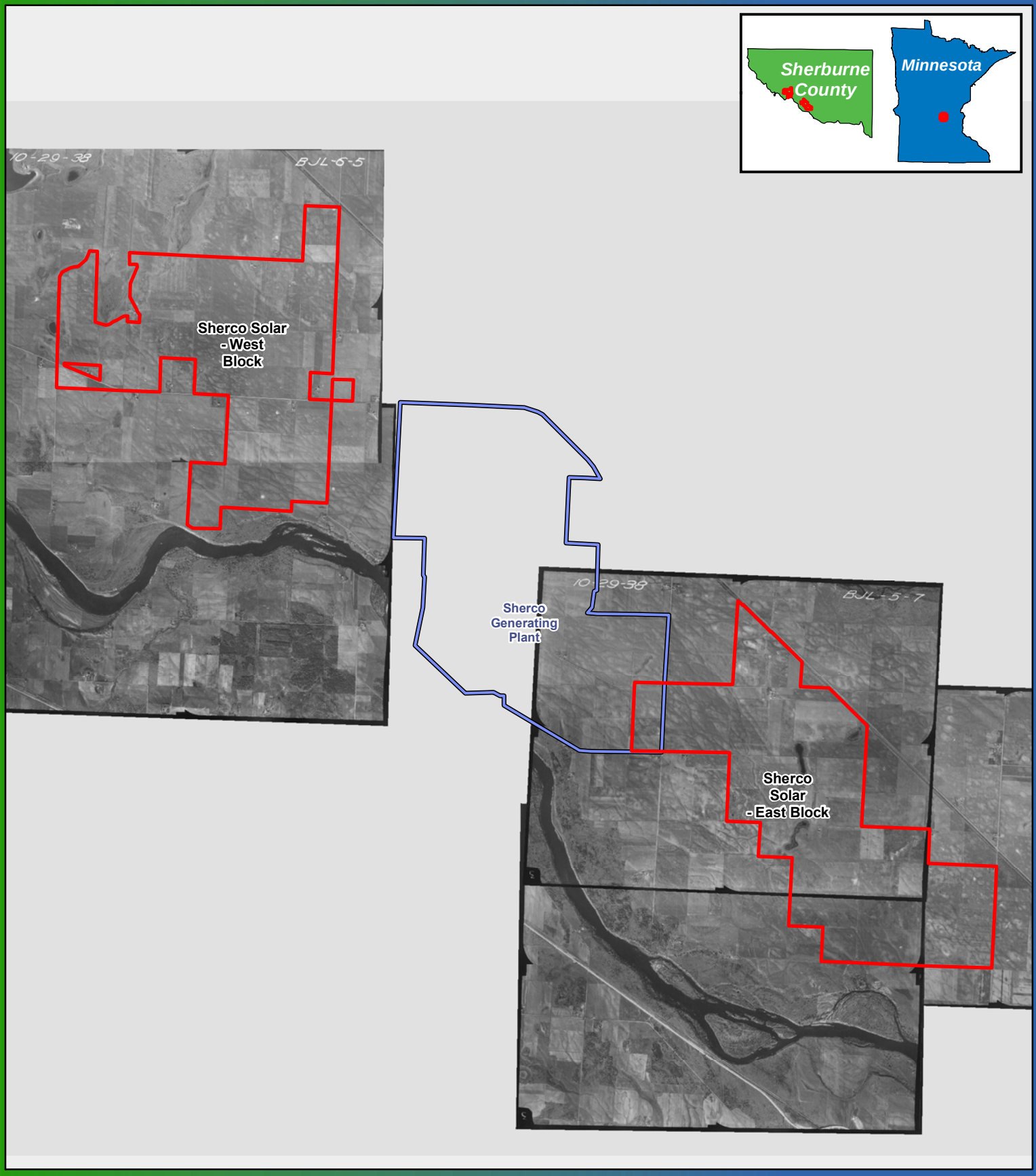

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Figure 3a
Historic Aerial Photograph (1938)
Sherco Solar Project
Sherburne County, MN

Solar Project Area

Sherco Generating Plant

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brian.schreurs Date: 4/13/2021

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Figure 3b
Historic Aerial Photograph (1957)
Sherco Solar Project
Sherburne County, MN

Solar Project Area

Sherco Generating Plant

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brian.schreurs Date: 4/13/2021

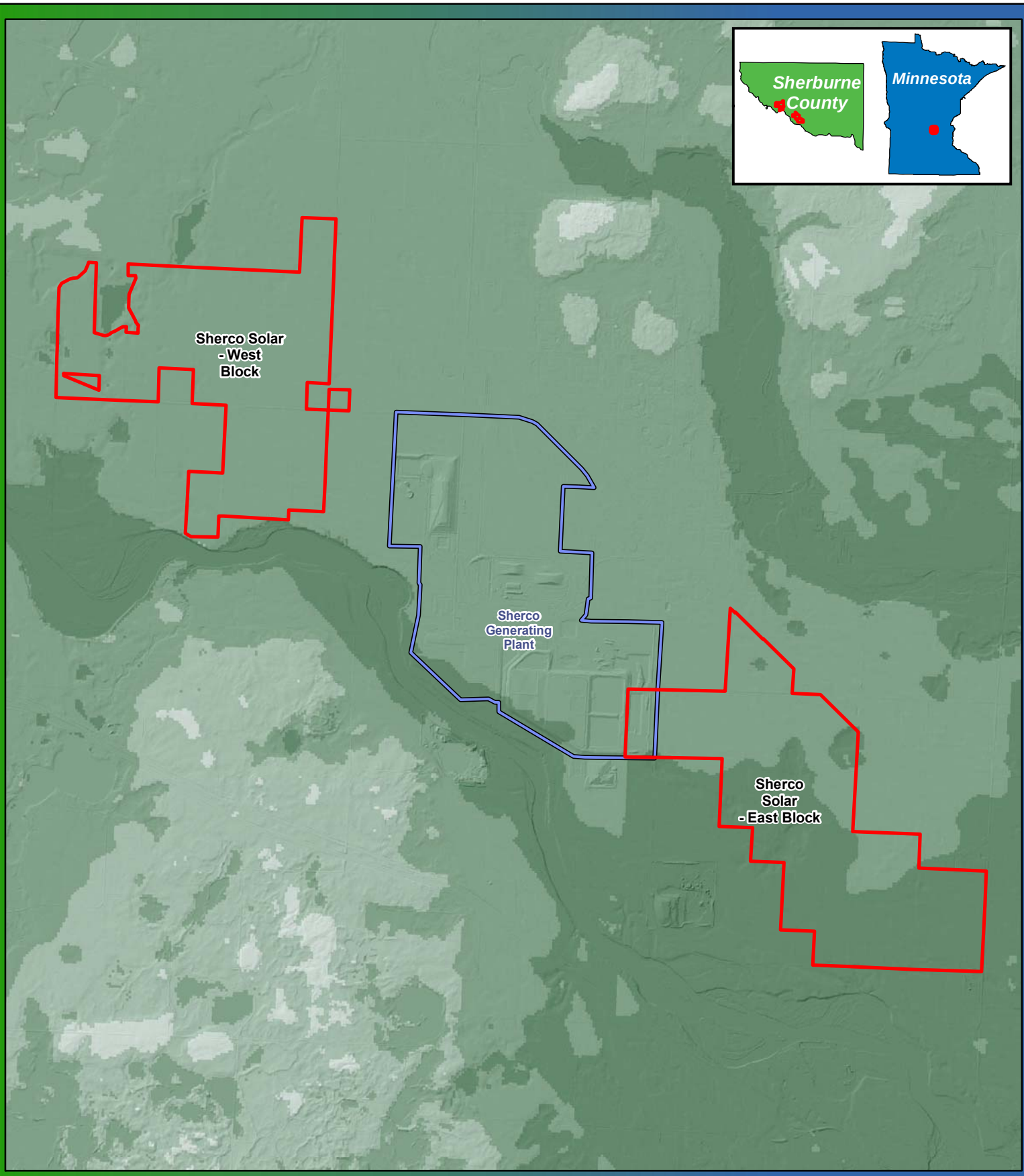

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Figure 4
Existing Conditions - Topography
Sherco Solar Project
Sherburne County, MN

Solar Project Area

Sherco Generating Plant

Elevation (feet)

881 - 956

956 - 985

985 - 1,023

1,023 - 1,105

Document Path: Z:\Clients\E_H\Geronimo\Sherco\Project_Data\Fig_VMP_04_Topograhy.mxd

Date: 4/13/2021

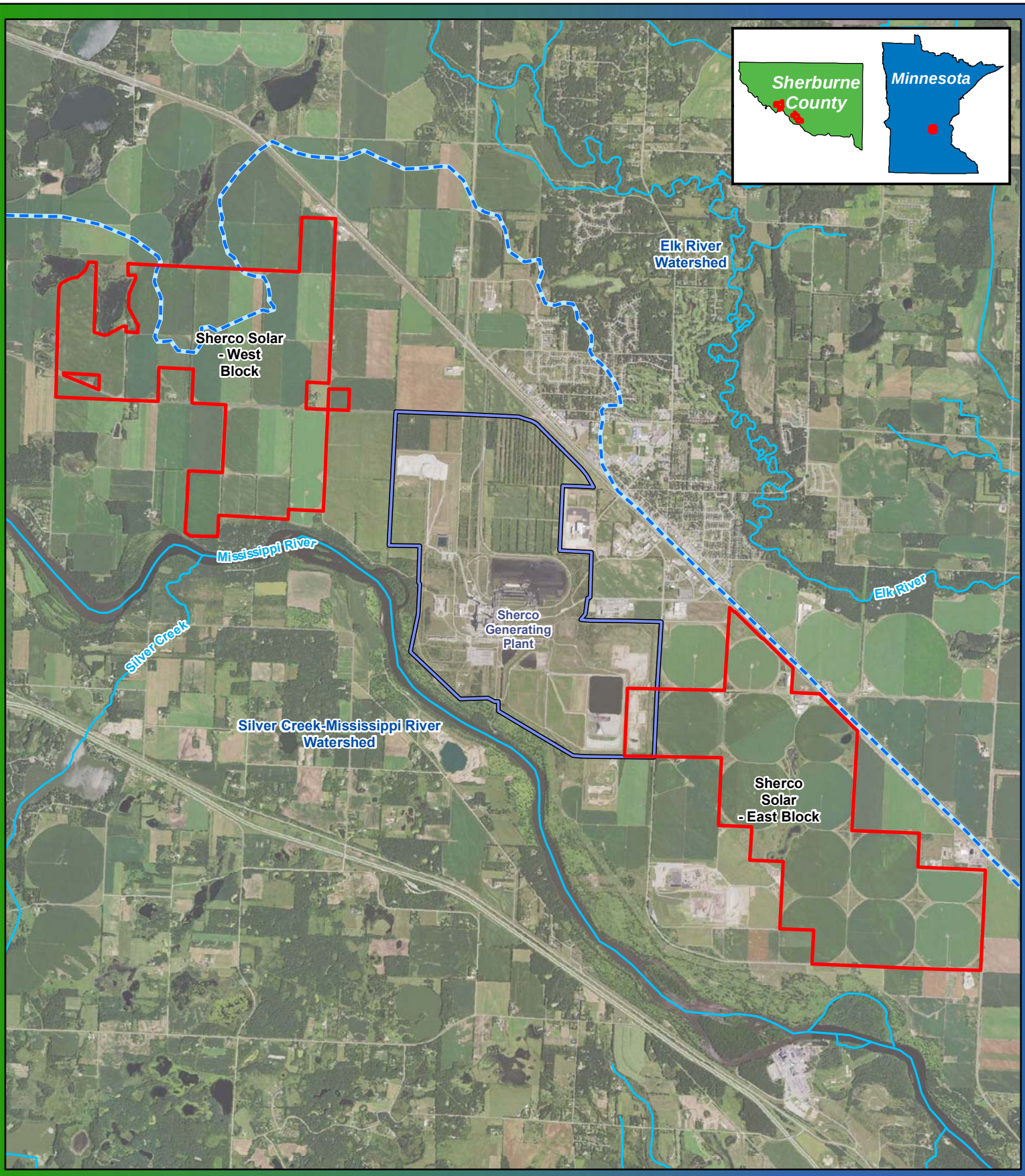

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Figure 5
Minor Watershed
Sherco Solar Project
Sherburne County, MN

- Solar Project Area
- Sherco Generating Plant
- NHD Named Stream
- Watershed Boundary (10 digit)

Document Path: Z:\Clients\E_H\Geronimo\Sherco\Project_Data\Fig_VMP_05_Minor_Watershed.mxd

brian.schreurs Date: 4/13/2021

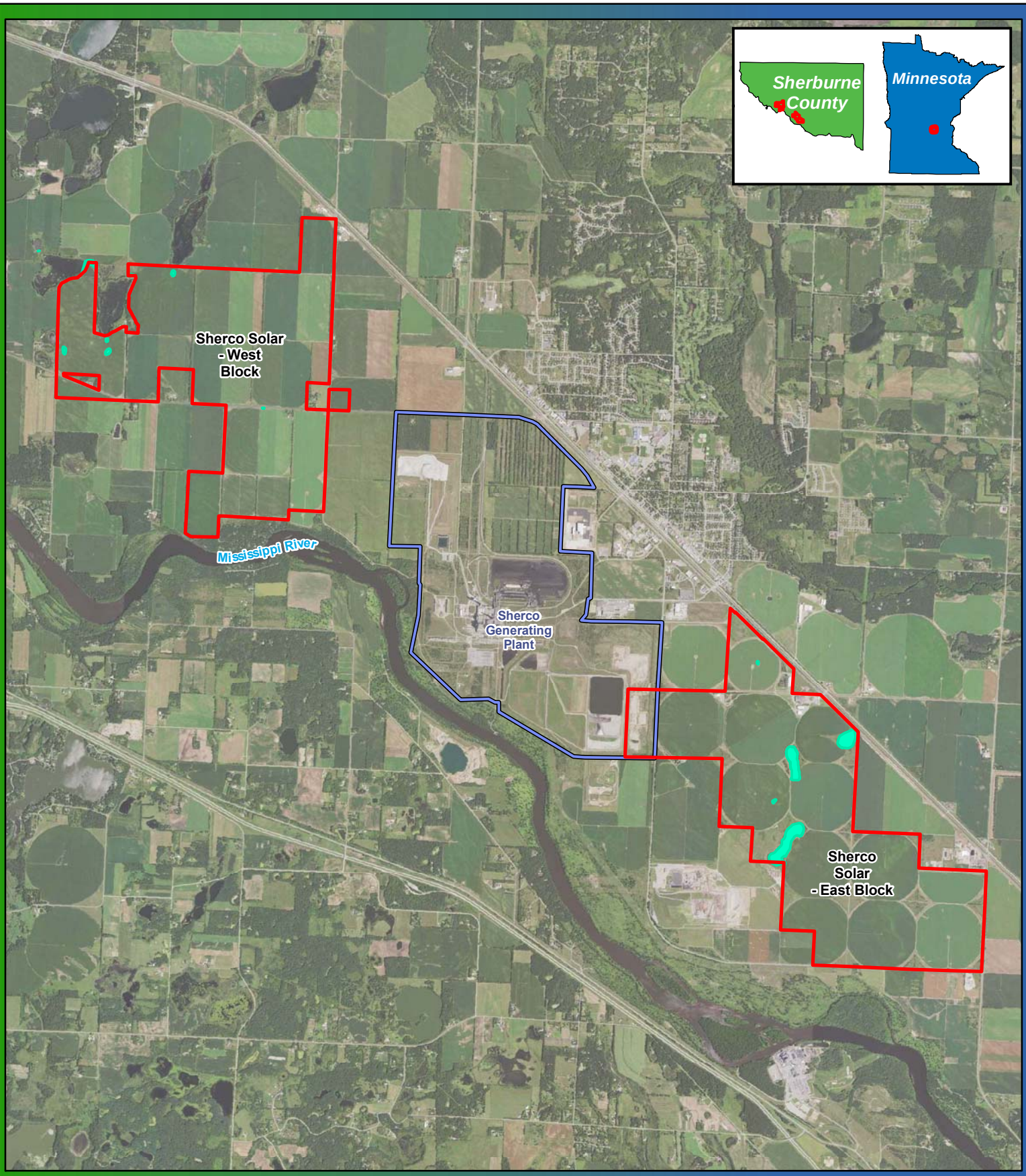

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Figure 6
Delineated Wetlands
Sherco Solar Project
Sherburne County, MN

Solar Project Area
Sherco Generating Plant
Delineated Wetlands

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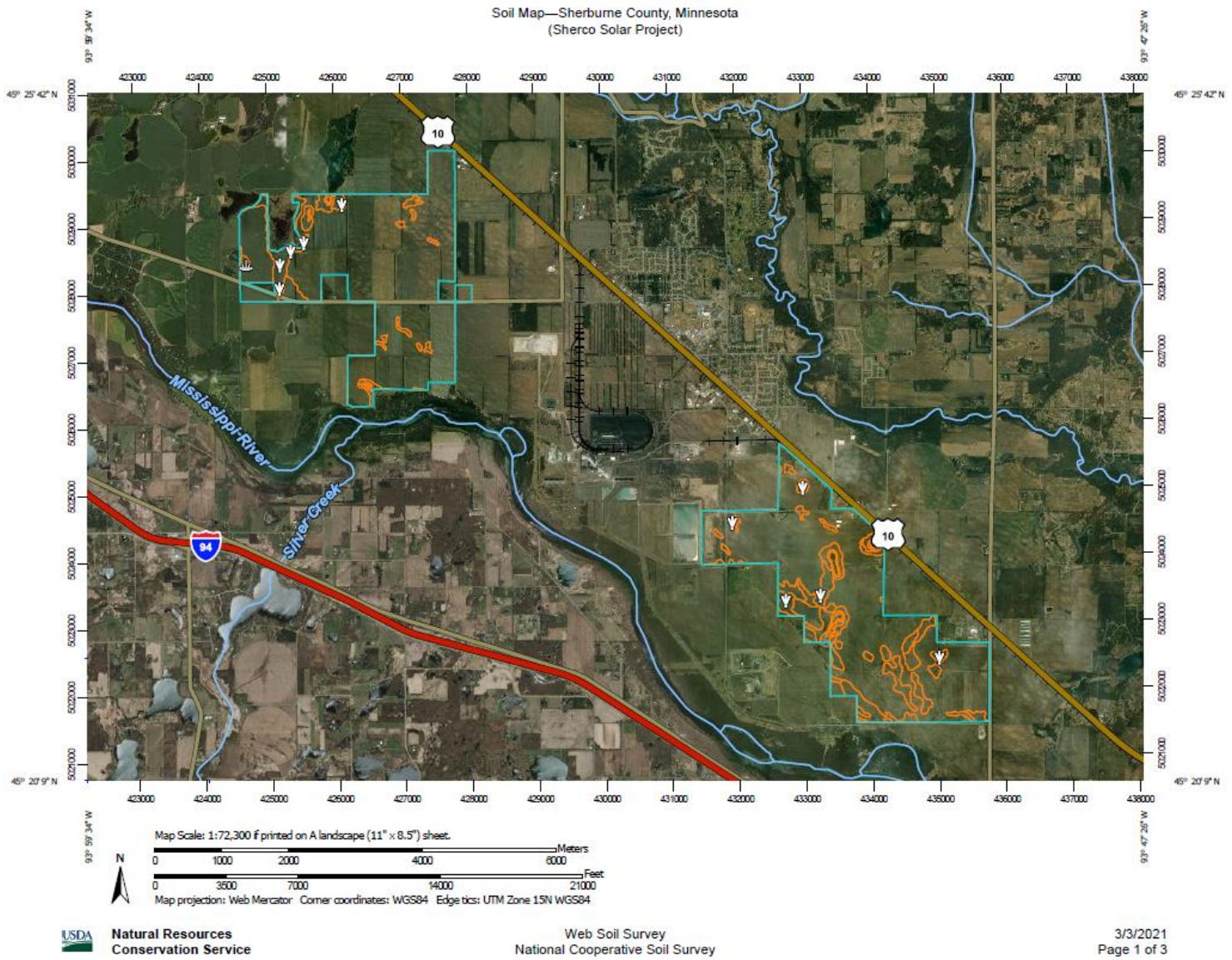
brian.schreurs Date: 4/13/2021

Appendix 1. NRCS Soils Map



Soil Map—Sherburne County, Minnesota
(Sherco Solar Project)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sherburne County, Minnesota
Survey Area Data: Version 18, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 19, 2014—May 4, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
258B	Sandberg loamy sand, 1 to 6 percent slopes	47.5	1.4%
258C	Sandberg loamy sand, 2 to 12 percent slopes	11.9	0.3%
258E	Sandberg loamy coarse sand, 6 to 30 percent slopes	3.0	0.1%
260	Duelm loamy sand, 0 to 2 percent slopes	2.8	0.1%
261	Isan sandy loam, depressional, 0 to 1 percent slopes	19.3	0.6%
708	Rushlake coarse sand, 1 to 4 percent slopes	2.1	0.1%
768	Mosford sandy loam, 0 to 2 percent slopes	5.8	0.2%
1028	Udorthents-Pits, gravel, complex	3.7	0.1%
1223	Sandberg-Arvilla complex, 0 to 3 percent slopes	9.1	0.3%
1288	Seelyeville-Markey complex, ponded, 0 to 1 percent slopes	16.3	0.5%
D20A	Isan-Isan, frequently ponded, complex, 0 to 2 percent slopes	1.3	0.0%
D62A	Hubbard-Mosford complex, Mississippi River Valley, 0 to 3 percent slopes	2,940.5	84.5%
D67A	Hubbard loamy sand, 0 to 2 percent slopes	52.4	1.5%
D67B	Hubbard loamy sand, 1 to 6 percent slopes	173.5	5.0%
D67C	Hubbard loamy sand, 2 to 12 percent slopes	192.6	5.5%
Totals for Area of Interest		**3,481.8**	**100.0%**

Appendix 2. Seed Mixes and Plants for Sherco Solar

Mesic Array Mix (for upland areas)

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
Bouteloua curtipendula	Sideoats grama	24.00	1.50	17.6	3.3
Bouteloua hirsuta	Hairy grama	1.50	0.09	1.1	2.4
Carex bicknellii	Bicknell's sedge	1.00	0.06	0.7	0.4
Carex brevior	Short beak sedge	2.00	0.13	1.5	1.3
Carex molesta	Field oval sedge	1.75	0.11	1.3	1.0
Elymus canadensis	Canada wild rye	30.00	1.88	22.1	3.6
Elymus trachycaulus	Slender wheatgrass	22.00	1.38	16.2	3.5
Festuca rubra ssp. *rubra*	Red fescue	12.00	0.75	8.8	9.5
Schizachyrium scoparium	Little bluestem	13.00	0.81	9.6	4.5
Sporobolus cryptandrus	Sand dropseed	0.75	0.05	0.6	3.4
	Total Graminoids	**108.00**	**6.75**	**79.4**	**32.9**
Achillea millefolium	Yarrow	0.50	0.03	0.4	2.0
Asclepias syriaca	Common milkweed	6.00	0.38	4.4	0.6
Chamaecrista fasciculata	Partridge pea	8.00	0.50	5.9	0.5
Dalea purpurea	Purple prairie clover	2.50	0.16	1.8	1.0
Drymocallis arguta	Prairie cinquefoil	0.50	0.03	0.4	2.6
Geum canadense	White avens	1.00	0.06	0.7	0.6
Monarda punctata	Spotted beebalm	0.50	0.03	0.4	1.0
Oligoneuron rigidum	Stiff goldenrod	1.25	0.08	0.9	1.2
Penstemon grandiflorus	Large beardtongue	1.50	0.09	1.1	0.5
Rudbeckia hirta	Black-eyed Susan	2.50	0.16	1.8	5.3
Solidago nemoralis	Gray goldenrod	0.25	0.02	0.2	1.7
Symphyotrichum ericoides	Heath aster	0.25	0.02	0.2	1.1
Symphyotrichum oolentangiense	Sky-blue aster	0.50	0.03	0.4	0.9
Verbena stricta	Hoary vervain	1.25	0.08	0.9	0.8
Zizea aptera	Heart-leaved alexanders	1.50	0.09	1.1	0.4
	Total Forbs	**28.00**	**1.75**	**20.6**	**20.4**
	Total	**136.00**	**8.50**		**53.3**

Wet-Mesic Mix (used beneath the panels in wetter areas)

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
Carex molesta	Field oval sedge	2.50	0.16	2.0	1.4
Carex scoparia	Broom sedge	1.00	0.06	0.8	1.9
Carex vulpinoidea	Fox sedge	1.00	0.06	0.8	2.3
Elymus canadensis	Canada wild rye	26.00	1.63	20.3	3.1
Elymus villosus	Silky wild rye	6.00	0.38	4.7	0.8
Elymus virginicus	Virginia wild rye	40.00	2.50	31.3	3.9
Glyceria striata	Fowl manna grass	1.50	0.09	1.2	5.5
Leersia oryzoides	Rice cut grass	2.50	0.16	2.0	2.0
Muhlenbergia mexicana	Leafy satin grass	1.50	0.09	1.2	6.0
Poa palustris	Fowl bluegrass	2.00	0.13	1.6	6.0
Schizachyrium scoparium	Little bluestem	12.00	0.75	9.4	4.1
	Total Graminoids	**96.00**	**6.00**	**75.0**	**37.0**
Anemone canadensis	Canada anemone	2.00	0.13	1.6	0.4
Asclepias incarnata	Swamp milkweed	4.00	0.25	3.1	0.4
Asclepias syriaca	Common milkweed	4.00	0.25	3.1	0.4
Bidens cernua	Nodding bur marigold	2.50	0.16	2.0	1.2
Desmodium canadense	Showy tick trefoil	4.00	0.25	3.1	0.5
Euthamia graminifolia	Grass-leaved goldenrod	0.50	0.03	0.4	4.0
Geum canadense	White avens	2.00	0.13	1.6	1.1
Lobelia siphilitica	Great blue lobelia	0.50	0.03	0.4	5.7
Lycopus americanus	American bugleweed	1.00	0.06	0.8	3.0
Mimulus ringens	Allegheny monkeyflower	0.15	0.01	0.1	7.9
Monarda fistulosa	Wild bergamot	1.50	0.09	1.2	2.4
Pycnanthemum virginianum	Virginia mountain mint	0.60	0.04	0.5	3.0
Rudbeckia hirta	Black-eyed Susan	3.25	0.20	2.5	6.9
Symphyotrichum lanceolatum	Panicled aster	1.50	0.09	1.2	1.5
Symphyotrichum lateriflorum	Calico aster	0.50	0.03	0.4	2.9
Zizia aurea	Golden alexanders	4.00	0.25	3.1	1.0
	Total Forbs	**32.00**	**2.00**	**25.0**	**42.4**
	Total	**128.00**	**8.00**		**79.4**

Wet Mix (used around stormwater basins and in other wet areas with no panels

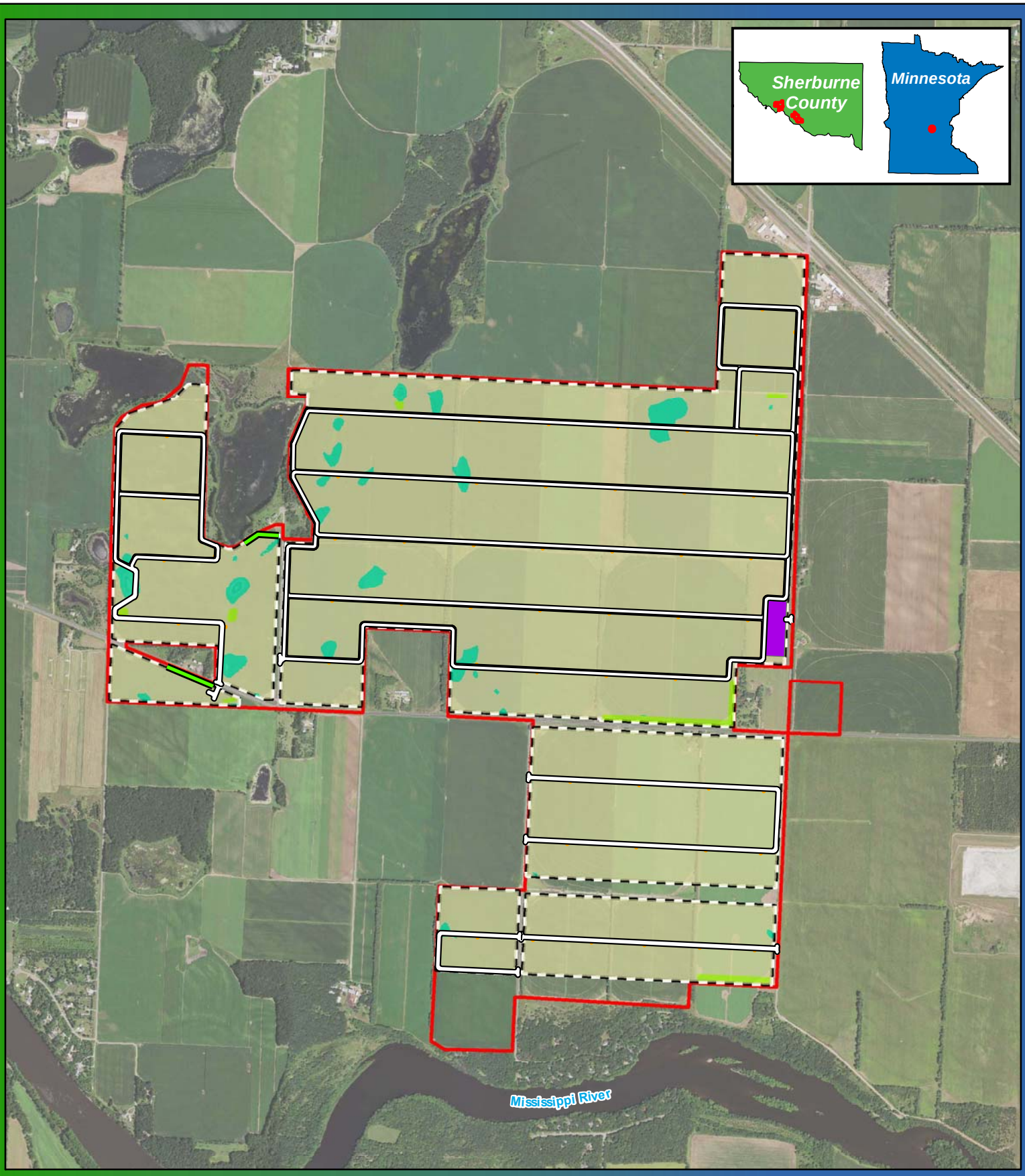
Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
Bromus ciliatus	Fringed brome	6.00	0.38	7.1	1.4
Calamagrostis canadensis	Bluejoint	0.50	0.03	0.6	3.2
Carex hystericina	Bottlebrush sedge	2.00	0.13	2.4	1.4
Carex vulpinoidea	Fox sedge	1.00	0.06	1.2	2.3
Elymus virginicus	Virginia wild rye	48.00	3.00	57.1	4.6
Glyceria striata	Fowl manna grass	0.75	0.05	0.9	2.8
Juncus dudleyi	Dudley's rush	0.15	0.01	0.2	11.0
Juncus effusus	Common rush	0.40	0.03	0.5	9.2
Leersia oryzoides	Rice cutgrass	2.50	0.16	3.0	2.0
Poa palustris	Fowl bluegrass	2.00	0.13	2.4	6.0
Scirpus atrovirens	Green bulrush	0.50	0.03	0.6	5.3
Scirpus cyperinus	Wool grass	0.20	0.01	0.2	7.8
	Total Graminoids	**64.00**	**4.00**	**76.2**	**56.9**
Anemone canadensis	Canada anemone	2.00	0.13	2.4	0.4
Asclepias incarnata	Swamp milkweed	8.00	0.50	9.5	0.9
Bidens cernua	Nodding bur marigold	1.00	0.06	1.2	0.5
Caltha palustris	Marsh marigold	0.50	0.03	0.6	0.3
Eupatorium perfoliatum	Common boneset	0.75	0.05	0.9	2.8
Euthamia graminifolia	Grass-leaved goldenrod	0.50	0.03	0.6	4.0
Eutrochium maculatum	Spotted Joe Pye weed	0.50	0.03	0.6	1.1
Lobelia siphilitica	Great blue lobelia	0.25	0.02	0.3	2.9
Lycopus americanus	American bugleweed	1.00	0.06	1.2	3.0
Mimulus ringens	Allegheny monkeyflower	0.15	0.01	0.2	7.9
Pycnanthemum virginianum	Virginia mountain mint	0.50	0.03	0.6	2.5
Symphyotrichum novae-angliae	New England aster	0.85	0.05	1.0	1.3
Symphyotrichum puniceum	Marsh aster	1.00	0.06	1.2	1.8
Verbena hastata	Blue vervain	1.00	0.06	1.2	2.1
Zizia aurea	Golden alexanders	2.00	0.13	2.4	0.5
	Total Forbs	**20.00**	**1.25**	**23.8**	**32.0**
	Total	**84.00**	**5.25**		**88.8**

Representative Woody Plants for Sherco Solar Screening

DECIDUOUS & CONIFEROUS TREES*			
Scientific Name	**Common Name**	**Size**	**Spacing**
Crataegus arnoldiana 'Homestead'	Homestead Arnold Hawthorn	10# Cont.	14' o.c.
Juniperus virginiana	Eastern Red Cedar	10# Cont.	15' o.c.
Picea glauca 'Densata'	Black Hills Spruce	10# Cont.	15' o.c.
Pinus banksiana	Jack Pine	10# Cont.	15' o.c.
Quercus marcrocarpa	Bur Oak	10# Cont.	15' o.c.
DECIDUOUS & CONIFEROUS SHRUBS			
Scientific Name	**Common Name**	**Size**	**Spacing**
Amelanchier sanguinea	Roundleaf Serviceberry	5# Cont.	6' o.c.
Aronia melanocarpa	Black Chokeberry	5# Cont.	6' o.c.
Cornus racemosa	Gray Dogwood	5# Cont.	6' o.c.
Corylus americana	American Hazelnut	5# Cont.	6' o.c.
Juniperus communis	Common Juniper	5# Cont.	6' o.c.
Prunus americana	American Plum	5# Cont.	6' o.c.
Rhus glabra	Smooth sumac	5# Cont.	6' o.c.

*****Vegetation species are representative of species that provide adequate screening. Other species may be considered that provide similar screening outcomes based on sourcing needs.

Appendix 3. Proposed Planting Plan



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Proposed Planting Plan
West Block
Sherco Solar Project
Sherburne County, MN

- Solar Project Area
- Vegetation Screening
- Access Road
- Inverter
- Substation
- Security Fence
- Mesic Mix
- Wet Mesic Mix
- Wet Mix

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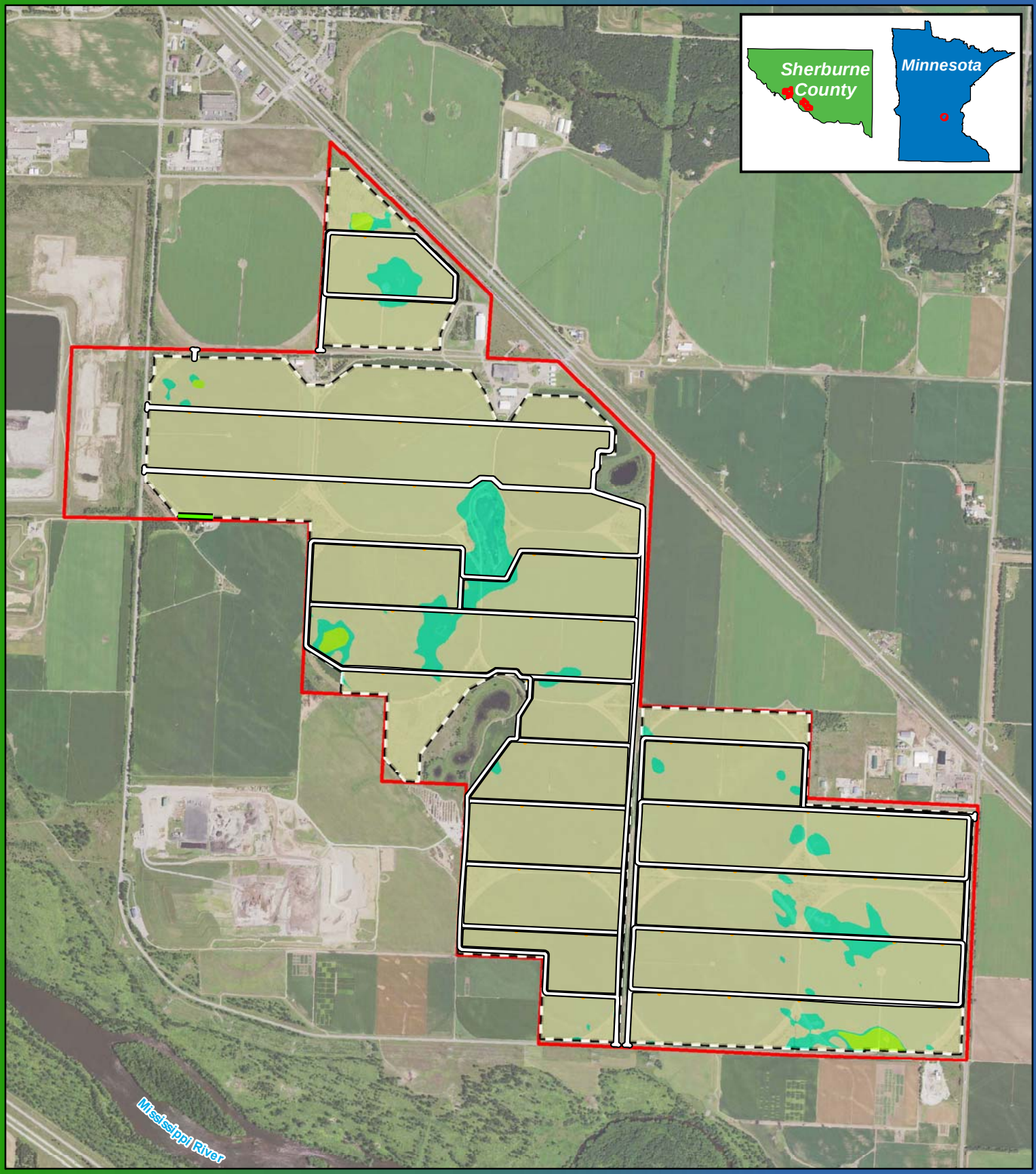
brian.schreurs Date: 4/13/2021



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Proposed Planting Plan
East Block
Sherco Solar Project
Sherburne County, MN

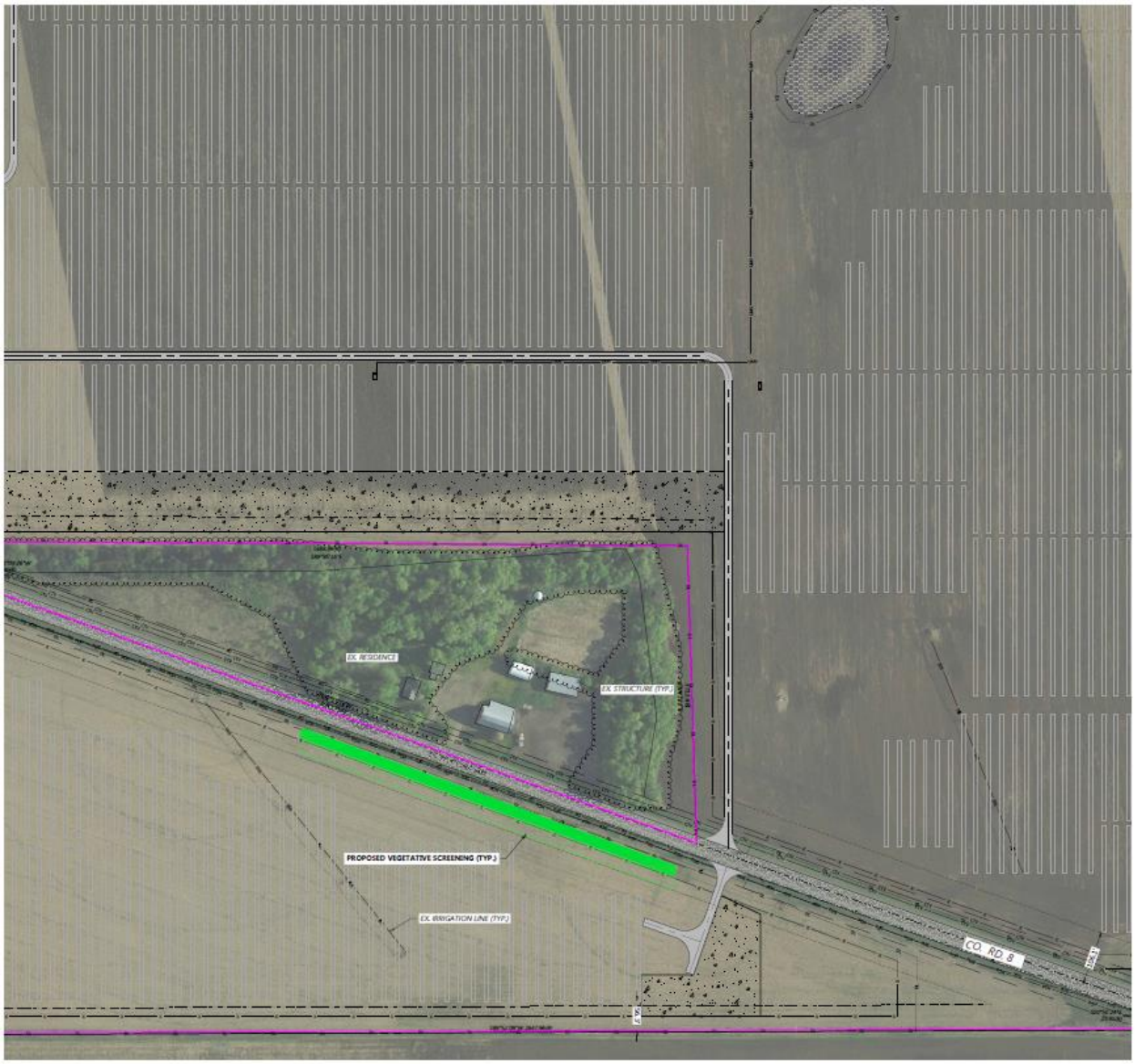
- Solar Project Area
- Vegetation Screening
- Access Road
- Inverter
- Security Fence
- Mesic Mix
- Wet Mesic Mix
- Wet Mix

Document Path: Z:\Clients\E_H\Geronimo\Sherco\Project_Data\Fig_VMP_Planting_Plan_East.mxd

brian.schreurs Date: 4/13/2021

Appendix 4. Proposed Landscaping / Screening Area Planting Plans

Area 1: West Block along River Road SE (County Road 8)



Area 2: West Block near 100th Avenue SE

Area 3: East Block near Sherburne Avenue

Appendix 5. Minnesota Prohibited Noxious Weeds

Eradicate. *All above- and below-ground parts of the plant must be destroyed.*	
Common Name	**Scientific Name**
Tree of heaven	*Ailanthus altissima*
Palmer amaranth	*Amaranthus palmeri*
Oriental bittersweet	*Celastrus orbiculatus*
Diffuse knapweed	*Centaurea diffusa*
Brown knapweed	*Centaurea jacea*
Yellow star thistle	*Centaurea solstitialis*
Meadow knapweed	*Centaurea x moncktonii*
Poison hemlock	*Conium maculatum*
Black swallow-wort	*Cynanchum louiseae*
Grecian foxglove	*Digitalis lanata*
Common teasel	*Dipsacus fullonum*
Cut-leaved teasel	*Dipsacus laciniatus*
Giant hogweed	*Heracleum mantegazzianum*
Japanese hops	*Humulus japonicus*
Dalmatian toadflax	*Linaria dalmatica*
Japanese honeysuckle	*Lonicera japanica*
Control. *Effort must be made to prevent the spread, maturation, and dispersal of any propagating parts.*	
Common Name	**Scientific Name**
Common barberry	*Berberis vulgaris*
Narrowleaf bittercress	*Cardamine impatiens*
Plumeless thistle	*Carduus acanthoides*
Spotted knapweed	*Centaurea stoebe*
Canada thistle	*Cirsium arvense*
Leafy spurge	*Euphorbia esula*
Purple loosestrife	*Lythrum salicaria*
Wild parsnip	*Pastinaca sativa*
Non-native phragmites	*Phragmites australis*
Bohemian knotweed	*Polygonum x bohemicum*
Giant knotweed	*Polygonum sachalinese*
Japanese knotweed	*Polygonum cuspidatum*
Common tansy	*Tanacetum vulgare*

Appendix 6. Additional Problem Weeds to Remove

Plant Group & Priority	Common Name	Scientific Name
Top Priority Grasses to Remove	Smooth brome grass	*Bromus inermis*
	Reed canary grass	*Phalaris arundinacea*
	Giant reed	*Phragmites australis*
	Kentucky bluegrass	*Poa pratensis*
Top Priority Forbs to Remove	Garlic mustard	*Alliaria petiolata*
	Musk thistle	*Carduus nutans*
	Bull thistle	*Cirsium vulgare*
	Crown vetch	*Securigera varia*
	Birds-foot trefoil	*Lotus corniculatus*
	White sweet clover	*Melilotus alba*
	Yellow sweet clover	*Melilotus officinalis*
Second Priority Grasses to Remove	Amur silver grass	*Miscanthus sacchariflorus*
Second Priority Forbs to Remove	Creeping Charlie	*Glechoma hederacea*
	Butter and eggs	*Linaria vulgaris*
	Japanese knotweed	*Polygonum cuspidatum*
	Perennial sow thistle	*Sonchus arvensis*
	Cow vetch	*Vicia cracca*
	Hairy vetch	*Vicia villosa*
Any Tree, Shrub, or Vine Outside the Screening Plantings		

Appendix 7. Construction Civil Design Plans

Sherco Solar Project

Sherburne County, MN

Site Permit Plans

for 460 MW-AC Solar Array Project

Sheet List Table	
Sheet Number	Sheet Title
T.100	Cover
C.100	Existing Conditions - 1
C.101	Existing Conditions - 2
C.102	Existing Conditions - 3
C.103	Existing Conditions - 4
C.104	Existing Conditions - 5
C.105	Existing Conditions - 6
C.106	Existing Conditions - 7
C.107	Existing Conditions - 8
C.108	Existing Conditions - 9
C.109	Existing Conditions - 10
C.110	Existing Conditions - 11
C.111	Existing Conditions - 12
C.112	Existing Conditions - 13
C.200	Overall Site Plan - Area A
C.201	Overall Site Plan - POI
C.202	Overall Site Plan - Area B
C.203	Site Plan - 1
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C.205	Site Plan - 3
C.206	Site Plan - 4
C.207	Site Plan - 5
C.208	Site Plan - 6
C.209	Site Plan - 7
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C.211	Site Plan - 9
C.212	Site Plan - 10
C.213	Site Plan - 11
C.214	Site Plan - 12
C.215	Site Plan - 13
C.216	Site Plan - 14
C.217	Site Plan - 15
C.218	Site Plan - 16
C.219	Site Plan - 17
C.220	Site Plan - 18
C.221	Site Plan - 19
C.222	Site Plan - 20
C.223	Site Plan - 21
C.224	Site Plan - 22
C.225	Site Plan - 23
C.226	Site Plan - 24
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C.230	Site Plan - 28
C.231	Site Plan - 29

Sheet List Table	
Sheet Number	Sheet Title
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C.233	Site Plan - 31
C.234	Site Plan - 32
C.235	Site Plan - 33
C.236	Site Plan - 34
C.237	Site Plan - 35
C.238	Site Plan - 36
C.239	Site Plan - 37
C.240	Site Plan - 38
C.241	Site Plan - 39
C.242	Site Plan - 30
C.243	Site Plan - 41
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C.245	Site Plan - 43
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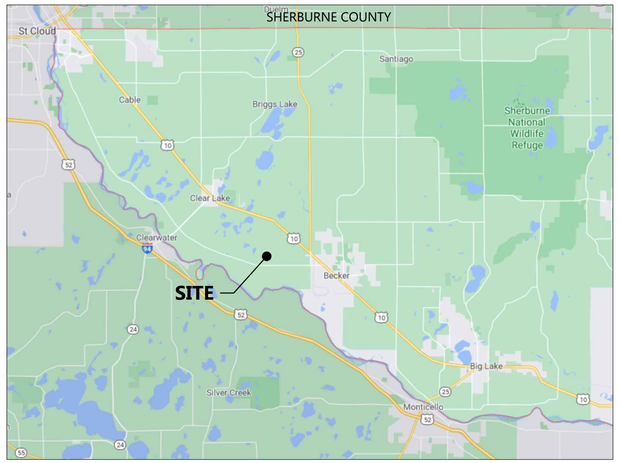
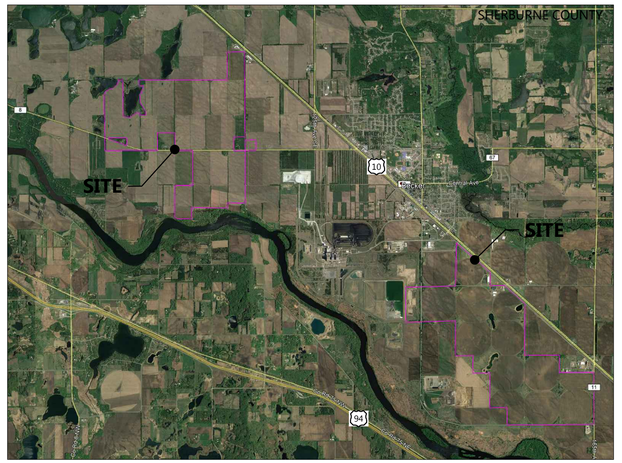
C.300	Overall Screening Plan - Area A
C.301	Overall Screening Plan - Area B
C.302	Screening Plan - 1
C.303	Screening Plan - 2
C.304	Screening Plan - 3
C.501	Construction Details - 1
C.502	Construction Details -2

REGIONAL MAP



VICINITY MAP



CONTACT INFORMATION			
CONSULTANT	COMPANY	NAME	PHONE NUMBER
DEVELOPER	NATIONAL GRID RENEWABLES	WILLIAM RISSE	(952) 300-9476
CIVIL ENGINEER	WESTWOOD	AUGUST CHRISTENSEN	(952) 937-5150

DATA SET INFORMATION			
Coordinate System	Minnesota South NAD83 (2011) SPCS US Feet		
BASE FILE	FILE NAME / NOTES	PROVIDER	DATE
AERIAL IMAGE	World_IMG_DL_2020_12_11.jp2	ESRI	5/15/2018
LAND CONTROL/PLANIMETRICS	Offut_Lease_Area.shp/Sherco.zip	National Grid	1/5/2021
ALTA SURVEY	*	*	*
TOPOGRAPHY	MNTOPO_MKP_DOT2_20ft.txt	MNTOPO	1/1/2014
ARRAY LAYOUT	0030507E-EQUIP	WESTWOOD	1/22/2021
ELECTRICAL COLLECTION DESIGN	*	*	*
GEN-TIE	*	WESTWOOD	*
FEMA INFO	NFHL_27_20190306_S_Fld_Haz_Ar.shp	FEMA	3/6/2019
STREAMS/WETLANDS	Sherco_wetlands.shp	National Grid	12/10/2020
CULTURAL RESOURCES	*	*	*
BIOLOGICAL	*	*	*
GEOTECHNICAL REPORT	*	*	*

Westwood

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TollFree (888) 937-5150

12701 Whitewater Drive, Suite #300
Minnetonka, MN 55343
westwoodps.com

Westwood Professional Services, Inc.

PREPARED FOR:

nationalgrid renewables

8400 NORMANDALE LAKE BLVD, STE 1200
BLOOMINGTON, MN 55437

REVISIONS:

#	DATE	COMMENT
B	1/25/2021	PERMITTING PLANS
C	2/05/2021	PERMITTING PLANS
D	2/17/2021	ALTERED SUBSTATION LOCATION
E	03/03/2021	ALTERED SUBSTATION LOCATION
F	03/09/2021	ALTERED SUBSTATION LOCATION

Sherco Solar Project
Sherburne County, MN

Cover

NOT FOR CONSTRUCTION

DATE: 03/09/2021

SHEET: T.100

SEE SHEET #####

SEE SHEET C.102

EX. WETLAND (TYP.)

EX. IRRIGATION LINE (TYP.)

EX. RESIDENCE

EX. GRAVEL ROAD

100TH AVE. SE.

EX. OVERHEAD POWER LINE

EX. STRUCTURE (TYP.)

CO. RD. 8

EX. PAVED ROAD

EX. FIELD APPROACH

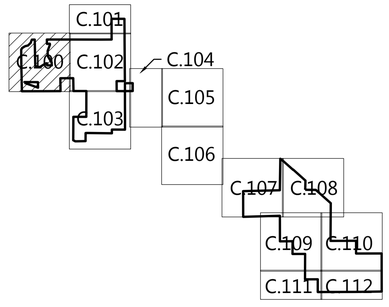
EX. FIELD APPROACH

EX. FIELD APPROACH

LEGEND:

- PROJECT BOUNDARY
- SECTION LINES
- RIGHT-OF-WAY LINES
- EASEMENT LINES
- EX. INDEX CONTOUR
- EX. INTERVAL CONTOUR
- EX. TREELINE
- EX. PAVED ROAD
- EX. GRAVEL ROAD
- EX. FENCE
- EX. OVERHEAD POWER
- EX. WETLAND
- EX. PUBLIC WATERBODY
- EX. RAILROAD
- EX. IRRIGATION LINE

KEY MAP



0' 300' 600' 900'

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Sherco Solar Project

Sherburne County, MN

Existing Conditions - 1

NOT FOR CONSTRUCTION

DATE: 03/09/2021

SHEET: C.100

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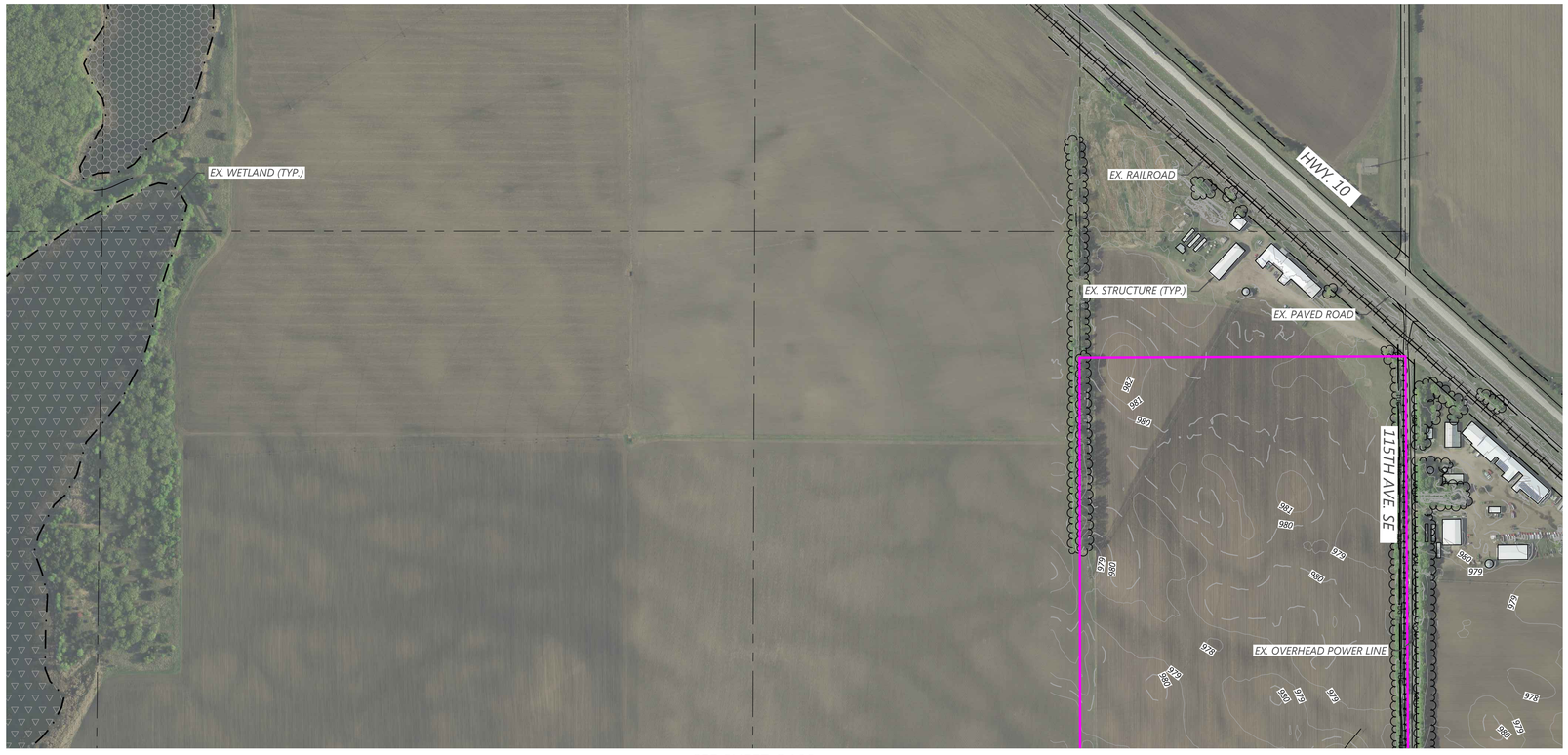

SEE SHEET C.102

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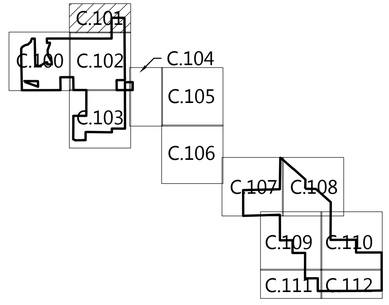
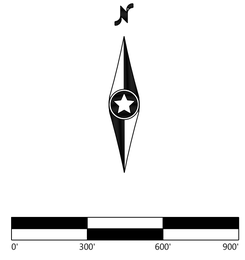
KEY MAP





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Sherco Solar Project

Sherburne County, MN

Existing Conditions - 2

NOT FOR CONSTRUCTION

DATE: 03/09/2021

SHEET: C.101