

Appendix E

Prime Farmland Alternatives Analysis



MEMO

Date:

February 10, 2024

To:

Summit Lake Solar, LLC

From:

Merjent, Inc.

Subject:

Prime Farmland Assessment

Summit Lake Solar Facility and BESS Project, Nobles County, Minnesota

1.0 INTRODUCTION

On behalf of and in coordination with Summit Lake Solar, LLC (Summit Lake), Merjent, Inc. (Merjent) prepared this memorandum to address siting a utility-scale photovoltaic solar energy conversion facility (Solar Facility) and associated Battery Energy Storage System (BESS), collectively the Project, in Minnesota on soils designated as prime farmland. Specifically, the purpose of this assessment is to determine whether there is a feasible and prudent alternative to locating the Solar Facility on designated prime farmland. The Summit Lake Solar Facility will generate up to 200 megawatts (MW) alternating current (AC) and the BESS will store up to 200 MW. The Project is located in Summit Lake and Elk Townships, Nobles County, Minnesota (see Figures 1-3).

The Project requires an area of approximately 1,989.6 acres (Land Control Area) within proximity of an existing electric substation with sufficient capacity to serve as the Point of Interconnection (POI) for bringing power generated by the Project into the existing electrical grid. Summit Lake evaluated alternative sites within five miles of the proposed POI for the Project, the Nobles Substation, and for comparison, a previously considered alternate project site that was not constructed, known as the Royal Solar Project (see Figure 2).

The proposed POI for the Royal Solar Project was a hydropower dam. The total amount of prime farmland within a five-mile radius of the Royal Solar Project POI was less than that in the five-mile radius of the Summit Lake Project; however, the Royal Solar Project was not developed because the proposed POI was ultimately determined to be inadequate because it could not meet the megawattage capacity required for a utility-scale solar project of this size. Although no prime farmland was present within the Royal Solar Project, the location and available POI could not meet the needs of a utility-scale solar project.

This prime farmland assessment is required to demonstrate compliance with Minnesota Rules 7850.4400, subpart 4 (Prime Farmland Rule or Rule). The Rule prohibits large energy power generating plants, such as the Solar Facility, from being sited on more than 0.5-acre of prime farmland per MW of net generating capacity unless there is no feasible and prudent alternative or

unless the project meets one of the Rule's exemptions. The BESS is not subject to the Rule¹. The entire Summit Lake Project (i.e., Solar Facility and BESS) is expected to occupy approximately 1,481.6 acres (Preliminary Development Area) within a 1,989.6-acre Land Control Area. The Land Control Area and Preliminary Development Area are sited on prime farmland (see Figures 4 and 4a). Given the 200 MW net generating capacity of the Project, the Rule would allow use of up to 100 acres of prime farmland; however, the Summit Lake Preliminary Development Area would occupy approximately 894.2 acres of "prime farmland" and approximately 561.0 acres of "prime farmland if drained".² Current land use within the Preliminary Development Area is predominately agricultural row crop production. The Project would result in the temporary removal of these acreages from row crop production for the life of the Project.

In May 2020, the Minnesota Department of Commerce (DOC) Energy Environmental Review Analysis (EERA) issued the Solar Energy Production and Prime Farmland: Guidance for Evaluating Prudent and Feasible Alternative (Prime Farmland Guidance) (DOC, 2020). The Prime Farmland Guidance recognizes that, "the State of Minnesota has dual mandates to advance solar energy production and protect prime farmland" and is "meant to assist developers in defining feasible and prudent in relation to siting alternatives." An analysis of factors identified in the Prime Farmland Guidance with respect to site selection and alternative sites is provided in the following sections below.

2.0 PROJECT DESCRIPTION

The Project is located in Summit Lake and Elk Townships, Nobles County, Minnesota (see Figure 1). The POI is the Nobles Substation, which is adjacent to the Land Control Area. The Preliminary Development Area and proposed equipment layout shown in the figures attached to this prime farmland assessment are preliminary and subject to change as the design advances.

The Preliminary Development Area (i.e., the area to be used for construction and operation of the Project) is approximately 1,481.6 acres (see Figure 4a), which is approximately 74.5 percent of the 1,989.6-acre Land Control Area (see Figure 4). Under the Rule (as applied to this proposed 200 MW Project), no more than 100 acres of prime farmland could be impacted by the Project (i.e., 0.5 acres of prime farmland per MW of net generating capacity) unless there is no feasible and prudent alternative or unless the Project meets one of the Rule exemptions. The Solar Facility does not meet an exemption to the Rule, but the BESS is not subject to the Rule. Of the 1,481.6 acres of Preliminary Development Area, 1,455.2 acres (98.2 percent) are considered prime farmland, which includes 894.2 acres (60.4 percent) of "prime farmland" and 561.0 acres (37.9 percent) of "prime farmland if drained". About 26.5 acres (1.8 percent) of the Preliminary Development Area are classified as "farmland of statewide importance", which is not considered prime farmland (see Figure 4a)³. However, as demonstrated in this memorandum, there is no

¹ Minnesota Session Law 2023, chapter 60, article 12, section 67(b) provides that "Minnesota Rules, Part 7850.4400, subpart 4, does not apply to energy storage systems." Accordingly, the BESS is not subject to the Rule.

² The BESS portion of the Project would occupy approximately 15 acres of land. Accordingly, if the land to be used for the BESS is removed from this analysis, the remaining Solar Facility land still exceeds the 0.5 acre / MW threshold required by the Rule.

³ Note that soils designated as 'prime farmland if drained' and 'prime farmland if protected from flooding or not frequently flooded during the growing season' were considered prime farmland and were included in prime farmland acreages provided in this memorandum; 'farmland of statewide importance' is, by definition, not considered prime farmland and was not included in prime farmland acreages provided in this memorandum.

feasible or prudent alternative to the proposed Project location; therefore, the Project satisfies the Rule.

Summit Lake attempted to minimize use of prime farmland to the maximum extent practicable when siting the Project. Summit Lake also identified and reviewed prime and non-prime farmland designated areas within the Land Control Area (see Figures 4/4a), within five miles of the POI (see Figure 5), and within Nobles County (see Figures 6) for potential sites suitable for development of the Project. Summit Lake was unable to locate any locations within five miles of the POI or within Nobles County that would fall below the prime farmland thresholds stipulated by the Prime Farmland Rule. Large tracts of non-prime farmland in Nobles County are generally associated with floodplains, streams, lakes, and wetlands (see Figure 6). There is no feasible or prudent alternative for the Project Land Control Area within five miles of the POI or within Nobles County.

Summit Lake has secured land rights with the landowners for the entire Land Control Area via lease option agreements or purchase options. Each landowner was given the option to either sell or lease their land to Summit Lake. The Project Substation and BESS will be located on purchased land. The use of agricultural land for the Project is only temporary during the life of the Project and is reversible.

A Vegetation Management Plan and an Agricultural Impact Mitigation Plan will be implemented during construction and operation of the Project. The anticipated life of the Project is 30 years, with the possibility to extend the life of the Project upon securing the necessary approvals. At the end of operation, Summit Lake will restore the land to its original condition and the land will likely return to agricultural use or any other use chosen by the landowners. A Decommissioning Plan will be in place to restore the land after the useful life of the Project and, together with the Agricultural Impact Mitigation Plan, will preserve the ability to farm the land after the Project ceases operation.

The Preliminary Development Area incorporates buffers and setbacks from the arrays and allows for flexibility in overall design. Summit Lake is coordinating with Nobles County to determine appropriate setback requirements and support maintenance of the existing drain tile system for the life of the Project. The electrical collection lines between the solar arrays/inverters and Project Substation (discussed below) will be 34.5-kilovolt feeders and will be direct buried in a trench at a depth of at least four feet below ground. Directional boring may be used to install collector cables across some portions of the Project, as applicable.

The Summit Lake Project will connect to the grid by tapping into the existing Nobles Substation. All electricity generated by the Solar Facility will be routed to a new Project Substation with a step-up transformer. The BESS is located adjacent to and connects directly to the west side of the Project Substation. A new 345-kilovolt generation-tie line (gen-tie line) that will be less than 1,500 feet, will connect the Project Substation to the Nobles Substation (see Figure 3). The Project Substation and gen-tie line will be constructed, owned, and operated by Summit Lake.

The Land Control Area is comprised of open land primarily utilized for row crop agriculture. Topography within the Land Control Area is generally flat ranging from 1,650 to 1,764 feet above mean sea level. The Preliminary Development Area is mostly devoid of permanent landcover and environmental constraints. Summit Lake was able to secure sufficient lease agreements to largely avoid existing water and other natural resource features. No other significant environmental constraints were identified in or near the Land Control Area (see Figures 3, 4, 4a, 11, and 13).

3.0 PROJECT NEED, PERMITTING, AND SCHEDULE

The Project is being developed, designed, and permitted to meet or exceed applicable state, county, and local requirements, including the Rule. The Project will specifically address Minnesota's mandate and goals found in the Renewable Energy Standard, Governor Walz's "One Minnesota Path to Clean Energy" to require 100% carbon-free energy by 2040, and applicable energy planning requirements.⁴ It will serve consumers' growing demand for renewable energy under various utility-sponsored programs and for utilities, independent power purchasers and corporations seeking to use renewable energy for business growth.

The Project will also benefit the local community through investment in construction spending, operation, property and business taxes, and landowner lease and easement payments. The Project will generate up to 200 MW of power which will provide electricity to approximately 33,200 homes annually and prevent emission of approximately 323,800 metric tons of carbon dioxide equivalent annually.⁵ Reduced emissions associated with the Project as compared to traditional carbon-based energy generation will further benefit the environment and overall health of the regional community (i.e., reduced potential mortality due to harmful air pollutants, associated health care costs, reduction in water consumption) which are summarized in the Joint Site Permit Application for the Solar Facility and BESS.

A Generator Interconnection Agreement has been executed for the Project. Summit Lake plans to construct the Project on a schedule that facilitates an in-service date of fourth quarter 2027.

4.0 FACTORS DRIVING CHOICE OF REGION

4.1 GUIDANCE

The Prime Farmland Guidance first directs an applicant to discuss why a project has been proposed in a particular region, including an assessment of: (1) the solar resource in the region; (2) available interconnection points; (3) and efforts to investigate developable sites (i.e., those with appropriate topography and willing participants). Summit Lake explored southern Minnesota to identify a suitable area for a solar project based on these factors. When Summit Lake began searching for locations, Minnesota was identified as a state supportive of solar deployment based on utility and regulatory interest, as well as previous development activity in the state. Summit Lake initially reviewed the entire state of Minnesota during the site selection process.

4.2 SOLAR RESOURCES IN THE REGION

Summit Lake's key goals in siting the proposed Project was to (1) identify the most productive solar resource in Minnesota which will allow economic operation of a large utility-scale solar energy generation facility, (2) allow for efficient use of installed facilities located in reasonable proximity to the transmission system, and (3) minimize impacts to human settlement and natural resources.

Summit Lake assessed publicly available solar generation data in Minnesota to determine solar potential in Minnesota. According to data compiled by the Minnesota Solar Suitability Analysis program, southern Minnesota has some of the best locations for exposure to the sun's solar

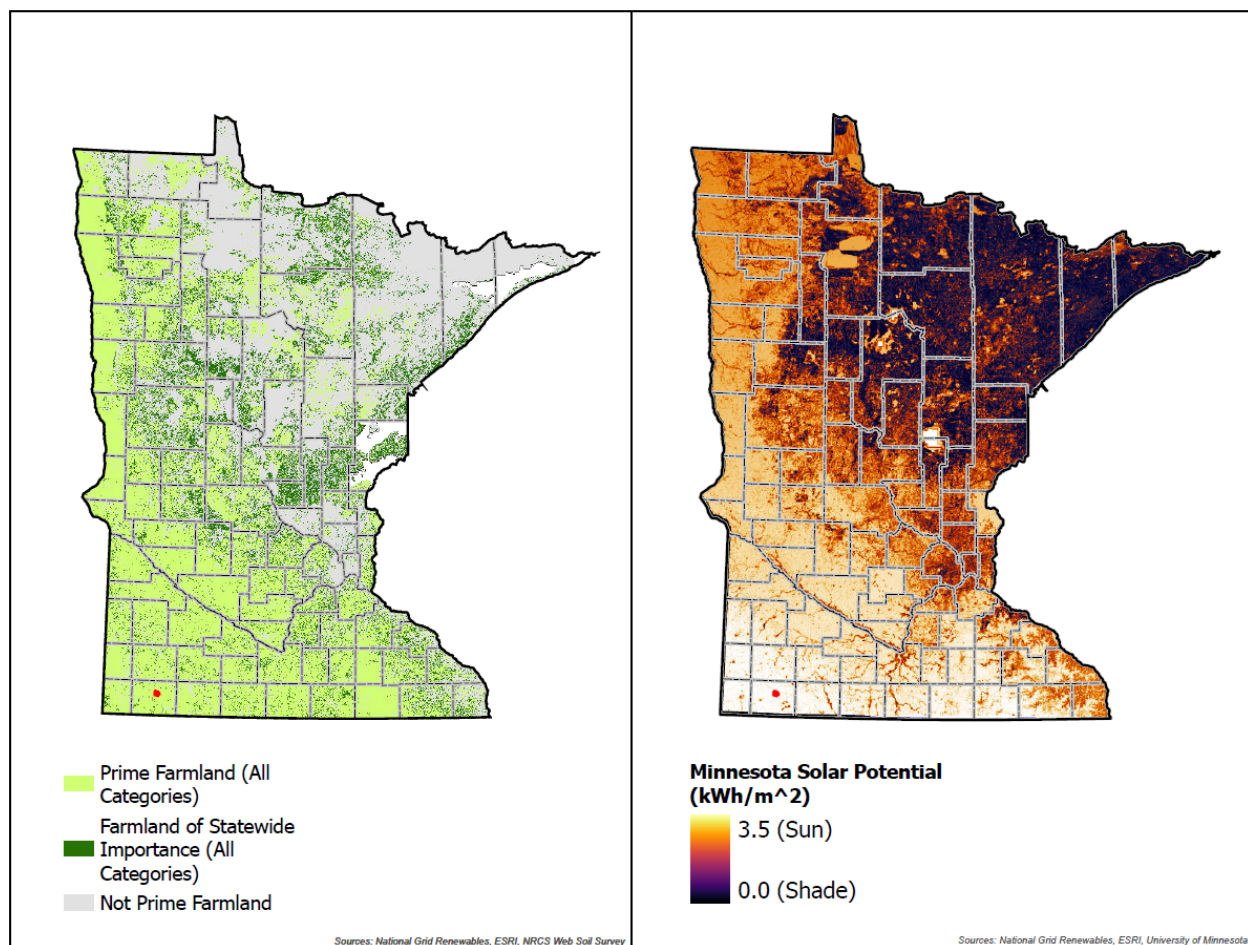
⁴ See Minn. Stat. §216B.1691; Minn. Stat. § 216C.05.

⁵ This is based upon <https://www.epa.gov/avert/avert-web-edition>.

radiation (insolation) and, thus, highest net capacity factors in the state (see Figure 7)⁶. Figures 8 and 9 provide Minnesota Solar Suitability Analysis Insolation for the Summit Lake Project and the Royal Solar Project, a previous project site that was evaluated and rejected due to lack of capacity for interconnection. In Minnesota, there is a strong correlation between high solar resource and the prevalence of prime farmland (see Image 1). As displayed in Image 1, southwestern and southcentral Minnesota are characterized by the prevalence of prime farmland and the highest solar resource. Conversely, areas without prime farmland generally have a lower solar resource.

Summit Lake focused its efforts on locating a Project site in areas with high solar potential near an existing point of interconnection that had available capacity to meet the output generated by the Project and be economically delivered to the electrical grid. Site locations were not evaluated in the northeastern portion of the state where low solar potential is mapped. Focus was directed to the south and west portions of Minnesota (see Figure 7).

Image 1: Prime Farmland and Solar Resources in Minnesota



⁶ The Minnesota Solar Suitability Analysis is an ongoing project led by graduate students in the Masters of Geographic Information Science program at the University of Minnesota. The project aims to map solar potential on a large scale across Minnesota using LiDAR data and GIS technology with the goal of providing free and open-source tools and data to the GIS community. See <https://solar.maps.umn.edu/app/>.

The south and west portions of the state are the highest solar potential regions in Minnesota and also have the most existing land cover conducive to solar development. Landcover most conducive to solar development is made up of large, flat, open agricultural lands.

The previously evaluated Royal Solar Project site was located on the edge of the region in Minnesota with high solar potential, and in an area with a reduced presence of prime farmland and proximity to existing transmission infrastructure with potentially available capacity. The Prime Farmland Guidance indicates that “otherwise compliant areas” refers to areas not specifically prohibited (subpart 1) or generally excluded (subpart 3) for energy development as enumerated in Minnesota Rules 7850.4400, subpart 1. When beginning a search for a site, Summit Lake assumed it would be able to identify an adequately sized site near available transmission capacity that did not exceed the 0.5 acre/MW threshold due to the general scarcity of prime farmland in the east central part of the State but was ultimately unable to do so as described below.

4.3 AVAILABLE INTERCONNECTION POINTS

Identifying existing electrical infrastructure with available capacity was the largest driving factor in selecting a suitable site. Summit Lake searched within the south and west portions of Minnesota for existing points of interconnection and transmission lines that had potential capacity to support the Project. As a result of this search, Summit Lake identified the Nobles Substation. The Nobles Substation had capacity for this Project to interconnect via a 345-kilovolt gen-tie line.

Summit Lake reviewed the site assessment conducted for the Royal Solar Project to determine potential feasibility of locating the Project in an area with less prime farmland (see Figure 10). A study was conducted of the Royal Solar Project POI. Summit Lake determined that the POI did not have sufficient capacity available to support a utility-scale solar project, such as the Project. Therefore, the Royal Solar Project site would not be prudent or feasible alternative to the Project.

Summit Lake proposes to interconnect the Project to the existing Nobles Substation (see Figure 2). Summit Lake submitted an interconnection request with MISO in 2020. Summit Lake has executed a Generator Interconnection Agreement on July 18, 2024, with MISO and Xcel Energy, the owner and operator of the Nobles Substation. This interconnection will provide sufficient outlet to accommodate the solar energy generation from the Solar Facility.

5.0 EFFORTS TO INVESTIGATE DEVELOPABLE SITES

The State of Minnesota policy requires the siting of transmission lines in a manner that “minimize[s] adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring that electric energy needs are met and fulfilled in an orderly and timely fashion” (Minnesota Statutes section 216E.02, Subdivision 1), and requiring the efficient use of resources, especially if a viable, feasible and prudent alternative exists.

Summit Lake evaluated potential project locations within five miles of the POI using the following criteria:

- significant tracts of cleared contiguous land;
- distance to a potential POI;
- specific areas of the region that were determined suitably flat to allow for economical construction of solar energy generation equipment;

- community support and acceptance of the Project;
- local landowners willing to enter voluntary leases or easements; and
- avoidance of sensitive environmental resources and minimization of potential adverse environmental impacts.

The analysis and results of the area within a five-mile radius of the potential POI is presented below. All factors were used in the evaluation and selection of the proposed Land Control Area.

5.1 SOILS

In consideration of Minnesota Rules 7850.4400, subpart 4, Summit Lake examined the soils within the south and west Minnesota regions. The prevalence of prime farmland is consistently high regardless of location in the region. Prime farmland, and its sub-categories, are mapped throughout the region (see Figure 6). For context, Nobles County encompasses about 462,460 acres of land, of which 423,368 acres (92 percent) are classified as prime farmland and prime farmland if drained or protected from flooding (Soil Survey Staff, 2024). Areas in the region most conducive to solar development, consisting of approximately 1,989.6 acres of land, are also primarily comprised of soils defined as prime farmland.

To find an area suitable for construction, Summit Lake evaluated the area within five miles of the POI (see Figure 5) and for comparison reviewed the area within five miles of the Royal Solar Project POI (see Figure 10). The area within five miles of the Royal Solar Project POI contained fewer overall acres of prime farmland; however, the Royal Solar POI did not have available capacity that would allow the interconnection of a 200 MW generation facility. Transmission interconnection was the most significant factor in Project siting. If there is not sufficient capacity to interconnect a project, then the lack or presence of prime farmland is meaningless. The Summit Lake Project Substation will be located approximately 550 feet from the Nobles Substation, which has available capacity to allow the interconnection of the 200 MW Project.

5.2 FACTORS DRIVING CHOICE OF REGION

The Prime Farmland Guidance further identifies factors to assess when prime farmland is present within a proposed project site, including (1) alternative sites in nonprime farmland in proximity to an interconnection site; (2) avoidance of other prohibited areas; and (3) alternative configurations or technologies. As displayed on Image 1, southwestern and southcentral Minnesota, including Nobles County, contains the best solar resource in the state.

With respect to avoidance of prohibited areas, Summit Lake evaluated potential constraints during site selection to determine whether the Project has avoided constraints to the maximum degree practicable. These include transmission interconnection, willing landowners to sell or lease land for Project facilities, and environmental constraints that may prohibit or make development more challenging. Within five miles of the POI, Summit Lake avoided parcels:

- owned or managed by a state or federal agency (i.e., state park, Wildlife Management Area, or Waterfowl Production Area);
- within a municipality;
- within two miles of a public airport;

- under lease with a different developer;
- with Minnesota Department of Natural Resources (MDNR) Sites of Biodiversity Significance;
- with MDNR mapped native plant communities and native prairie; and
- with MDNR rare species records.

These constraints, and the areas most suitable for solar development without these features, are displayed on Figure 11. As shown on the constraints map, Summit Lake has sited the facility to avoid the sensitive resources identified above.

During development of the Project, Summit Lake also reviewed the Royal Solar Project assessment. A five-mile radius around the hydropower plant, proposed as the POI, was the search area used to identify potential project locations. A constraints analysis was completed for the area within the five-mile radius as shown on Figure 12.

By comparing Figures 11 and 12, it is easily discernable that area within five miles of the Summit Lake Project contains fewer natural resources such as wetlands, floodplains, public waters and potential threatened and endangered species habitat than the Royal Solar Project. On the contrary, there is a less buildable area within five miles of the Royal Solar Project POI that is not encumbered by natural resources and where the available buildable area is not designated as prime farmland.

Summit Lake further evaluated and generated buildable area maps within five miles of the Summit Lake POI and Royal Solar POI (see Figures 14a and 14b). Summit Lake used the constraint layers identified in Figures 11 and 12 to determine which areas are not buildable. Additionally, other constraints that would limit constructability were also evaluated, regardless of prime farmland status. Constraints included National Land Cover Data and aerial imagery to identify forested areas, National Wetlands Inventory and National Hydrography Datasets to map streams and wetlands, Federal Emergency Management Agency data to identify floodplains, and slope information to identify slopes in excess of 12 percent (considered too steep for solar development). Moreover, public infrastructure corridors and features such as roads, railroads, pipelines, transmission lines, substations, and existing homes were also excluded from buildable areas.

Figure 14a shows the estimated buildable area within five miles of the POI for the Summit Lake Project. Overall, the Summit Lake buildable area is approximately 44,692 acres within five miles of the POI. Figure 14b shows the estimated buildable area within five miles of the POI for the Royal Solar Project. Overall, the Royal Solar Project buildable area is approximately 26,193 acres within five miles of the POI. The available buildable area for Summit Lake is approximately twice the size of the Royal Solar Project buildable area. The difference between the two buildable areas highlights the presence of significantly more constraints that would preclude solar development within five miles of the Royal POI.

The Royal Solar Project was not pursued further due to the existing environmental and development constraints in conjunction with the lack of available capacity at the Royal POI for a 200 MW Project.

Based on the analysis above, there are no feasible or prudent alternatives to the proposed Project Area (as herein defined) for the Project.

5.3 AVOIDANCE & MINIMIZATION CONSIDERATIONS

As discussed above, the Land Control Area is an optimal site for development of the proposed 200 MW AC Solar Facility and BESS. The selected location better meets the needs of the Project and avoids prohibited areas to the maximum extent practicable. In addition, there is relatively little opportunity to avoid impacts to prime farmland in the state of Minnesota where high solar potential exists. Areas where non-prime farmland is more prevalent are generally associated with steep slopes, forested areas, wetlands and floodplains, and other areas not suitable for solar development. In addition, areas of non-prime farmland that are not constrained by natural resources do not have adequate capacity to support a 200 MW interconnection necessary for the Project.

Summit Lake has considered several design options to minimize impacts on soils and prime farmland including minimizing the overall Preliminary Development Area, minimizing solar facility placement in areas with slopes that would require excess grading. Similarly, access road construction requires grading and soil segregation. Summit Lake has minimized access roads, except to the extent required for safety and maintenance activities, and grading and soil disturbance is minimized to the extent practicable. The installation of the electrical collection system involves trenching a portion of the electrical collection cables to a depth of four feet. The design will also include direct current electrical collection cabling that will be installed either below-ground, underhung beneath the photovoltaic panels and racking and/or suspended above ground via the solar cable management system. Implementing the cable management system greatly reduces soil disturbance because trenching is not required along every row of panels. Together, these design considerations minimize the Project's impact on prime farmland and other sensitive resources.

5.4 MITIGATION AND OFFSETTING BENEFITS

In addition to the minimization measures described above, the Project includes an Agricultural Impact Mitigation Plan and Vegetation Management Plan as mitigation measures, as well as offsetting benefits such as reducing nitrogen pollution. Each of these is described further below.

5.5 AGRICULTURAL IMPACT MITIGATION PLAN

Summit Lake has developed an Agricultural Impact Mitigation Plan detailing methods to minimize soil compaction, preserve topsoil, and establish and maintain appropriate vegetation that will help to ensure the Project is designed, constructed, operated, and ultimately decommissioned and restored in a manner allowing the land to be returned to its original agricultural use in the future. Moreover, conversion of the Project footprint to non-row-crop uses for the life of the Project may have beneficial environmental impacts such as soil building, erosion control, habitat for wildlife, and protection of groundwater and surface water resources from nitrogen pollution (see Sections 3.2.3.1 and 5.3 of the Agricultural Impact Mitigation Plan).

5.6 VEGETATION MANAGEMENT PLAN

Summit Lake has developed a Vegetation Management Plan that provides a guide to site preparation, installation of prescribed seed mixes, management of invasive species and noxious weeds, and control of erosion/sedimentation. As discussed further below, shifting the land cover

in the Preliminary Development Area to perennial vegetation instead of row crops for the life of the Project could prove to be beneficial for limiting nitrogen infiltration into groundwater supply and nitrogen runoff, thereby improving groundwater and surface water quality. Additionally, perennial plants improve the soil with organic matter over the 30-year life the Project, allowing soil animals (i.e. soil fauna) to recover after years of intensive compaction and pesticide and fertilizer application.

5.7 THE PROJECT MAY REDUCE NITROGEN POLLUTION AND AVOID IMPACTS TO SENSITIVE GROUNDWATER RESOURCES

Nitrogen, in the form of fertilizer, is a critical component to agricultural productivity. However, nitrogen is a potent water pollutant that is exceedingly difficult to contain once it has been introduced into the environment. Elevated nitrate levels can be harmful to fish and aquatic life and pollute drinking water wells as it moves both in surface water and in groundwater. In Minnesota, concern about nitrates, from nitrogen fertilizer, in groundwater has been well documented (Minnesota Department of Agriculture, 2019).

A study by the Minnesota Pollution Control Agency (MPCA) found that more than 70 percent of nitrates in the Minnesota environment comes from cropland; the rest is from sources such as wastewater treatment plants, septic and urban runoff, forest, and the atmosphere (MPCA, 2024). Nitrate concentrations and loads in surface water are high throughout much of southern Minnesota, largely as a result of leaching through large areas of intensely cropped soils and into underlying drain tiles and groundwater.

Minnesota state agencies and private organizations are working to address nitrogen levels by evaluating irrigation and fertilizer application practices. The MNDNR, local soil and water conservation districts, and the University of Minnesota are all evaluating irrigation strategy improvements centered around smarter irrigation. They are developing tools that assess soil moisture levels, crop stage (maturity), and precipitation received. Researchers are also evaluating the economics of subsurface irrigation. These strategies are designed to more efficiently water crops when and where they need it while conserving groundwater resources and limiting the vehicle (i.e., water deposits on the land) by which nitrogen can pollute groundwater.

Similarly, the Minnesota Department of Agriculture is working to protect groundwater from agricultural contamination. The agency passed the Groundwater Protection Rule in late 2018 (Minnesota Department of Agriculture, 2019). The two-part rule minimizes potential sources of nitrate pollution to the state's groundwater and protects drinking water. Part one of the rule restricts fall application of nitrogen fertilizer in areas vulnerable to contamination; part two outlines steps to reduce the severity of the problem in areas where nitrates in public water supply wells are already elevated.

While the State works to identify vulnerable areas for groundwater contamination and protect groundwater resources through a variety of programs, perhaps the most prudent method is to simply shift the cropping system on vulnerable soils, as practicable, from a nitrogen-intensive row-crop agriculture to land cover that does not involve nitrogen applications. The Project does just that by converting acres of nitrogen-intensive cropland to perennial vegetation that will not receive nitrogen application and further acts as a mechanism of capturing nitrogen and reducing the ability of that nitrogen to leave the Project boundary (Christianson et al., 2016).

Even though the Land Control Area is considered prime farmland, shifting the land cover to perennial vegetation instead of row crops for the life of the Project could be beneficial for limiting

nitrogen infiltration into groundwater supply and nitrogen runoff into local water resources, thereby improving groundwater and surface water quality.

5.8 OTHER PROJECT BENEFITS

Summit Lake is committed to being a good steward to the community, landowners, and environment as part of development of the Project. As introduced above, upon construction of and implementation of the mitigative measures described in the Joint Site Permit Application, Agricultural Impact Mitigation Plan, and Vegetation Management Plan, the Project will directly and indirectly provide benefits and improve the water quality in the Des Moines River – Headwaters and Rock River Watersheds. These benefits include:

- decreasing the amount of nutrients (including phosphorous and nitrogen) applied to the Preliminary Development Area during the 30-year life of the Project (i.e., row crop agricultural operations would temporarily cease during Project construction and operation) thereby protecting groundwater resources from surface contaminants (see Figure 13);
- managing nutrients at the Project sites through incorporation, installation, and establishment and maintenance of native vegetative plant species, as detailed in the Vegetation Management Plan and Agricultural Impact Mitigation Plan that will be implemented for the life of the Project;
- designing, engineering, permitting, constructing, operating and maintaining a stormwater management system (i.e., stormwater pond) in accordance with applicable MPCA rules and regulations to effectively address stormwater runoff from the Project;
- obtaining and implementing a National Pollutant Discharge Elimination System Construction Stormwater permit from the MPCA and the Stormwater Pollution Prevention Plan during construction to address, manage and control erosion, stormwater runoff from construction activities and re-establishment of vegetative cover post-construction;
- potentially increasing the water storage capacity and managing surface water runoff with the installation and establishment of perennial vegetation and other vegetative cover in combination with the stormwater management facilities (e.g., swales or ponds) to be installed for operation of Project which will help improve soil health and downstream water quality; and
- maintaining current county drain tile and judicial drainage ditches across the Project to ensure no impact to neighboring agricultural land uses and field drainage.

As the permitting process advances and the Project becomes more developed, additional offsetting benefits may be identified. Summit Lake is committed to identifying additional benefits and evaluating and incorporating such benefits into Project plans as it deems possible.

6.0 CONCLUSIONS AND RECOMMENDATIONS

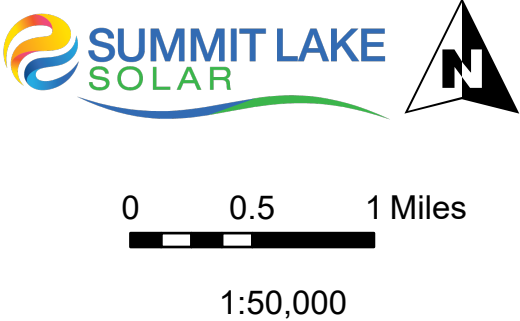
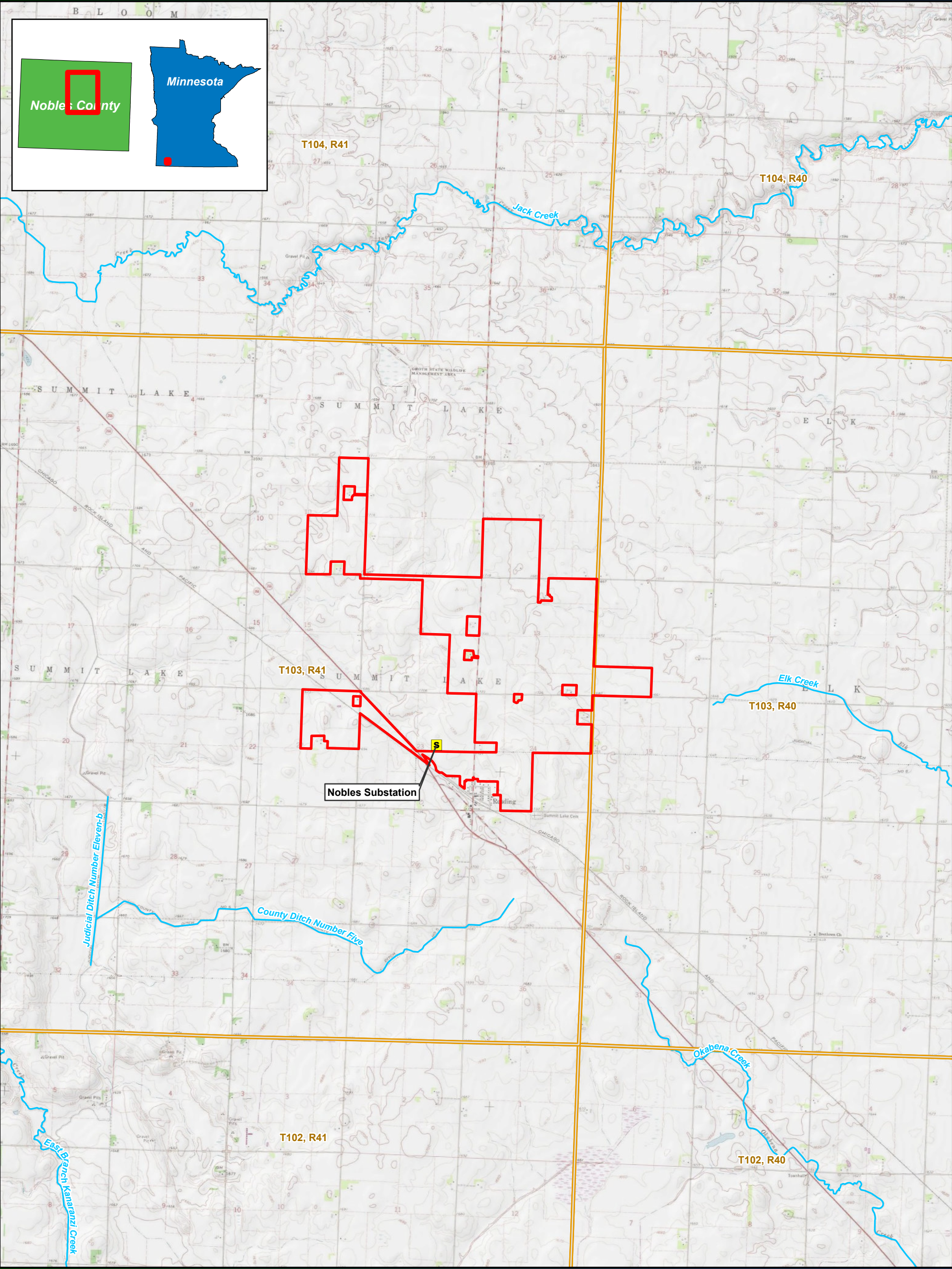
For the reasons demonstrated in the above analysis, Summit Lake believes it has met Prime Farmland Guidance recommendations and the requirements of the Rule to determine that there is no feasible or prudent alternative Project site.

FIGURES

Figure 1	Summit Lake Project Location
Figure 2	Summit Lake and Royal Solar Project Locations
Figure 3	Summit Lake Land Control and Preliminary Development Areas
Figure 4	Summit Lake Prime Farmland – Land Control Area
Figure 4a	Summit Lake Prime Farmland – Preliminary Development Area
Figure 5	Summit Lake Prime Farmland – Five Miles of POI
Figure 6	Summit Lake Prime Farmland – Nobles County
Figure 7	Summit Lake and Royal Solar Project – Solar Resources in Minnesota
Figure 8	Summit Lake – Minnesota Solar Suitability Analysis Insolation
Figure 9	Royal Solar Project – Minnesota Solar Suitability Analysis Insolation
Figure 10	Royal Solar Project Prime Farmland – Five Miles of POI
Figure 10a	Royal Solar Project Prime Farmland – Land Control Area
Figure 11	Summit Lake Constraints – Five Miles of POI
Figure 11a	Summit Lake Land Cover – Land Control Area
Figure 12	Royal Solar Project Constraints – Five Miles of POI
Figure 12a	Royal Solar Project Land Cover – Land Control Area
Figure 13	Summit Lake Sensitivity of Surficial Aquifers to Pollution – Land Control Area
Figure 14a	Summit Lake Buildable Area (Prime Farmland Excluded) – Five Miles of POI
Figure 14b	Royal Solar Project Buildable Area (Prime Farmland Excluded) – Five Miles of POI

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Imagery: USGS
Sources: National Grid Renewables, MN Geospatial Commons, MDNR, ESRI

Figure 1
Project Location
Summit Lake Solar Project
Nobles County, MN

- Existing Substation
- Land Control Area
- City/Town
- Township
- County Boundary
- NHD Named Stream
- Railroad



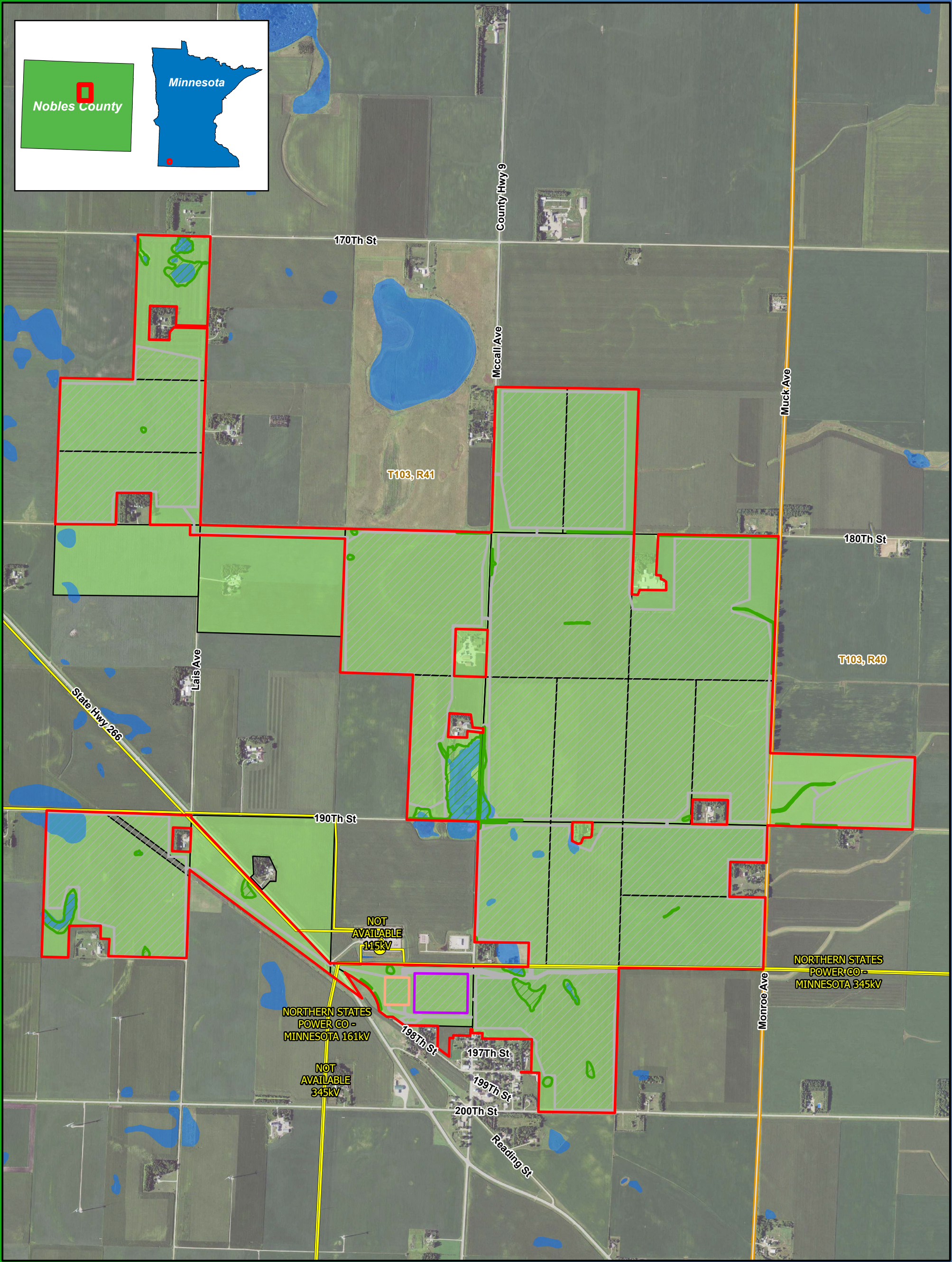
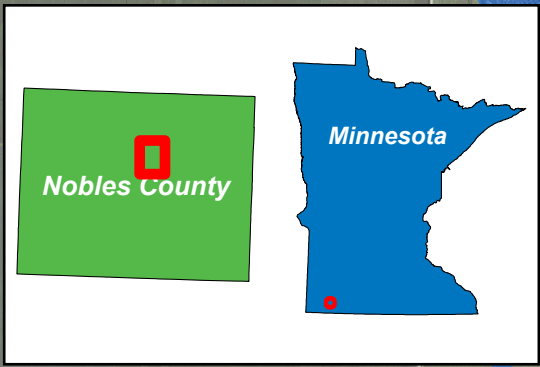
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Figure 2
Project Location
Summit Lake Solar Project
and Royal Solar Project
Nobles and Morrison Counties, MN

- | | |
|-------------------------------|-----------------|
| Summit Solar Project Location | County Boundary |
| Royal Solar Project Location | State Boundary |

Sources: National Grid Renewables, MN Geospatial Commons, MDNR, ESRI



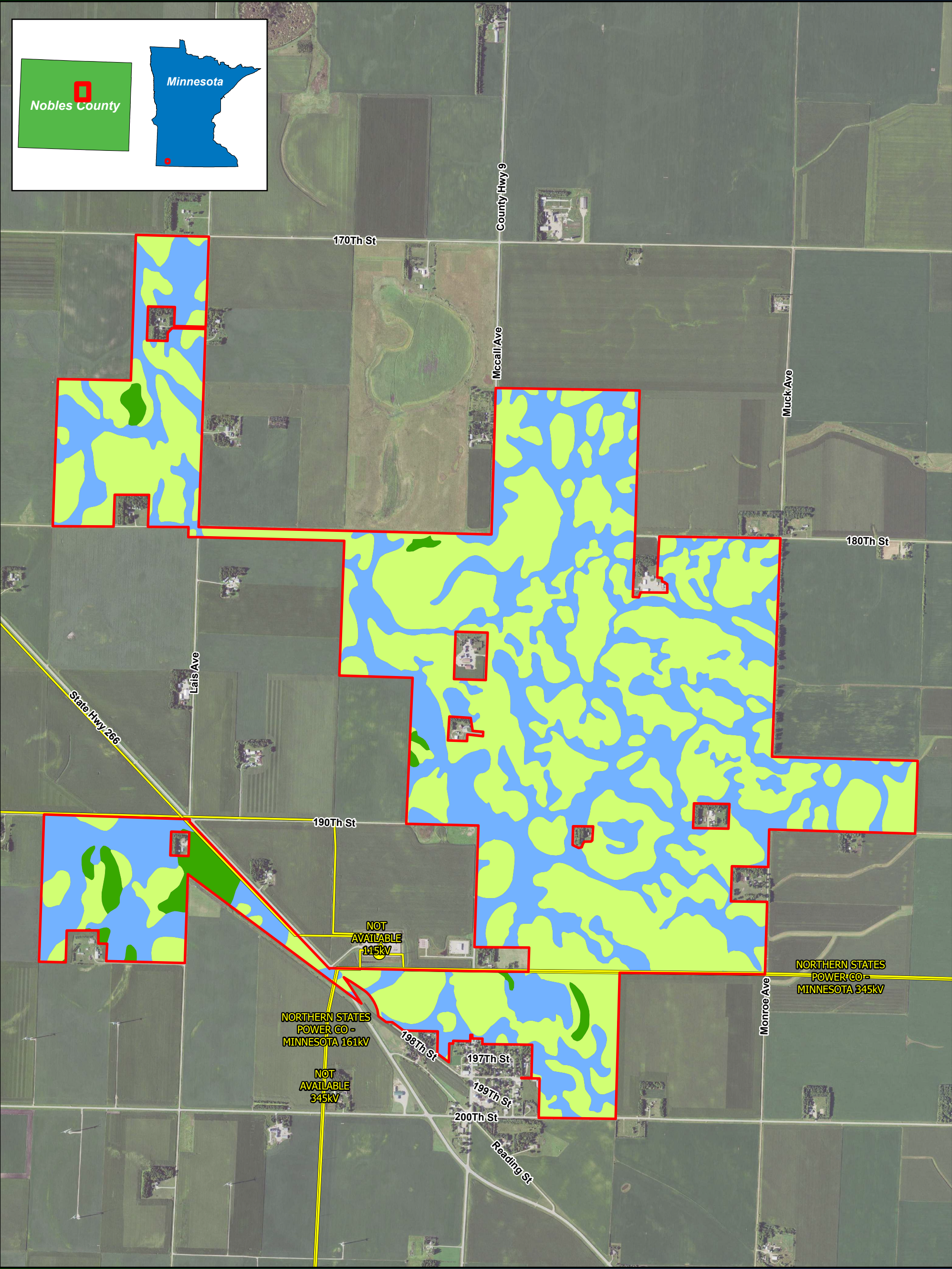
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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NRCS Web Soil Survey, HIFLD

Figure 3
Land Control and
Preliminary Development Areas
Summit Lake Solar Project
Nobles County, MN

- | | |
|---|-------------------------------|
| Land Control Area | NWI Wetland |
| Preliminary Development Area | Existing Transmission Line |
| Proposed BESS Facility | Parcel Boundary |
| Proposed Substation | Participating Lease Agreement |
| Proposed Point of Interconnection (POI) | Township |
| Field Delineated Wetland (2024) | County Boundary |



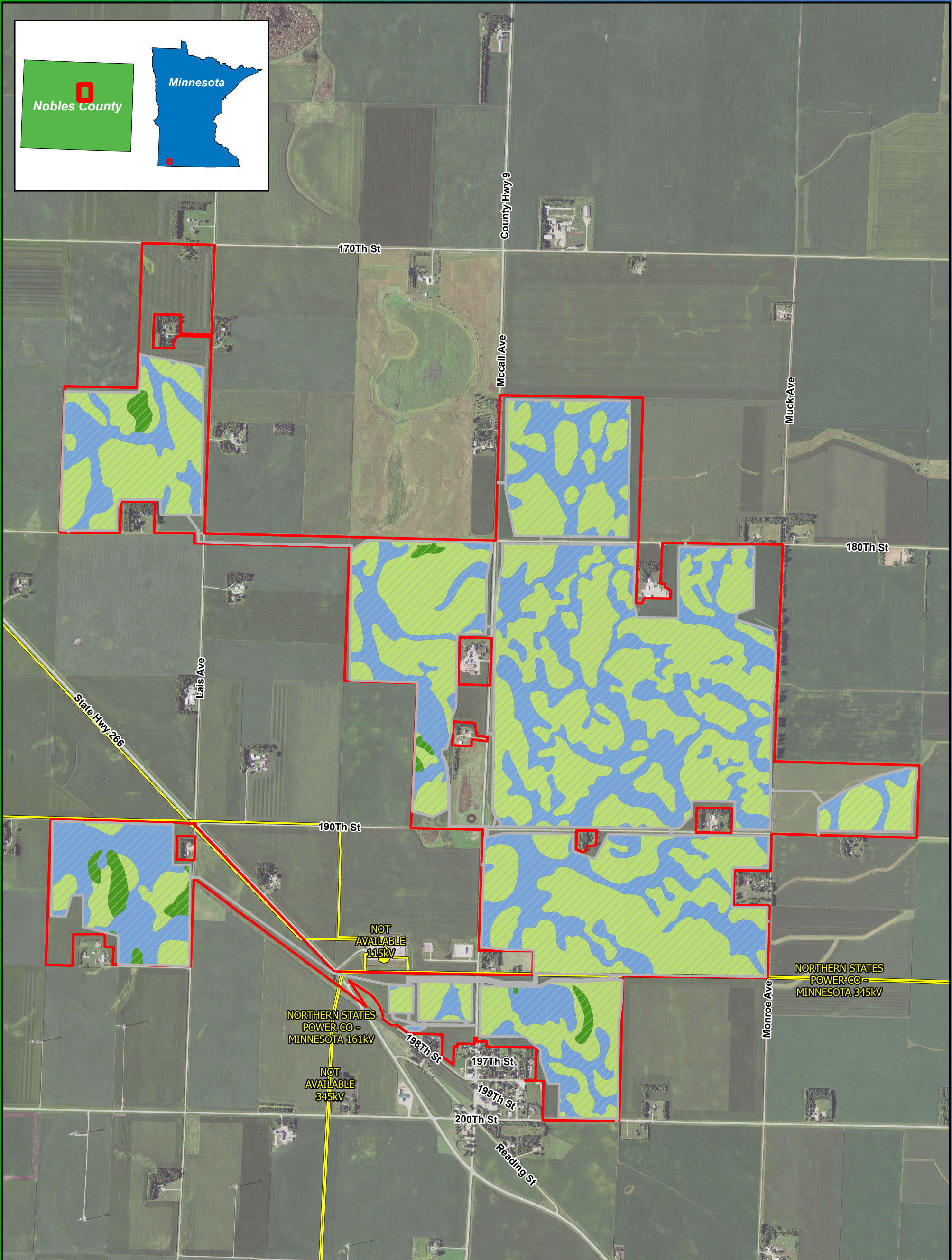
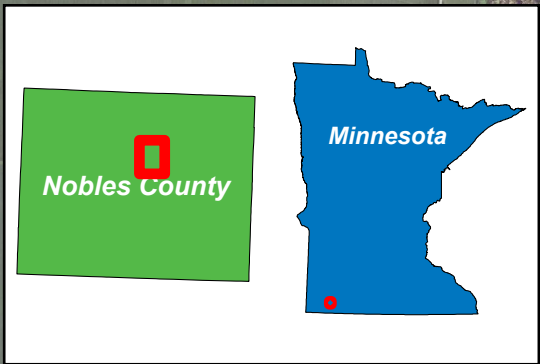
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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NRCS Web Soil Survey, HIFLD

Figure 4
Project Area Prime Farmland
Summit Lake Solar Project
Nobles County, MN

- Land Control Area
- Proposed Point of Interconnection (POI)
- Prime Farmland Classification - Project Area Acreage (Percent Total)**
 - All areas are prime farmland - 1128.36 Acres (56.7%)
- Farmland of statewide importance - 49.63 Acres (2.48%)
- Prime farmland if drained - 812.34 Acres (40.82%)
- Existing Transmission Line

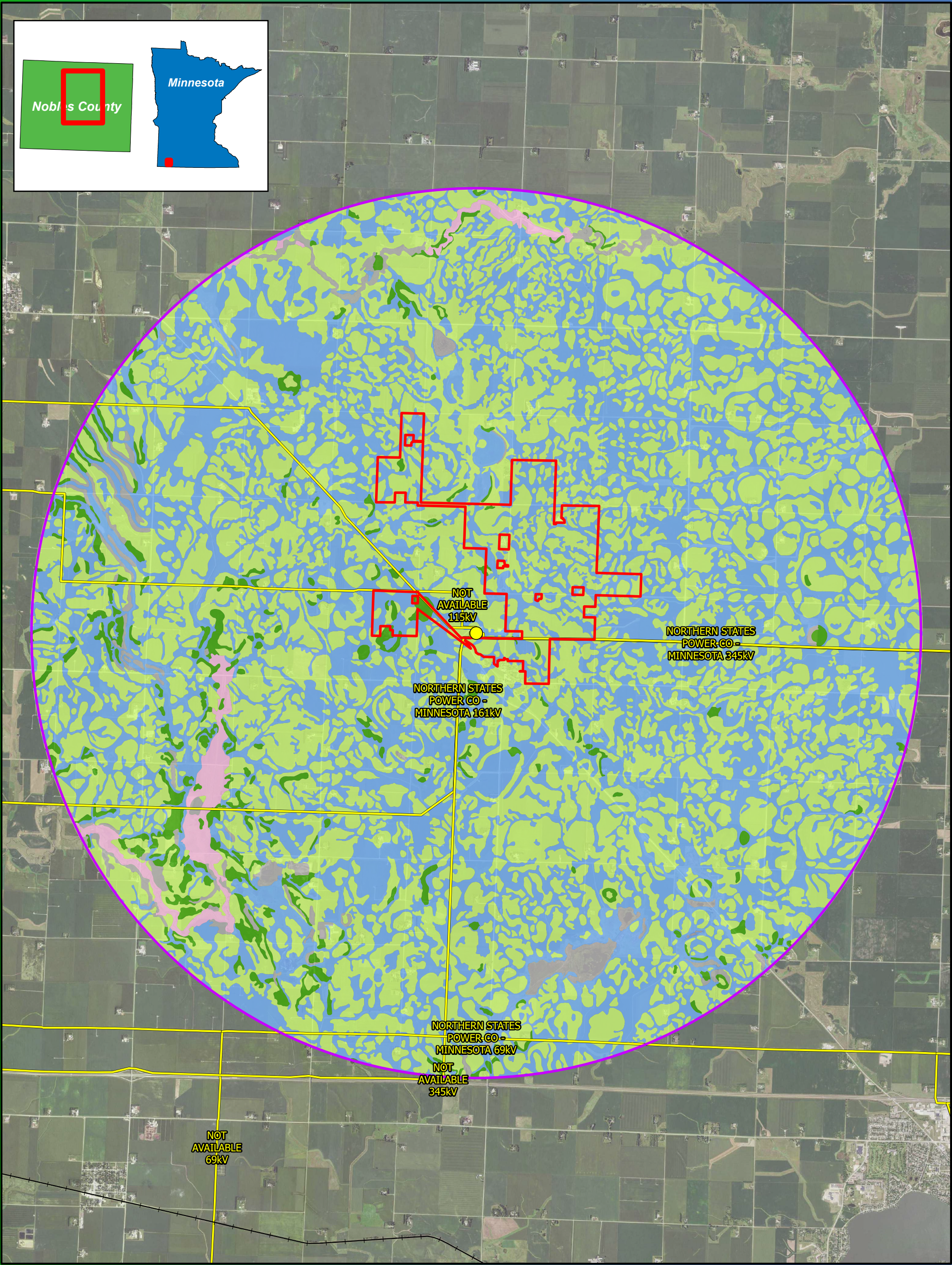


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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NRCS Web Soil Survey, HIFLD

Figure 4a
Preliminary Development Area
Prime Farmland
Summit Lake Solar Project
Nobles County, MN

- Land Control Area
- Preliminary Development Area
- Proposed Point of Interconnection (POI)
- Prime Farmland Classification - Project Area Acreage (Percent Total)
 - All areas are prime farmland - 933.09 Acres (59.55%)
- FarmLand of statewide importance - 29.25 Acres (1.87%)
- Prime farmland if drained - 604.68 Acres (38.58%)
- Existing Transmission Line

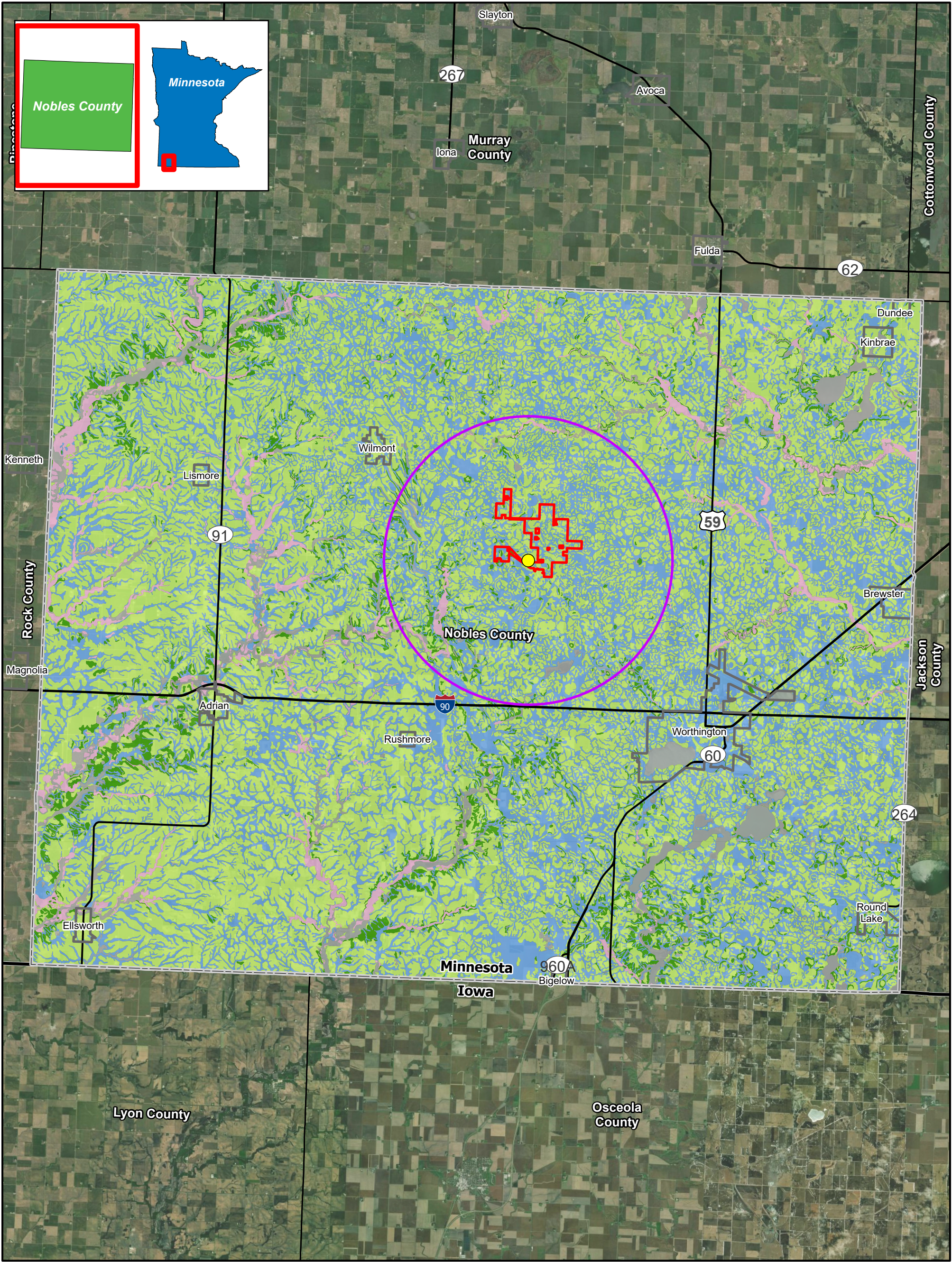


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Figure 5
Prime Farmland within
Five Miles of POI
Summit Lake Solar Project
Nobles County, MN

- Land Control Area
- Proposed Point of Interconnection (POI)
- POI 5-Mile Buffer
- Prime Farmland Classification - Project Area Acreage (Percent Total)**
 - All areas are prime farmland - 26903 Acres (53.29%)
 - Farmland of statewide importance - 1695 Acres (3.36%)
 - Not prime farmland - 1057 Acres (2.10%)
 - Prime farmland if drained - 20196 Acres (40.00%)
 - Prime farmland if protected from flooding or not frequently flooded during the growing season - 631 Acres (1.25%)
- Existing Transmission Line
- Railroad

Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons, MDNR, ESRI, NRCS Web Soil Survey, HIFLD

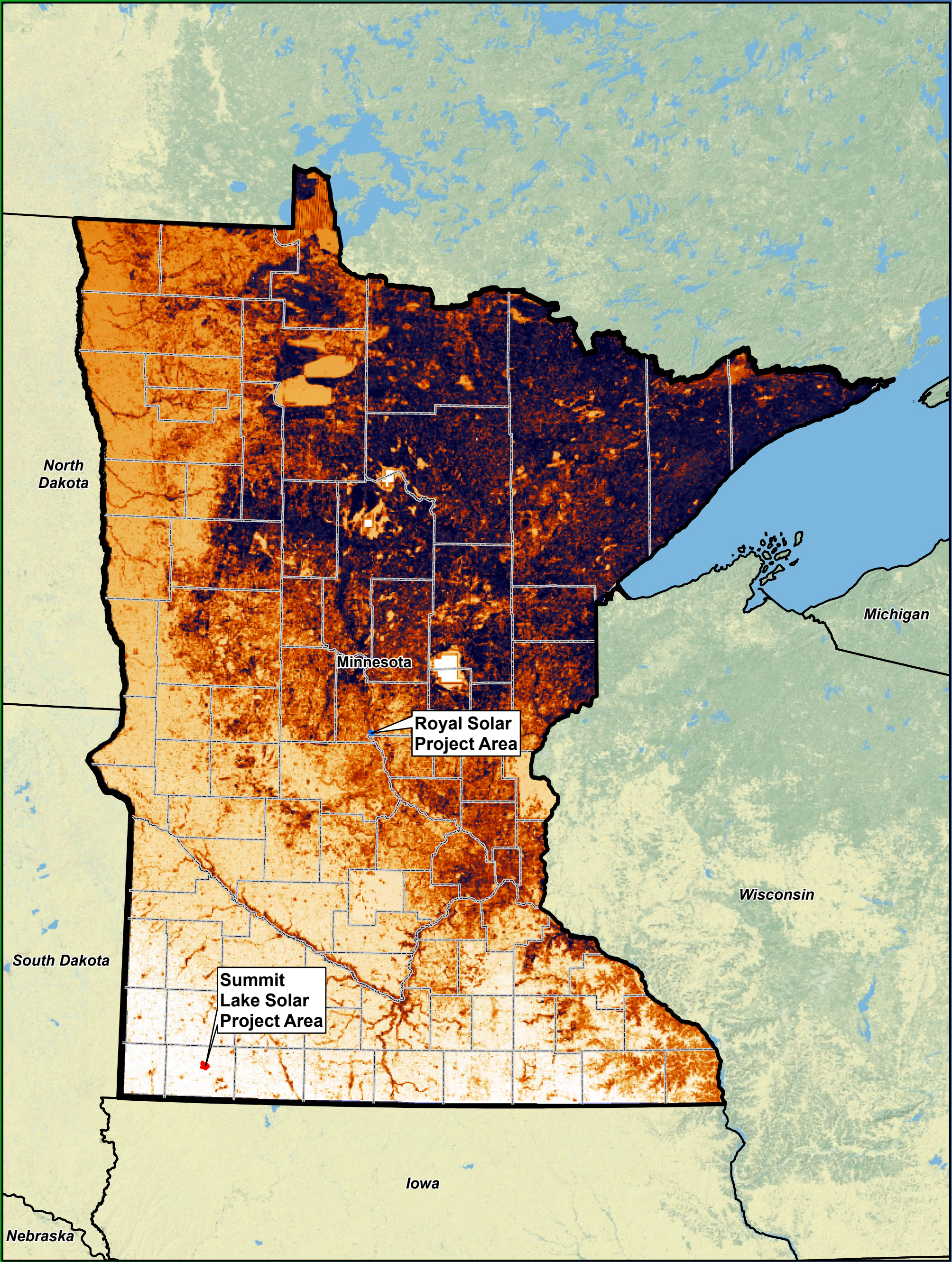


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Figure 6
Prime Farmland within
Nobles County
Summit Lake Solar Project
Nobles County, MN

- Land Control Area
- Proposed Point of Interconnection (POI)
- POI 5-Mile Buffer
- City/Town
- Nobles County Boundary
- County Boundary
- State Boundary
- Major Road
- Prime Farmland Classification - Project Area Acreage (Percent Total)
 - All areas are prime farmland - 258688 Acres (55.94%)
- Farmland of statewide importance - 20505 Acres (4.43%)
- Not prime farmland - 18585 Acres (4.02%)
- Prime farmland if drained - 150367 Acres (32.51%)
- Prime farmland if protected from flooding or not frequently flooded during the growing season - 14312 Acres (3.10%)





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Figure 7
Solar Resources in Minnesota
Summit Lake Solar Project
Nobles County, MN

Solar Project Location

Royal Solar Project Location

County Boundary

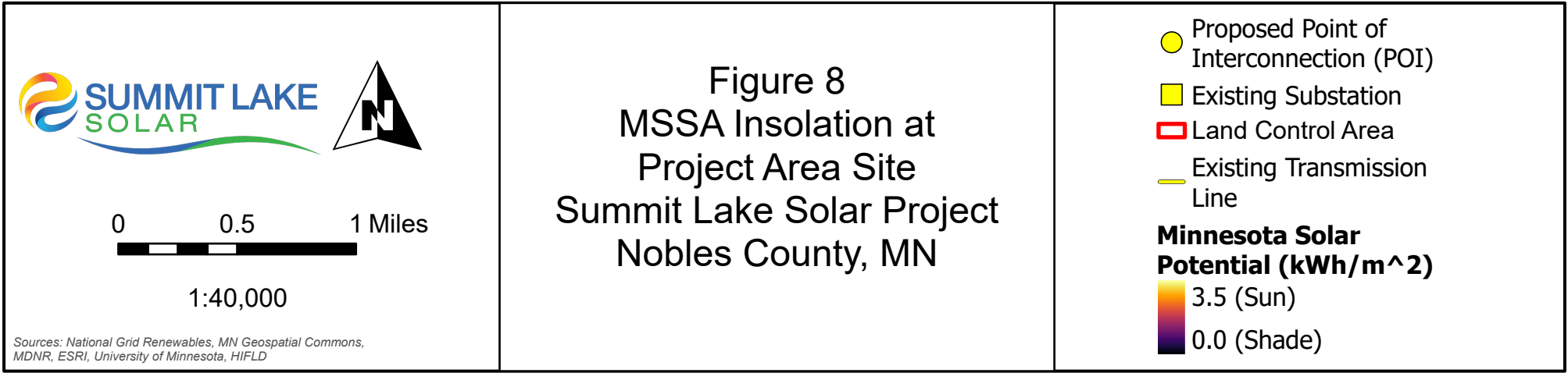
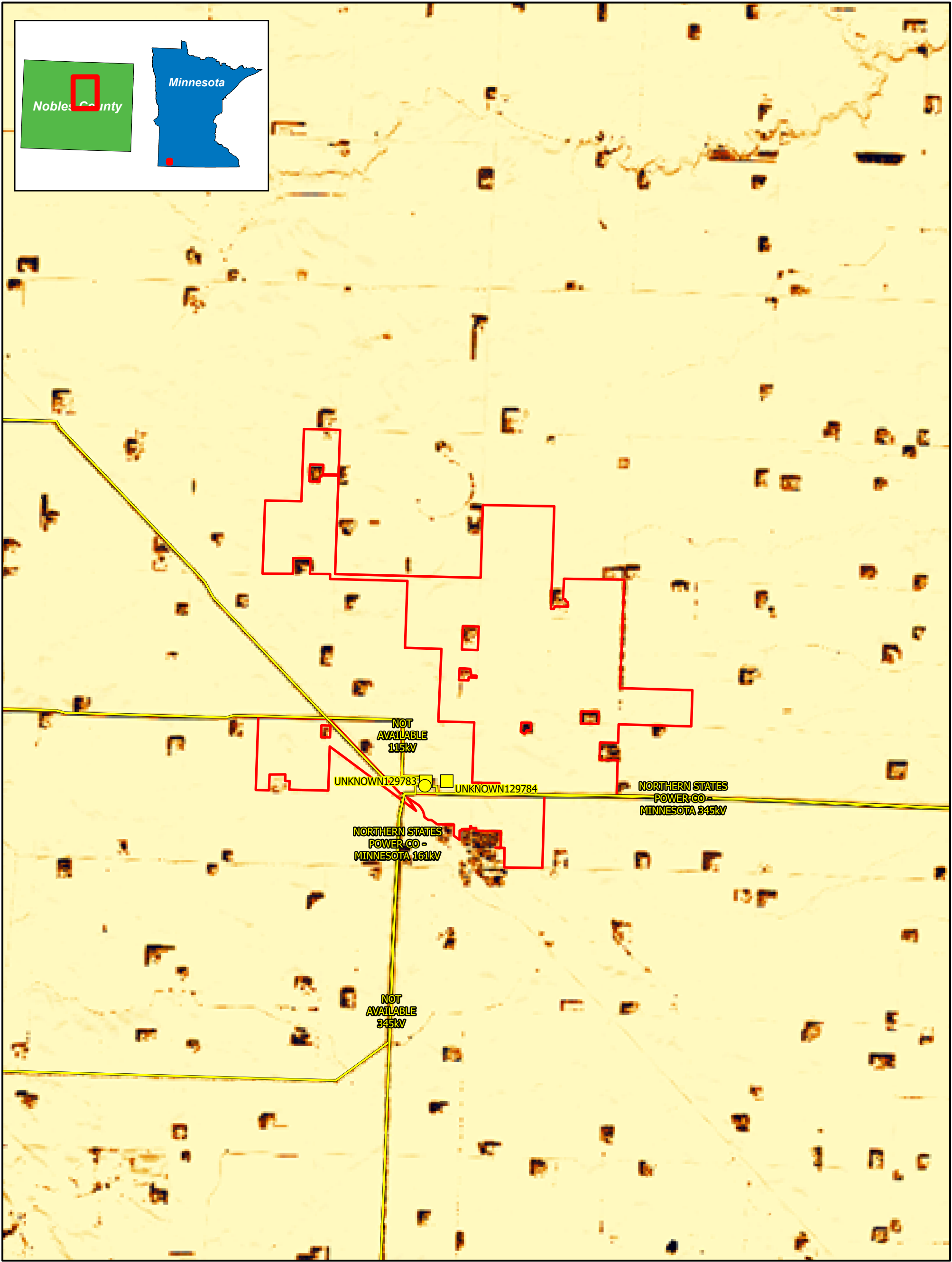
State Boundary

Minnesota Solar Potential (kWh/m²)

3.5 (Sun)

0.0 (Shade)

Imagery: USGS
Sources: National Grid Renewables, MN Geospatial Commons, MDNR, ESRI, University of Minnesota



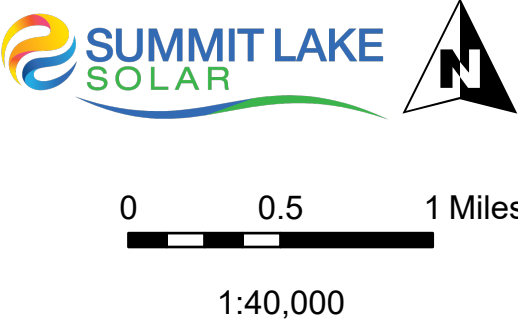
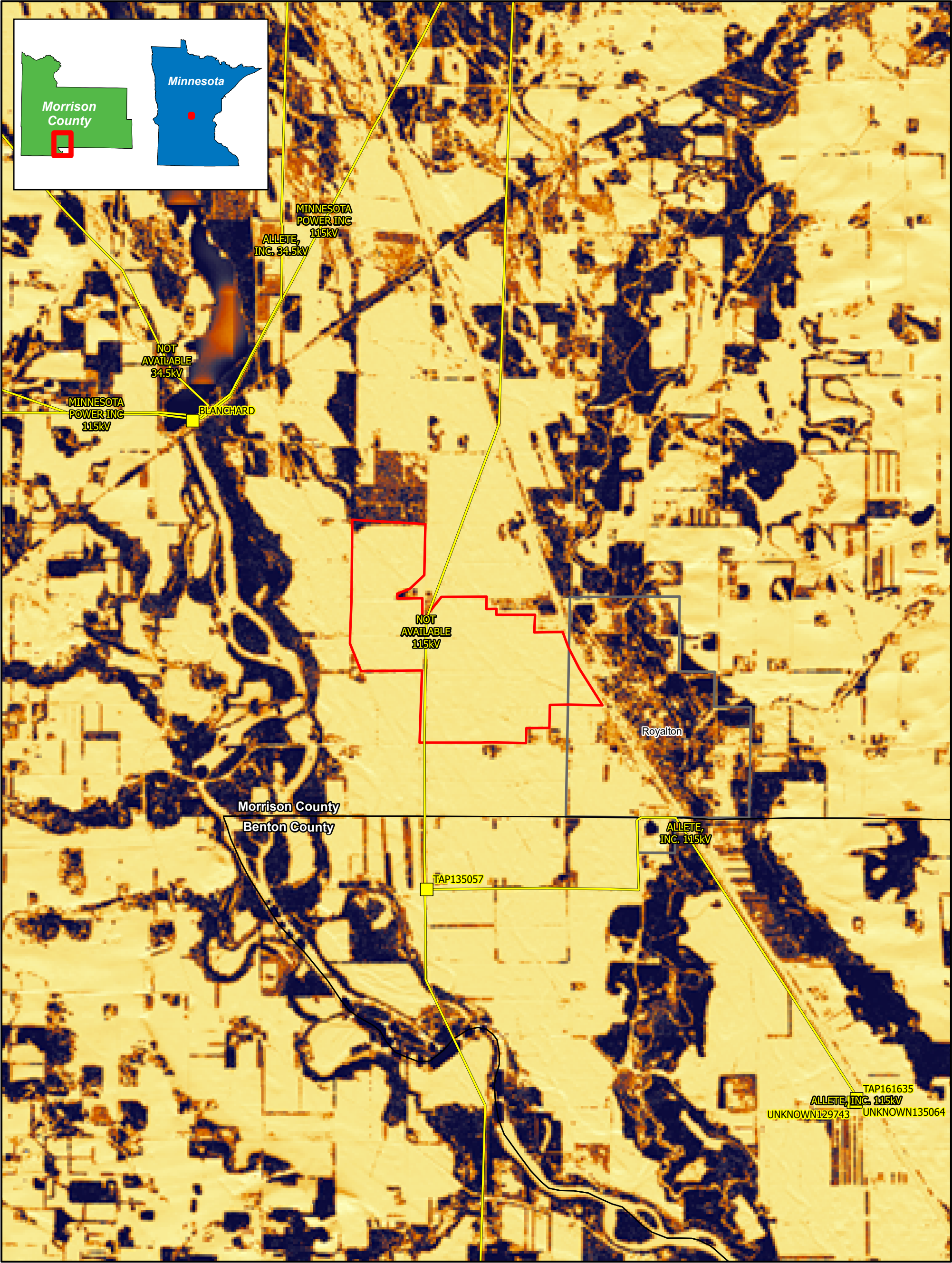
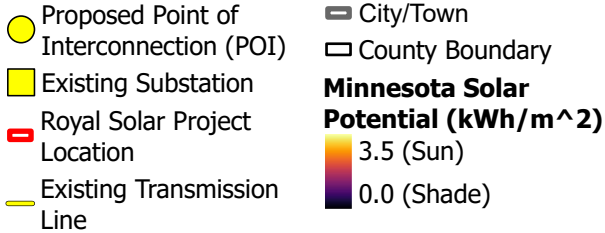
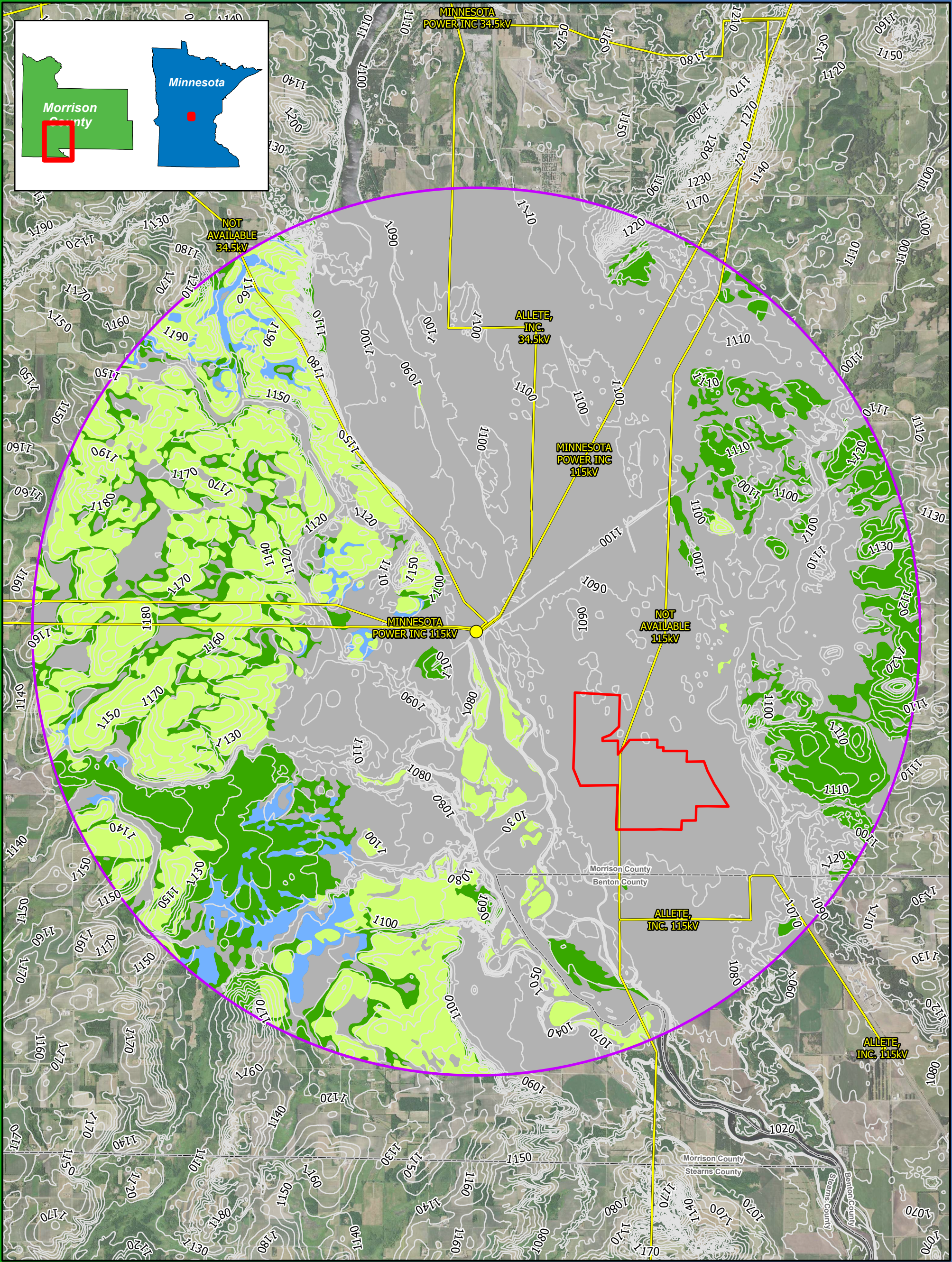


Figure 9
MSSA Insolation at
Royal Solar Site
Summit Lake Solar Project
Morrison County, MN



Sources: National Grid Renewables, MN Geospatial Commons, MDNR, ESRI, University of Minnesota, HIFLD

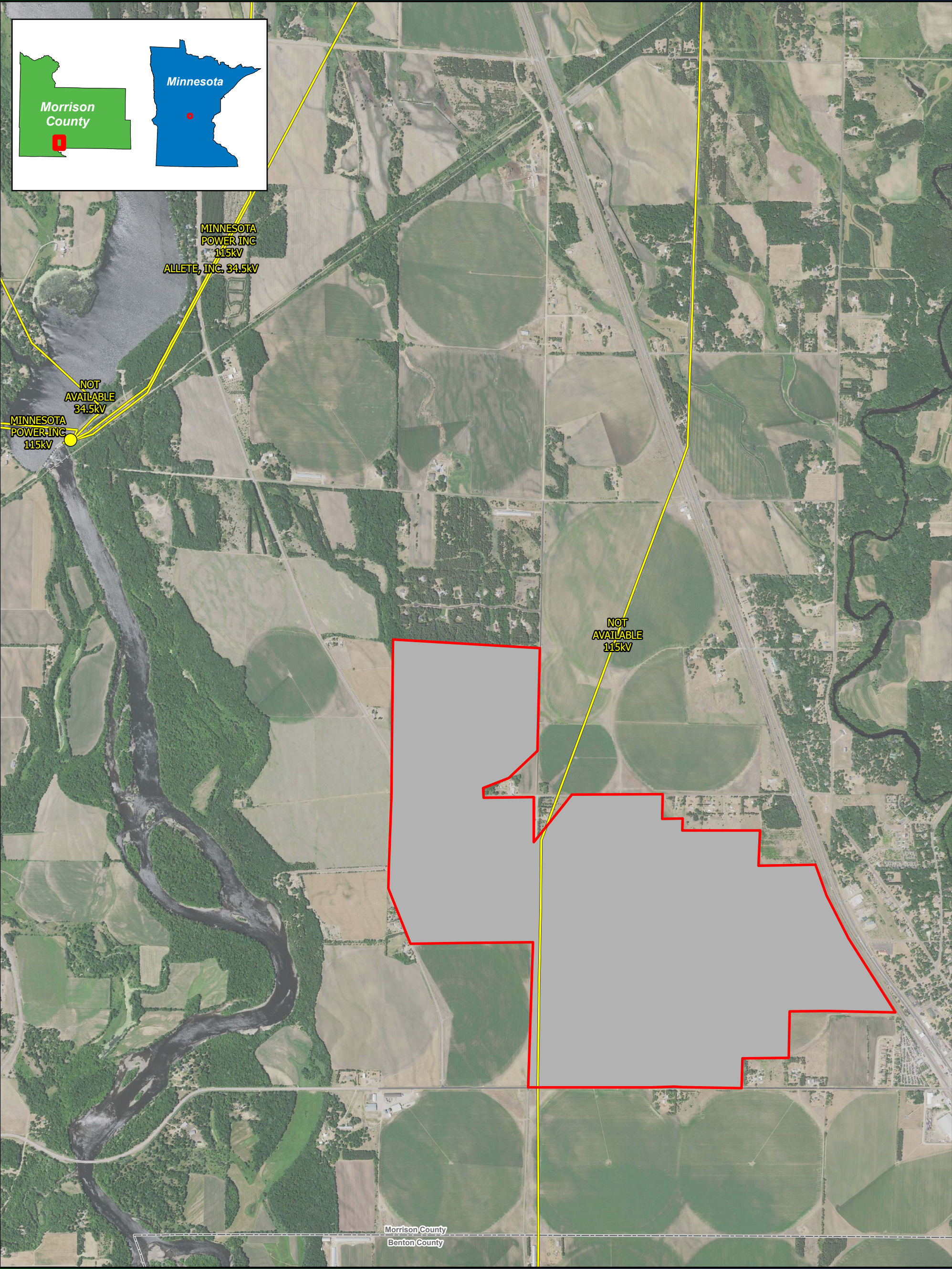


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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NRCS Web Soil Survey, USGS, HIFLD

Figure 10
Prime Farmland and Topography
within Five Miles of Royal
Solar Project POI
Summit Lake Solar Project
Morrison County, MN

- Royal Solar Site
- Proposed Point of Interconnection (POI)
- POI 5-Mile Buffer
- 10ft Contour
- Prime Farmland Classification - Project Area Acreage (Percent Total)**
 - All areas are prime farmland - 9843 Acres (19.48%)
- Farmland of statewide importance - 7529 Acres (14.9%)
- Not prime farmland - 32098 Acres (63.54%)
- Prime farmland if drained - 1049 Acres (2.08%)
- Existing Transmission Line
- County Boundary



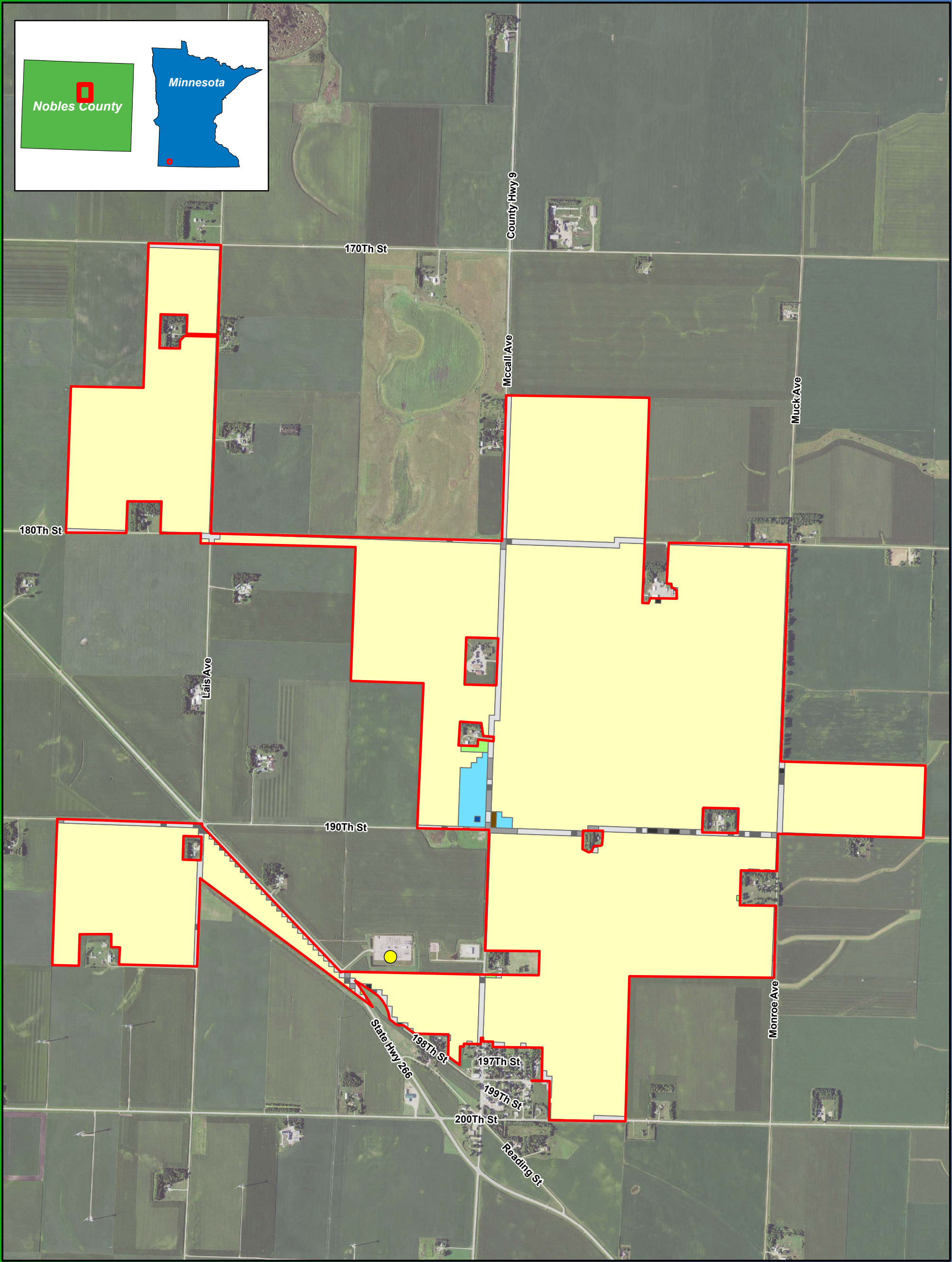
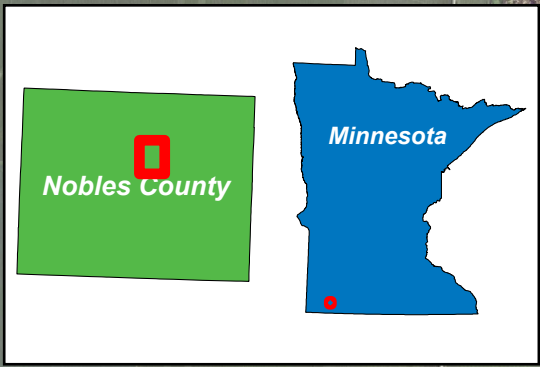
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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NRCS Web Soil Survey, HIFLD

Figure 10a
Royal Solar Site Prime Farmland
Summit Lake Solar Project
Morrison County, MN

- Royal Solar Site
- Proposed Point of Interconnection (POI)
- Prime Farmland Classification - Project Area Acreage (Percent Total)**
 - Not prime farmland - 898.5 Acres (100%)
 - Existing Transmission Line
 - County Boundary



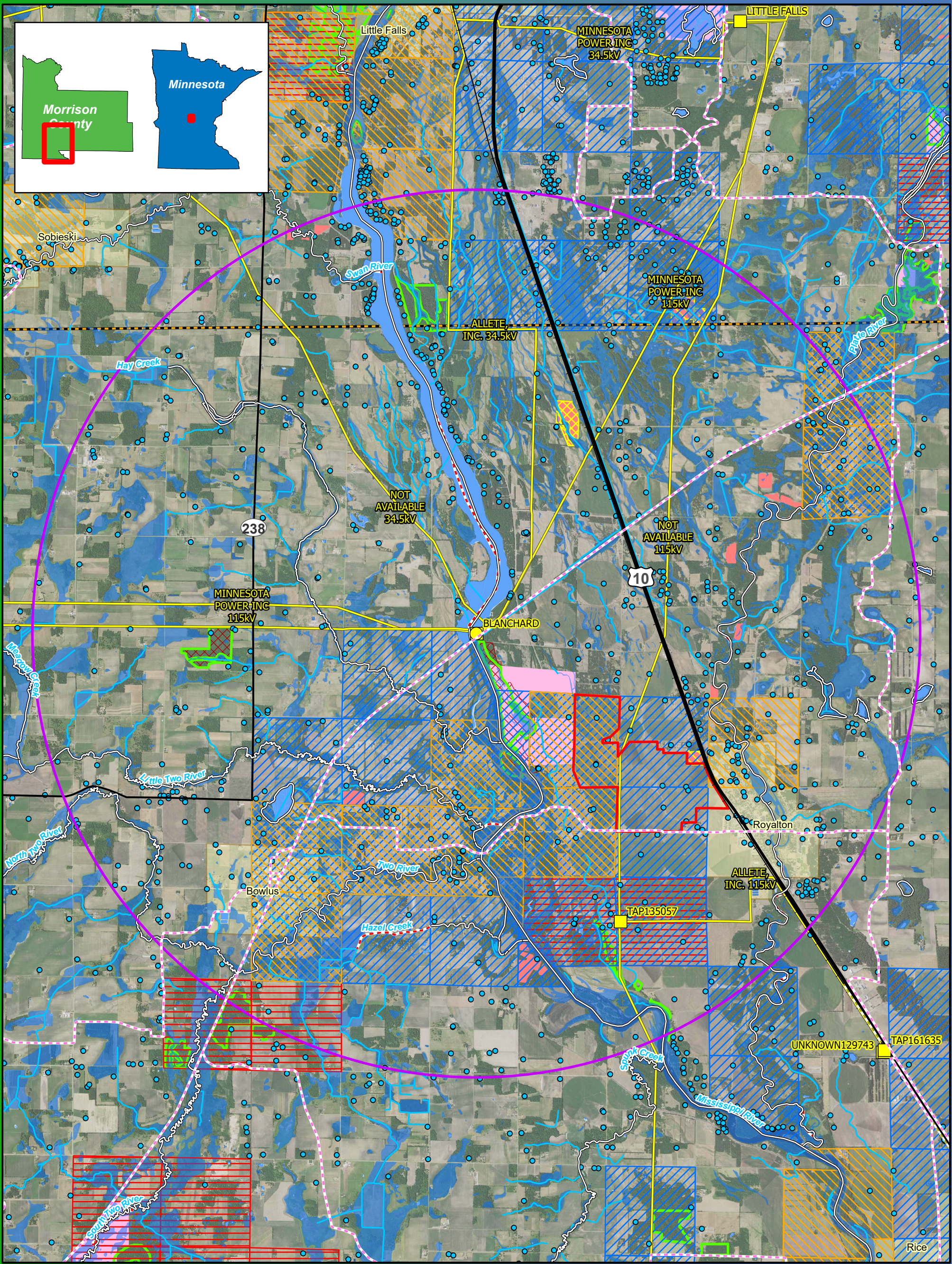
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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NLCD

Figure 11a
Land Cover - Land Control Area
Summit Lake Solar Project
Nobles County, MN

Land Control Area	Developed, Medium Intensity - 5.18 Acres (0.26%)
Proposed Point of Interconnection (POI)	Developed, Open Space - 67.87 Acres (3.41%)
NLCD Land Cover Type - Project Area Acreage (Percent Total)	
Barren Land - 0.66 Acres (0.03%)	Emergent Herbaceous Wetlands - 14.90 Acres (0.75%)
Cultivated Crops - 1888.77 Acres (94.93%)	Hay/Pasture - 0.16 Acres (0.01%)
Deciduous Forest - 0.18 Acres (0.01%)	Herbaceous - 2.14 Acres (0.11%)
Developed, High Intensity - 1.62 Acres (0.08%)	Mixed Forest - 0.19 Acres (0.01%)
Developed, Low Intensity - 7.74 Acres (0.39%)	Open Water - 0.22 Acres (0.01%)



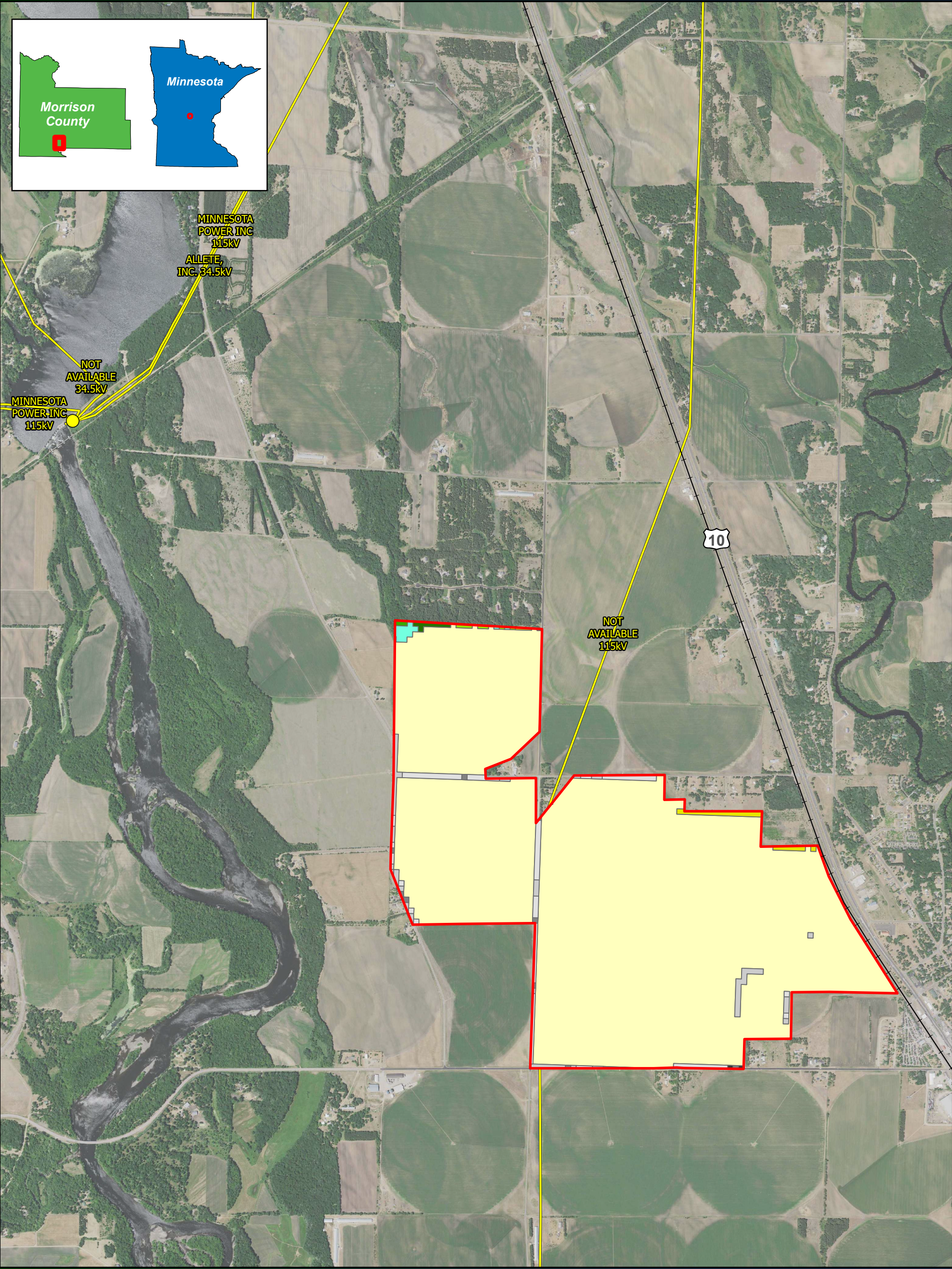
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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons, MDNR, ESRI, NRCS Web Soil Survey, HIFLD, NCED

Figure 12
Royal Solar Site &
POI Constraints
Summit Lake Solar Project
Morrison County, MN

- Royal Solar Site
- Proposed Point of Interconnection (POI)
- Existing Substation
- POI 5-Mile Buffer
- Water Well
- Existing Transmission Line
- Architectural History Resource
- Cultural Resource Area
- Historic Cemetery
- PWI Watercourse
- PWI Basin
- NHD Named Stream
- NWI Wetland
- NHD Waterbody
- Impaired Stream
- Natural Gas Pipeline
- Invertebrate Animal
- Vertebrate Animal
- Vascular Plant
- MNDNR Buffer Protection Area
- NCED Easement
- Native Plant Community
- Minnesota Wildlife Management Area
- Snowmobile Trail
- MCBS Railroad Rights of Way
- Prairie
- MBS Site of Biodiversity Significance
- Major Road
- Conservation Easement
- City/Town
- Railroad



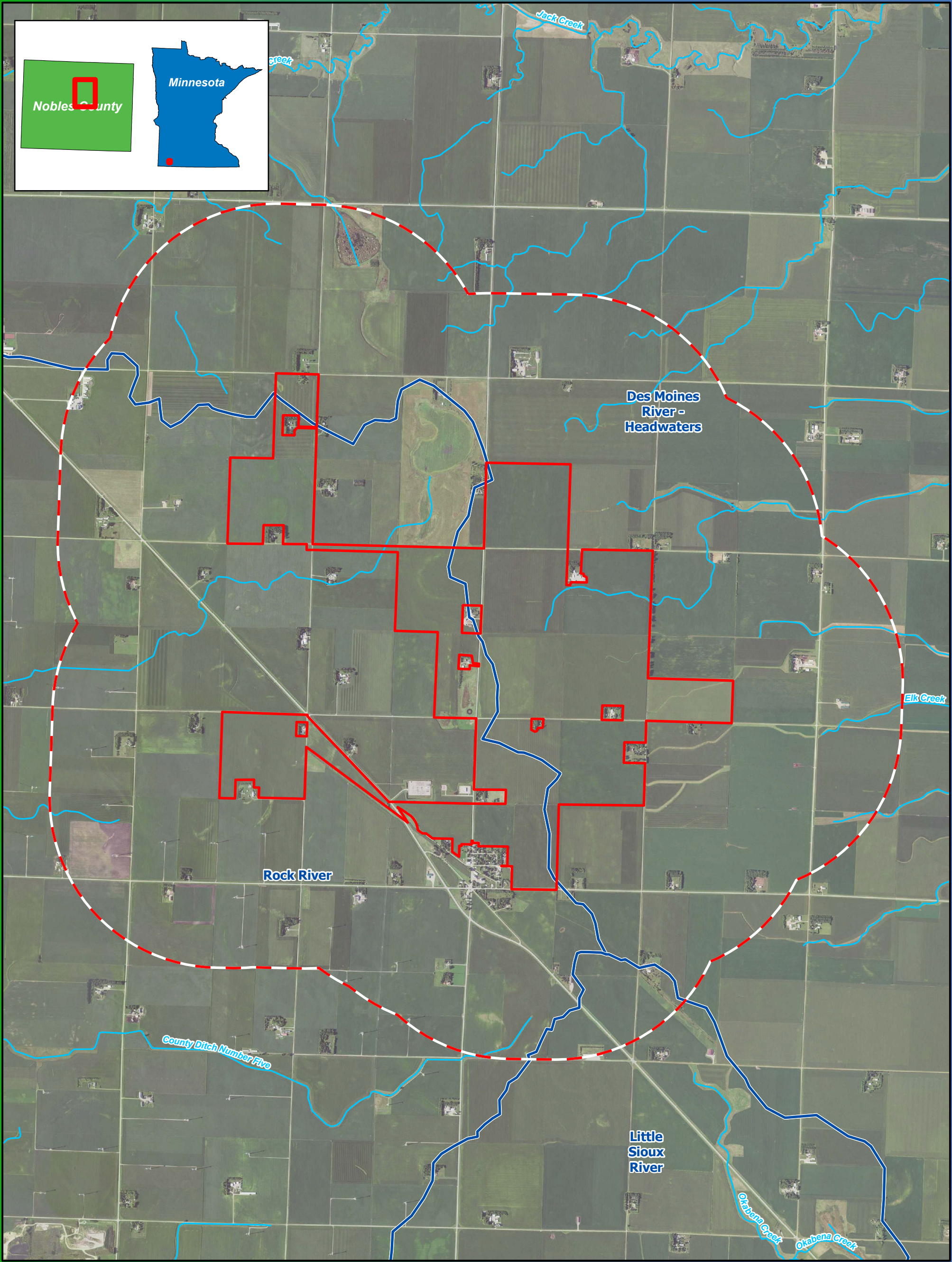
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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NLCD

Figure 12a
Royal Solar Site Land Cover
Summit Lake Solar Project
Morrison County, MN

Royal Solar Site	Developed, Medium Intensity - 1.51 Acres (0.17%)
Proposed Point of Interconnection (POI)	Developed, Open Space - 15.72 Acres (1.75%)
Existing Transmission Line	Evergreen Forest - 0.89 Acres (0.10%)
NLCD Land Cover Type - Project Area Acreage (Percent Total)	
Cultivated Crops - 859.89 Acres (95.76%)	Hay/Pasture - 4.52 Acres (0.50%)
Deciduous Forest - 0.48 Acres (0.05%)	Mixed Forest - 1.47 Acres (0.16%)
Developed, High Intensity - 0.27 Acres (0.03%)	Woody Wetlands - 2.53 Acres (0.28%)
Developed, Low Intensity - 11.23 Acres (1.25%)	Railroad





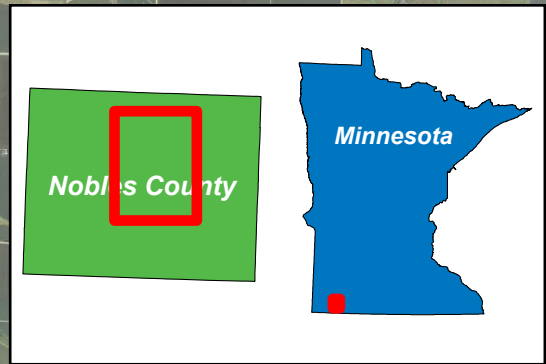
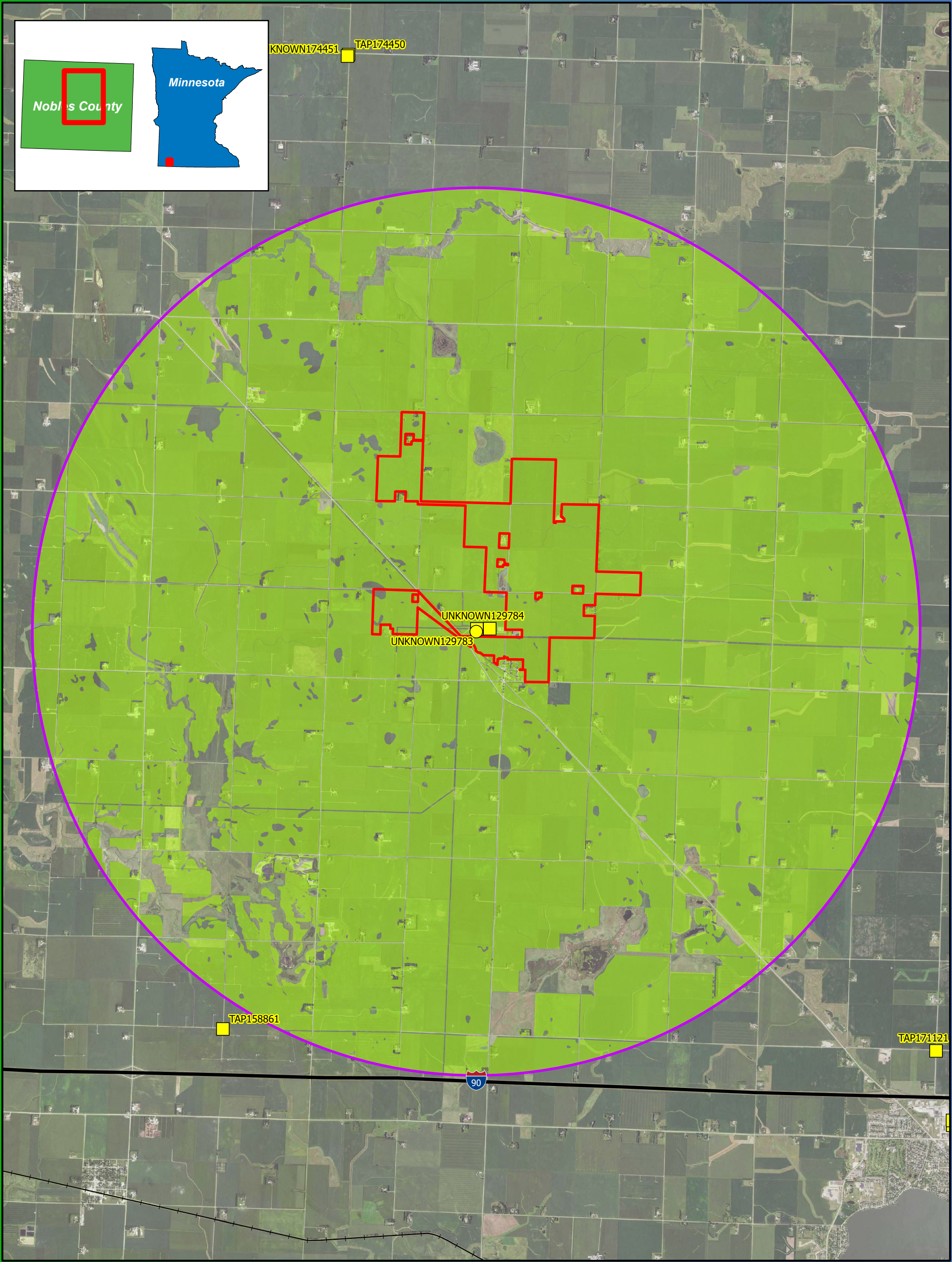
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Figure 13
Sensitivity of Surficial
Aquifers to Pollution
Summit Lake Solar Project
Nobles County, MN

-  Land Control Area
-  Project Area 1-Mile Buffer
-  NHD Flowline
-  Watershed Boundary

Imagery Source: 2021 FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI

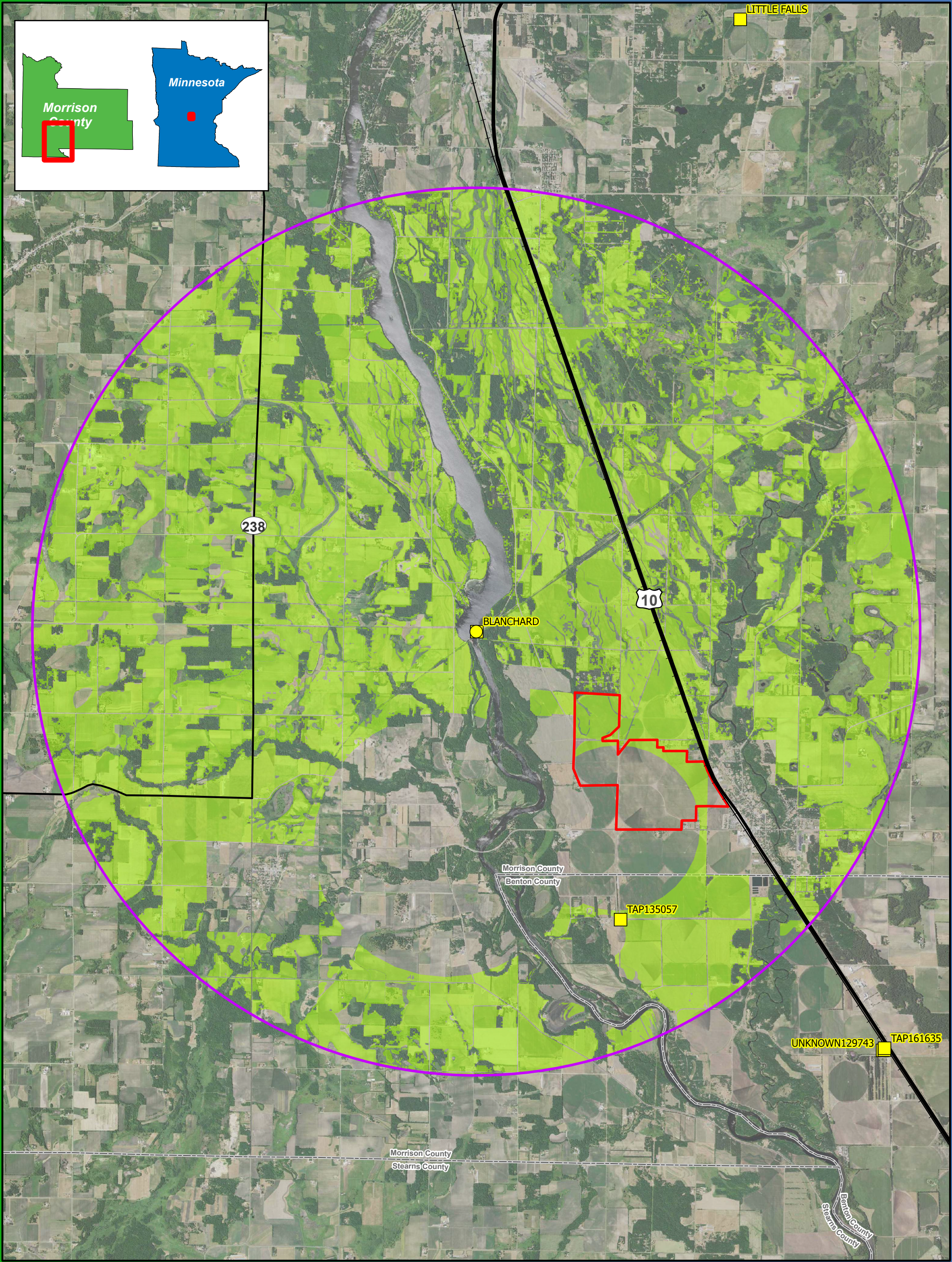


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Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NRCS Web Soil Survey, HIFLD

Figure 14a
Buildable Area within
Five Miles of POI
(Prime Farmland Excluded)
Summit Lake Solar Project
Nobles County, MN

- Land Control Area
- Proposed Point of Interconnection (POI)
- Existing Substation
- POI 5-Mile Buffer
- Buildable Area - 44,692 Acres
- Major Road
- Railroad



0 1 2 Miles

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Figure 14b
Buildable Area within
Five Miles of Royal Solar POI
Summit Lake Solar Project
Morrison County, MN

- Royal Solar Site
- Proposed Point of Interconnection (POI)
- Existing Substation
- POI 5-Mile Buffer
- Buildable Area - 26,193 Acres
- County Boundary
- Major Road
- Railroad

Imagery: MNGeo 2021 Color FSA
Sources: National Grid Renewables, MN Geospatial Commons,
MDNR, ESRI, NRCS Web Soil Survey, USGS, HIFLD