Appendix J

Phase I Survey Reports and Natural Heritage Information System Request

In accordance with Minnesota Rules, part 7829.0500 and Minnesota Statutes Chapter 13, Xcel Energy has designated portions of Appendix J – Phase I Survey Reports and Natural Heritage Information System Request as **NONPUBLIC DATA – NOT FOR PUBLIC DISCLOSURE** because it contains sensitive cultural resource location information. The Minnesota State Historic Preservation Office Manual for Archaeological Projects in Minnesota provides for restricted access to sensitive cultural resource location information.

April 2021

Re: Cultural Surveys and Reports and Survey Coverage for the Sherco Solar Project

To whom it may concern;

As noted in Xcel Energy's Site Permit Application, the proposed Sherco Solar Project represents a joint development between Xcel Energy and National Grid Renewables Development, LLC (NG Renewables). NG Renewables was developing a solar project on the west side of the Sherco Generating Plant (West Block and West HVTL) while Xcel Energy was developing a solar project on the east side of the Sherco Generating Plant (East Block and East HVTL). The companies entered into a Purchase and Sale Agreement (PSA) on January 15, 2021 whereby NG Renewables will act as an authorized representative on behalf of Xcel Energy to secure a Site Permit and two Route Permits for the Solar Project and the West and East HVTL Projects, respectively.

Prior to execution of the PSA, NG Renewables and Xcel Energy separately retained Westwood Professional Service (Westwood) and Tetra Tech, Inc. (Tetra Tech) to complete cultural surveys of their respective solar projects. Both reports are contained within this appendix. Westwood completed survey of the East Block and East HVTL, which are considered in Westwood's "A Report for Phase I Archaeological Survey, Sherco Solar One Facility and Transmission Line." Tetra Tech completed a separate survey of the West Block and West HVTL, which is considered in Tetra Tech's "Phase I Cultural Resources Survey, Sherco Solar and Transmission Line." In Tetra Tech's report, the West Block is referred to as the southeastern solar development area and the West HVTL is referred to as the Transmission Line Project Area. Tetra Tech also completed survey of a northwestern solar development area and anticipated underground collection line southeast of Clear Lake, MN. The northwestern solar development area considered in the report was subsequently dropped from the scope for the 460 MW Sherco Solar Project presented in the Site Permit Application.

Since completion of the initial reports, the Solar Project area and West and East HVTL Projects were further refined based on additional data collection and design considerations. The remaining survey, which represents a very small portion of the total Sherco Solar Project area, will be completed in 2021. Following completion of survey, consultation with the MN SHPO will be initiated.

Don't hesitate to contact me with questions.

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Phase I Cultural Resources Survey

Sherco Solar and Transmission Line
Becker, Sherburne County, Minnesota

February 16, 2021

PRESENTED TO

Sherco Solar, LLC
8400 Normandale Lake Boulevard, Suite 1200
Bloomington, Minnesota 55437

PRESENTED BY

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2001 Killebrew Drive, Suite 141
Bloomington, Minnesota 55425
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MANAGEMENT SUMMARY

This report presents the findings of a Phase I Cultural Resource Survey for the proposed Sherco Solar Facility and Transmission Line (the Projects) located south of the city of Clear Lake and east of the city of Becker in Sherburne County, Minnesota. The proposed Solar Project Area encompasses 2,561 Acres (1,036 hectares) and is proposed to be developed in two areas, a northwestern solar development area and southeastern solar development area, which are connected by a proposed underground collection line route. The northwestern solar development area is approximately 913 acres (369 hectares) and the southeastern solar development area is approximately 1,610 acres (652 hectares). The proposed underground collection line route that connects the two solar development areas is approximately 1.9 miles (3.1 kilometers) long and has a survey area of approximately 38 acres (15 hectares). The proposed Transmission Line Project Area consists of a proposed transmission line route that extends from the southeastern solar development area to Xcel Energy's Sherco Power Plant. The Transmission Line Project Area is approximately 3.4 miles (5.5 kilometers) long and has a survey area of approximately 177 acres (72 hectares), The Solar and Transmission Line Project Areas include approximately 2,738 acres (1,108 hectares) and encompasses portions of 17 sections of land in Becker and Clear Lake Townships.

The Projects will need a Site Permit (Solar Project Area) and Route Permit (Transmission Line Project Area) from the Minnesota Public Utilities Commission (PUC). Typically, as part of the permit conditions, each Project must describe effects of the facility on archaeological and historic resources under Minnesota Administrative Rules Chapter 7850.1900 and consult with the Minnesota State Historic Preservation Office (SHPO) and Office of the State Archaeologist (OSA) in the event that a cultural or archaeological resource is encountered. The Site Permit and Route Permit will also likely specify that Sherco shall make every effort to avoid impacts to identified archaeological and historical resources when constructing the Project.

This investigation was conducted to comply with the conditions expected in the PUC Site Permits and with Minnesota state law. The investigation included: (1) a file review of the Study Areas (i.e., each Project Area plus a 1-mile [1.6-kilometer] buffer) to identify any National Register of Historic Places (NRHP) listed or eligible archaeological or architectural resources that are present, and (2) a pedestrian survey to assess the presence or absence of cultural resources on the surface within the Project Areas.

Due to the COVID-19 pandemic, the SHPO was closed and an in-person manuscript search of the Study Areas were unable to be completed. Tetra Tech requested a manuscript search of the Study Areas and the SHPO provided manuscript data based on an internal query of its records.

A SHPO file review and a review of the OSA archaeological site portal failed to identify any previously documented archaeological resources within the Solar Project Area; however, six previously documented archaeological resources (Sites 21SHc, 21WRbu, 21SH0040, 21SH0042, 21SH0058, and 21WR0117) were identified within the Solar Study Area. The six previously documented archaeological resources are located approximately 800 feet to

0.9 mile (244 meters to 1.4 kilometers) from the Solar Project Area. All six of the previously documented archaeological resources are currently unevaluated for listing in the NRHP.

No previously documented architectural resources were identified within the Solar Project Area; however, 20 previously documented architectural resources were identified within the Solar Study Area. One of the resources is the NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367), located approximately 150 feet north of the southeastern solar development area. Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367), also known as U.S. Highway 10, is considered eligible for listing in the NRHP under Criterion A: Events for the important role it played in the transportation history of Minnesota. The remaining 19 resources in the Solar Study Area are currently unevaluated for listing in the NRHP.

A SHPO file review and a review of the OSA archaeological site portal failed to identify any previously documented archaeological sites within the Transmission Line Project Area; however, one previously documented archaeological resource (Site 21WR0117) is located in the Transmission Line Study Area approximately 0.4 mile (0.6 kilometer) west of the Transmission Line Project Area. Site 21WR0117 is currently unevaluated for listing in the NRHP. No previously documented architectural resources were identified within the Transmission Line Project Area; however, one previously documented architectural resource was identified within the Transmission Line Study Area. The resource is the NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367), located approximately 0.4 mile (0.6 kilometer) northeast of the Transmission Line Project Area. Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367), also known as U.S. Highway 10, is considered eligible for listing in the NRHP under Criterion A: Events for the important role it played in the transportation history of Minnesota.

Based on the significance of Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) under Criterion A for its role in the history of transportation in Minnesota, it is Tetra Tech's opinion that construction of the Projects would not negatively affect the resource's ability to convey its historic associations with transportation. As a result, it is Tetra Tech's opinion that the NRHP eligibility of Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) would not be affected by the Projects. No additional assessment activities are required for the remaining 19 unevaluated resources within the Solar Study Area.

The pedestrian survey failed to identify any cultural resources within the Project Areas. No further work is recommended.

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APPENDICES

1.0 INTRODUCTION

This report presents the findings of a Phase I Cultural Resource Survey for the proposed Sherco Solar Facility and Transmission Line (the Projects) located south of the city of Clear Lake and east of the city of Becker in Sherburne County, Minnesota (Appendix A, Figure 1). The proposed Solar Project Area encompasses 2,561 Acres (1,036 hectares) and is proposed to be developed in two areas, a northwestern solar development area and southeastern solar development area, which are connected by a proposed underground collection line route. The northwestern solar development area is approximately 913 acres (369 hectares) and the southeastern solar development area is approximately 1,610 acres (652 hectares). The proposed underground collection line route that connects the two solar development areas is approximately 1.9 miles (3.1 kilometers) long and has a survey area of approximately 38 acres (15 hectares). The proposed Transmission Line Project Area consists of a proposed transmission line route that extends from the southeastern solar development area to Xcel Energy's Sherco Power Plant. The Transmission Line Project Area is approximately 3.4 miles (5.5 kilometers) long and has a survey area of approximately 177 acres (72 hectares), The Solar and Transmission Line Project Areas include approximately 2,738 acres (1,108 hectares) and encompasses portions of 17 sections of land in Becker and Clear Lake Townships (Table 1).

Table 1. Public Land Survey Description of the Project Areas

County	Project Area	Township Name	Township	Range	Section(s)
Sherburne	Solar	Clear Lake	34N	29W	17-22, 27, 28, 34
	Solar	Clear Lake	34N	30W	13, 24
	Transmission Line	Becker	33N	29W	1, 2
	Transmission Line	Becker	34N	29W	25, 26, 35, 36
	Transmission Line	Clear Lake	34N	29W	27

1.1 REGULATORY REQUIREMENTS

The Projects will need a Site Permit (Solar Project Area) and Route Permit (Transmission Line Project Area) from the Minnesota Public Utilities Commission (PUC). Typically, as part of the permit conditions, each Project must describe effects of the facility on archaeological and historic resources under Minnesota Administrative Rules Chapter 7850.1900 and consult with the Minnesota State Historic Preservation Office (SHPO) and Office of the State Archaeologist (OSA) in the event that a cultural or archaeological resource is encountered. The Site Permit and Route Permit will also likely specify that Sherco shall make every effort to avoid impacts to identified archaeological and historical resources when constructing the Project.

The Project is also subject to the Minnesota Historic Sites Act (MS 138.661-138.669), which requires that state agencies consult with the SHPO to determine appropriate treatments and to seek ways to avoid and mitigate any

adverse effects on state or federal designated or listed historic properties if such a property may be impacted by the Project.

1.2 ORGANIZATION OF THE REPORT

This report details the research methods, environmental background, results of the literature review, archaeological field survey results, and conclusions. Mr. Adam Holven served as Principal Investigator, Mr. Grant Kvendru served as lead author, and the field crew consisted of Mr. Kvendru, Mr. Mike Straskowski, Mr. Brett Tanselle, Mr. Creighton Gerber, and Mr. Spencer Patterson. Supporting documentation for this investigation includes: Appendix A. Figures; Appendix B. Historic Map Log; and Appendix C. Photo Log.

2.0 METHODS

All work was conducted in accordance with *Minnesota SHPO Manual for Archaeological Survey Projects* (Anfinson 2005), and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation [48 Federal Register 44716-44740] (National Park Service [NPS] 1983).

2.1 BACKGROUND RESEARCH

The Study Areas (i.e., the Project Areas plus a 1-mile [1.6-kilometer] buffer) were investigated through file reviews received from SHPO on September 30, 2020 and December 14, 2020, and reviews of the OSA archaeological site portal. Tetra Tech reviewed this data for archaeological and architectural resources that (1) are potentially eligible for listing on the NRHP or (2) may be deemed culturally sensitive. Due to the COVID-19 pandemic, the SHPO was closed and an in-person manuscript search of the Study Areas were unable to be completed. Tetra Tech requested a manuscript search of the Study Areas conducted by SHPO and SHPO provided manuscript data based on an internal query of its records.

The background research also included a review of historic sources including county atlases, a county history, aerial photographs, and topographic maps (Table 2). These documents were examined to identify historic structures, railroads, roads, and trails that might have been within the Project Areas and encountered during the field survey as well as notable citizens of the area that may have been associated with the Project Areas.

Table 2. Historic Resources Reviewed within the Study Areas

Type	Year	Reference
U.S. Department of the Interior General Land Office (GLO) Plats	1851	GLO Records
Atlas	1874	A.T. Andreas
Atlas	1903	Northwest Publishing Company
Atlas	1914	Webb Publishing Company
7.5-minute Topographic Maps	1991	U.S. Geological Survey (USGS)

Aerial Photographs	1938	University of Minnesota – John R. Borchert Library
Aerial Photographs	1953	USGS Earth Explorer
Aerial Photographs	2017	Google Earth Pro

2.2 FIELD METHODS

The purpose of the field survey was to identify the presence or absence of previously undocumented archaeological resources within the Project Areas.

2.2.1 Pedestrian Survey

A systematic pedestrian surface survey at 50-foot (15-meter) interval transects was conducted throughout 100 percent of the Project Areas to determine the presence of artifacts or features on the surface. An EOS Arrow 100 GNSS GPS receiver coupled with an Apple iPad unit was used to navigate and document cultural resources encountered in the Project Areas. The pedestrian survey also documented land use, ground cover, and surface visibility. Observations and photographic documentation of field conditions are on record at the Tetra Tech office in Bloomington, Minnesota.

2.2.2 Site Delineation

If single artifacts, artifact scatters, or features were identified during the pedestrian survey, an intensive surface survey of the area was conducted at 10-foot (3-meter) interval transects to delineate the site's surficial boundaries. During this intensive pedestrian survey, the boundaries were flagged and then the locations recorded with ESRI Survey123. The locations of temporally or culturally diagnostic artifacts and features were also recorded with the ESRI Survey123.

In Minnesota, a site consists of "a discrete original location containing or once containing evidence of past human activity that holds significance for most archaeologists" (OSA 2009). A Precontact period[1] site is assigned an official number if it meets two conditions: an official site form has been correctly filled out and an archaeologist or reliable informant has observed an artifact or feature at a specific, original location (OSA 2009). A Post-contact period[2] site needs to meet the two criteria for a Precontact period site and be at least 50 years old, have field documented artifacts and/or features with the potential to yield significant information about the past, and the site cannot be better classified as a building, structure, or object according the NRHP's criteria (OSA 2009).

2.2.3 Assigning Temporal Affiliation

During the field survey, identified archaeological sites were recorded, described, and mapped, and cultural affiliation was assigned when possible. Clear temporal affiliation was assigned to site types such as lithic scatters

[1] The Precontact period dates roughly from 11,450 to 300 years Before Present (B.P.).
[2] The Post-contact period dates from roughly 300 B.P. to Present.

(Precontact) and abandoned farmsteads (Post-contact), if identified. If sites contained features or artifacts of indeterminate temporal affiliation or contained both Precontact and Post-contact components, this information was also noted.

3.0 ENVIRONMENTAL BACKGROUND

A brief overview of environmental conditions within the Project Areas provides a foundation for understanding human subsistence and settlement patterns in the region over time. Understanding how environmental variables (e.g. availability of food, water, fuel, and tool materials) affected past decision making allows for a greater awareness of a region's potential archaeological resources.

3.1 LANDFORMS

The Project Areas are located within the Anoka Sand Plain Subsection of the Minnesota and Northeast Iowa Morainal Section of the Eastern Broadleaf Forest Province (Minnesota Department of Natural Resources [MN DNR] 2020). The Anoka Sand Plain Subsection is characterized by a flat, sandy lake plain and terraces along the Mississippi River. This sandy lake plain is the major landform within the subsection, which also contains small dunes, kettle lakes, and tunnel valleys. Topography within the subsection is level to gently rolling. Prior to Euro-American settlement, vegetation in the subsection was predominately oak barrens and openings with areas of brushland, upland prairie, or floodplain forest (MN DNR 2020).

3.2 SOILS

Eleven soil map units encompass the Project Areas (U.S. Department of Agriculture-Natural Resources Conservation Service [USDA-NRCS] 2020a) (Table 3). The parent materials for 10 of these soil map units include glacial outwash, alluvial sediments of the Late Wisconsin glaciation, and organic materials (USDA-NRCS 2020b). Approximately 85 percent of these 10 soils (2,367 acres [957.9 hectares]) belong to the Zimmerman series. Approximately 37 acres (15 hectares) of the Transmission Line Project Area is categorized as Udipsamments, cut and fill land, and have been previously disturbed to the extent that no natural soil horizons remain in those areas. These soils are within the Transmission Line Project Area near the Sherco Power Plant. The potential for deeply buried archaeological deposits to exist within the Project Areas is low.

Table 3. Soil Map Units in the Project Areas

Soil Map Unit	Description
Arvilla	Very deep, somewhat excessively drained soils formed in moderately coarse textured glacial outwash and the underlying sand and gravel on glacial lake beaches, stream valley terraces, and outwash plains.
Duelm	Very deep, moderately well drained soils formed in sandy glacial outwash on outwash plains, stream terraces, and valley trains.

Soil Map Unit	Description
Hubbard	Very deep, excessively and well drained soils formed in sandy glacial outwash or sandy alluvial sediments of the Late Wisconsin glaciation on slightly concave to convex slopes on outwash plains, valley trains, and stream terraces.
Isan	Very deep, poorly and very poorly drained soils formed in sandy glacial outwash on outwash plains, stream terraces, flood plains, and valley trains.
Markey	Very deep, very poorly drained organic soils formed in herbaceous organic material overlying sandy deposits in depressions on outwash plains, lake plains, flood plains, river terraces, valley trains, and moraines.
Mosford	Very deep, somewhat excessively drained soils formed in glacial outwash deposits of a loamy mantle underlying sandy deposits, located on stream terraces, outwash plains, and flood plains.
Rushlake	Very deep, moderately well drained soils formed in sandy and gravelly deposits on lake beaches.
Sandberg	Very deep, excessively drained soils formed in coarse or moderately coarse glacial outwash sediments or glacial beach deposits with or without a thin loamy mantle, located on outwash plains, glacial lake beaches, stream terraces, valley trains, and glacial moraines.
Seelyeville	Very deep, very poorly drained soils formed in organic materials on glacial outwash plains, valley trains, floodplains, glacial lakes, and glacial moraines.
Udipsamments, cut and fill land	Excessively drained soils of variable sandy soils occurring on outwash plains, stream terraces, and lake plains that have been disturbed so no original soil horizons remain.
Zimmerman	Very deep, excessively drained soils formed in sandy glacial outwash or eolian sediments on glacial outwash plains

Source: USDA-NRCS 2020b

3.3 HYDROLOGY

Intermittent wetlands are illustrated within the Solar Project Area on the 1991 USGS 7.5-minute series Clear Lake and Clearwater, Minnesota Topographic Quadrangles (Appendix A, Figure 1). Multiple intermediate wetlands are illustrated adjacent to the Project Areas. Camp Lake, Crescent Lake, Jones Lake, Mosford Lake, and Prairie Lake are all illustrated near the Solar Project Area; Jones Lake is the closest, immediately adjacent to the northwestern solar development area. No wetlands were illustrated near the Transmission Line Project Area.

The Mississippi River is the closest major drainage to the Project Areas. The southern portions of the Project Areas are nearest to the river; the southeastern solar development area is on a terrace approximately 150 feet (45.7 meters) north of the river and the southern portion the Transmission Line Project Area is approximately 600 feet (183 meters) east of the river, at their closest points. On a regional scale, the Project Areas are within the Clearwater-Elk Watershed of the Upper Mississippi-Crow-Rum Subregion of the Upper Mississippi Water Resource Region (USGS 2020a).

4.0 CULTURAL BACKGROUND

This section provides a summary of the known cultural resources within the region. Similar to Section 3.0 (Environmental Background), a general understanding of a region's cultural resources is necessary for interpretations of land use patterns and newly documented sites. The Project Areas lie within the Central Lakes Deciduous East (4e) Archaeological Region in central Minnesota. The Archaeological Regions are used for Precontact and Post-contact archaeological site studies and management in the state.

4.1 PRECONTACT AND CONTACT PERIOD

Precontact cultures within the Minnesota are divided into three periods: Paleoindian and Archaic, Initial Woodland, and Terminal Woodland (Gibbon 2012). These periods are based largely on technological innovations that can be observed in the archaeological record. These innovations include changes in the forms of projectile point styles and the development and decoration of pottery. Behavioral adaptations such as changing subsistence and mobility patterns also serve as points of reference in determining the transition from one tradition to another. The following descriptions were primarily compiled from Archaeology of Minnesota (Gibbon 2012).

4.1.1 Paleoindian and Archaic Periods (11,200 – 500 B.C.)

The Paleoindian and Archaic Periods are generally poorly understood in Minnesota since most archaeological evidence for them are from surface sites. The lithic tool types present at site locations are generally what characterize sites dating to these periods. These periods are marked by environmental stress due to retreating glaciers during the Paleoindian Period, a transition to a dry, warmer climate during the Middle Archaic Period, followed by a shift to a wetter, cooler climate during the Late Archaic Period

4.1.1.1 Paleoindian and Early Eastern Archaic Traditions (11,200 – 7,500 B.C.)

The Paleoindian Tradition is characterized by hunting and gathering adaptations with a notable concentration on now-extinct big game animals. The beginning of the Paleoindian Tradition focused attention on Pleistocene fauna such as mammoths and camelops; later focus was on species of bison intermediate in size between late Pleistocene and modern forms. Other characteristics of the Paleoindian Tradition include (1) geographically extensive interaction networks between social groups (Hayden 1981), and (2) distinctive lanceolate projectile point styles by which the various Paleoindian cultural complexes are identified. Cultural complexes represented throughout Minnesota include the Clovis, Folsom, and Plano complexes (Anfinson 1997). Paleoindian artifacts within Minnesota have largely been poorly documented and often consist of isolated tools. The best-known Paleoindian site in Minnesota is the Browns Valley Site (21TR0005) in west-central Minnesota.

Gibbon (2012) notes that there was a large temporal overlap between Late Paleoindian traditions and the early portion of the Archaic tradition (also known as the Early Eastern Archaic) in Minnesota. Late Paleoindian and Early Eastern Archaic site components are generally distinguished by the presence of distinctive tool types. Commonly

identified tool types include stemmed points, scrapers, and knives. Heavy stone tools like choppers, adzes, mauls, gouges, hammerstones, and picks have been at sites within wooded biomes of Minnesota, as the Project Areas would have been during this time.

4.1.1.2 Middle and Late Archaic Traditions (7,500 – 500 B.C.)

The Middle Archaic Tradition (7,500 – 3,000 B.C) coincides with the Hypsithermal, a warm and dry climatic episode (Gibbon 2012). During this time, the woodlands present in the Central Lakes Deciduous Archaeological East Region during the Paleoindian and Early Archaic Traditions retreated northeast and were replaced by oak savanna, followed by prairie. Middle Archaic sites and artifacts have been sparsely identified within Minnesota. Those that have been identified indicate a shift in lithic tool technologies to a wider variety of projectile point styles and the emergence of ground stone tools (Anfinson 1997; Benchley et al. 1997; Gibbon 2012). Known Middle Archaic sites within the Central Lakes Deciduous East Archaeological Region are generally limited to surficial lithic scatters. The identified archaeological sites point towards populations that were smaller in number and highly mobile, which served as a primary subsistence strategy. Towards the end of the Middle Archaic, the climate of Minnesota cooled and became wetter, and woodlands again advanced into Central Lakes Deciduous Archaeological Region.

Following the climatic trends present during the later Middle Archaic Tradition, the environment of the Central Lakes Deciduous East Archaeological Region shifted from prairie to woodland during the Late Archaic (Benchley et al. 1997; Gibbon 2012). The Late Archaic Tradition is characterized by the appearance of side-notched and stemmed projectile points, the presence of exotic raw materials, including native copper and marine shell, and the presence of communal burial sites (mounds) (Gibbon 2012). As the climate became wetter, lakes and wetlands throughout Minnesota expanded; aquatic resources less readily available during drier times became more readily available. This allowed for a greater diversification of resources and foraging and an increased population density (Anfinson 1997; Gibbon 2012).

4.1.2 Initial Woodland Period (1,000 B.C. – A.D. 700)

The Woodland Period in Minnesota is defined by the appearance of ceramics in the archaeological record. Based on a greater number of previously identified Initial Woodland sites in Minnesota, the Initial Woodland Period is generally better understood than the Paleoindian or Archaic Period in Minnesota. Initial Woodland and Terminal Woodland Periods (Section 4.1.3) adaptations differ within Minnesota based on the geography and resources available to Native Americans, which led to different cultural complexes that appeared within Minnesota during this time. The Central Lakes Deciduous East Archaeological Region straddles two of these areas: southeastern Minnesota and central Minnesota. In both areas, ceramic types and burial mounds help to define the Initial Woodland Period.

Southeastern Minnesota during the Initial Woodland Period shared the climate, ecology, and geography of southern Midwest states like Illinois, Indiana, and Ohio (Gibbon 2012). Artifacts dating to the Initial Woodland period within southeastern Minnesota have been broadly associated with the Havana-Hopewell Complex, a complex present during the Early Woodland Period throughout the southern Midwest region (Benchley et al. 1997; Gibbon 2012).

Thick-walled ceramics classified as Havana-Related are diagnostic for the period, as are a variety of straight-stemmed or corner-notched projectile points. Burial mounds found in southeastern Minnesota are also assumed to be associated with the Havana-Hopewell Complex; these mounds are often conical in shape and contain diagnostic burial items that include copper earspools, perforated bear canines, pan or platform pipes, and large non-utiliarian bifaces made of exotic lithic materials (Gibbon 2012). Previously identified archaeological sites associated with the Havana-Hopewell Complex have primarily been identified near major rivers, lakes, wetlands, or floodplains.

In central Minnesota, Initial Woodland Period influences from the southern Midwest region are less common. However, like in southeastern Minnesota, thick-walled ceramics are also indicative of Initial Woodland sites in central Minnesota (Benchley et al. 1997; Gibbon 2012). A primary ceramic type identified in central Minnesota, Malmo pottery, exhibits characteristics similar to both Havana ceramics and ceramics found in northern Minnesota. Lithic assemblages primarily comprised of quartz are also common during the Initial Woodland Period in central Minnesota. Burial mounds dating to the Initial Woodland in this region generally vary between circular and dome-shaped or conical and sometimes lack the exotic goods found in burial mounds further south. Previously identified archaeological sites of the Initial Woodland have primarily been located around the numerous lakes of the region.

In both southeastern and central Minnesota, resource diversification and intensification gradually occurred during the Initial Woodland. Wild rice was first utilized in central Minnesota, while there is evidence that seeds and nuts were an important resource in southeastern Minnesota (Anfinson 1997; Benchley et al 1997). Deer and aquatic resources also served as a primary resource types in both regions during this time.

4.1.3 Terminal Woodland Period (A.D. 500 – 1750)

The Terminal Woodland Period is characterized by a gradual shift in the form of ceramic vessels and stone projectile points from those associated with the Initial Woodland Period. Towards the second half of the period, Terminal Woodland societies became heavily focused on intensive harvesting of domestic or foraged plants. As a result, populations grew and become more sedentary, which in turn led to larger villages or settlements more heavily defended than in previous periods.

During the first portion of the Terminal Woodland Period, ceramics begin to exhibit a finer temper and thinner walls than those dating to the Initial Woodland Periods. As during the Initial Woodland Period, ceramics types have become associated with cultural groups and complexes. Ceramic types present within the Central Lakes Deciduous East Archaeological Region dating to the Terminal Woodland include Kathio, Oneota, Sandy Lake, and St. Croix (Benchley et al. 1997). Arrow points, first as small corner-notched points then small triangular points, became the most common projectile point type during the Terminal Woodland, as the bow and arrow become the primary weapon technology by the end of the Terminal Woodland. Mounds present within the early Terminal Woodland in Minnesota include linear burial mounds in central Minnesota and effigy mounds in southeastern Minnesota, most commonly found near the Mississippi River Valley. No effigy mounds have been identified north of the present location of Minneapolis and St. Paul (Gibbon 2012).

A dramatic shift occurred circa 1000 AD, as influences from Mississippian cultures in Illinois and the surrounding area made their way into Minnesota via the Mississippi River. These populations trended towards a greater reliance on horticulture; cultigens in use at this time included maize, beans, squash, sunflowers, gourds, and tobacco. Based on archaeological evidence, Native Americans during this time exhibited a significant reliance on specific resources that could be harvested and dried (Gibbon 2012). In southeastern Minnesota the relied upon resource was maize and in central Minnesota the relied upon resource was wild rice. These stored surpluses of food facilitated the formation of larger, more permanently situated residential village communities. Palisades present at semi-sedentary village sites indicate that these communities became more heavily fortified, serving to protect gathered resources and populations. Towards the end of the Terminal Woodland Period, there is evidence that Native American populations were decimated by exposure to European diseases.

4.1.4 Contact Period (A.D. 1650s – 1830s)

At the time of European contact, Minnesota was primarily inhabited by Siouan groups (Dakota) and Algonquian groups (Ojibwe). European contact with the Dakota and the Ojibwe in Minnesota began with French fur-trading expeditions, and interactions between Native American groups and Europeans became more frequent between 1750 and 1800. The French traders and missionaries had the largest non-native presence in the region until British enterprises began controlling the fur trade following the French and Indian War in 1760 (Zimmerman 1985). The British maintained control of the fur trade until the United States purchased the Louisiana Territory in 1803, ultimately shifting the region to the United States government. During the Contact Period, Native American populations declined significantly due to warfare and disease predicated by the arrival of Europeans. European exploration and colonization also affected Native American settlement patterns as groups were pushed west by increasing European populations. This expansion frequently led to conflict between different Native American groups, such as the Dakota and Ojibwe in Minnesota, and European and American settlers.

4.2 POST-CONTACT PERIOD

4.2.1 Early Settlement Period (1837-1856)

In 1837 at Fort Snelling, nearly 12 million acres (4.8 million hectares) of land between the St. Croix and Mississippi Rivers, including the Project Areas, were ceded by the Ojibwe to the United States government via treaties (Minnesota Historical Society 2020). The primary American goal of this purchase was obtaining rich timber resources in the region; however, the widely reported treaty signings also attracted land speculators and settlers. Early overland travel and settlement near the Project Areas were achieved using the Red River Trails, a system of trails that connected St. Paul to the Red River Valley and beyond. A section of the Woods Trail, also known as the Metropolitan Trail, cut along sand plains through the Project Areas. The first recorded use of this path was in 1844. In 1851, a military road connecting Point Douglas, where the St. Croix River flowed into the Mississippi River, to Fort Ripley (known at the time as Fort Gaines) was surveyed and closely followed the Metropolitan Trail along most of its length. Near the Project Areas, the routes of the military road and the Metropolitan Trail split. One path followed the Mississippi River terrace along the current path of Sherburne County Highway 8, transecting portions

of the Solar Project Area and Transmission Line Project Area, and the other traversed the sand plains along the current path of U.S. Highway 10 (Gilman et al. 1979). While the military road was fully completed in 1858, it began to serve as the primary means of overland transport for the region in 1852.

The region was first occupied by Euro-American settlers in 1848 when two trading posts along the Mississippi River were opened approximately 1.5 miles south of the Project Areas (Winchell et al. 1903). The first permanent settler of the area was John Stevenson, who arrived in 1850 and settled approximately 2 miles northwest of the Solar Project Area, near Clear Lake. A townsite called Clear Lake, approximately 2 miles southwest of the current city of Clear Lake, attempted to gain footing along the Metropolitan Trail near the Mississippi River in the 1850s. The townsite was located on Clear Lake, but never gained traction and was quickly abandoned prior to any major development (Gilman et al. 1979). Another early settler of the area, Peter Vadnies, settled in modern-day Becker Township along the Mississippi River in 1855, approximately 0.2 mile (0.3 kilometer) southeast Solar Project Area (Becker Township 1978; Gilman et al. 1979). He named the settlement Marseilles; however, like the townsite of Clear Lake, the settlement did not attract many additional settlers.

Additional early settlement of the area was focused near the Mississippi River. The Clearwater Ferry, first operational in 1856 and located approximately 0.75 mile (1.2 kilometers) southwest of the Solar Project Area served as an early river crossing (Winchell et al, 1903; Gilman et al. 1979). However, ferries further upriver at St. Cloud and Sauk Rapids proved to be more popular (Gilman et al. 1979; Couzens 2011) and garnered greater settlement nearby.

4.2.2 Late Settlement Period (1856 to Present)

Sherburne County was officially organized via an act of the Minnesota Territorial Legislature in 1856, separating from Benton County to the north (Sherburne County Historical Society 2001). The county was named for Moses Sherburne, an associate Justice of the Minnesota Territorial Supreme Court (Upham 1920). Following the establishment of Sherburne County, additional settlers arrived in the county and in present-day Becker and Clear Lake Townships, which encompass the Project Areas. Clear Lake Township was officially organized in 1858 while Becker Township was officially organized in 1871 (Winchell et al. 1903; Upham 1920). The St. Paul & Pacific Railroad (St. P&P) was constructed through Sherburne County in 1867 and followed the general path of the Metropolitan Trail. This construction brought the first rail service to the region and helped to speed settlement of Sherburne County and the surrounding area. Clear Lake Station, built along the St. P&P in Section 7 of Clear Lake Township north of the Project Areas, and the townsite of Becker platted approximately 1 mile east of the Project Areas, were both founded due to the construction of the St. P&P (Winchell et al. 1903; Hanson 2017). Becker, platted in 1867, was one of the earliest permanent settlements near the Project Areas; the village of Clear Lake was platted 12 years later in 1879.

4.2.2.1 Becker and Becker Township

The village of Becker was named for George Loomis Becker, a state politician and land commissioner of the St. P&P when the village was platted (Upham 1920). Shortly after the village was platted, the St. P&P company

constructed an “Emigrant House” used by settlers searching for land to purchase in the Township and surrounding area; the majority of these early settlers were Scandinavian and hailed from Norway, Sweden, and Denmark (Winchell et al. 1903; Amundson 1971). A rail depot was constructed at the townsite of Becker in 1868, and a school and churches soon followed (Winchell et al. 1903; Becker Township 1978). Towards the end of the 1800s, a town hall and bank had been built within Becker and the village had its own newspaper.

Around 1900, the township was a mix of prairie, wooded land, marshland, and agricultural cropland. In the early years of the township, the marshland was used for haying. The amount and quality of hay produced by Becker Township was known throughout Sherburne County, producing up to 20 thousand tons annually (Winchell et al. 1903; Becker Township 1978). Beginning in the 1900s, potatoes became an important crop for the township, along with wheat and corn (Winchell et al. 1903; Becker Township 1978). Agriculture continues to be an important industry in the township.

In 1974, the coal-fired Sherco Power Plant was constructed within Becker Township by Northern States Power (Becker Township 1978). The Sherco Power Plant is the largest power plant in Minnesota and serves as a major source of revenue and employment for the city of Becker and surrounding communities. The population of the city of Becker, which had steadily increased from approximately 200 in 1910 to 1,000 by 1990, has grown throughout the 2000s to an estimated 5,000 people.

4.2.2.2 Clear Lake and Clear Lake Township

In 1879, lots near Clear Lake Station were platted by surveyors (Winchel et al. 1903). When first platted, the area around Clear Lake Station included a town hall, hotel, blacksmith shop, grain elevator, and two general stores (Winchell et al. 1903). Shortly thereafter, a school and church were constructed. In 1900, the Village of Clear Lake was officially established; during the 1970s a state statute converted the Village into the City of Clear Lake (Bujalski 2000). Circa 1900, Clear Lake Township primarily consisted of prairie fringed with woodlands and interspersed with agricultural land (Winchell et al. 1903). Since then, the majority of the township has become agricultural land. Crops grown within the county primarily consist of corn, soybeans, vegetables, and potatoes, while livestock poultry and cattle are also produced (USDA – National Agricultural Statistics Service [NASS] 2017). Clear Lake Township has remained largely rural and the population of the city of Clear lake has generally wavered between approximately 200 to 300 people since its inception in 1900.

5.0 RESULTS OF LITERATURE REVIEW

The purpose of the file review is to provide a general understanding of the cultural resources identified within the Study Areas and to provide a general overview of land use change within the Project Areas.

5.1 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Based on the data provided by SHPO, no previous cultural resource investigations were identified to have intersected either Project Area. However, one previous cultural resource investigation was identified to have been conducted within both Study Areas. The investigation, a cultural resources survey and evaluation, was conducted for proposed roadway and bridge construction over the Mississippi River (Justin et al., 2002). As part of this investigation, a Phase II survey of a previously identified archaeological site within both Study Areas (21WR0117) was conducted.

5.2 PREVIOUSLY DOCUMENTED CULTURAL RESOURCES

5.2.1 Solar Study Area

The file review failed to identify any previously documented archaeological sites within the Solar Project Area; however, six previously documented archaeological resources were identified within the Solar Study Area (Table 4; Appendix A, Figures 2A and 2B). The six resources are located approximately 800 feet to 0.9 mile (244 meters to 1.4 kilometers) from the proposed Solar Project Area and all are currently unevaluated for listing in the NRHP.

Table 4. Previously Documented Archaeological Resources within the Solar Study Area

Site Number	Name	Description	Cultural Affiliation	NRHP Status
21SHc		Historically Documented Trading Post	Contact	Unevaluated
21WRbu	Freemont City	Ghost Town	Post-Contact - unspecified	Unevaluated
21SH0040	St. Cloud Site BC2	Lithic Scatter	Precontact - unspecified	Unevaluated
21SH0042		Artifact Scatter and Structure	Post-Contact - unspecified	Unevaluated
21SH0058	Lee Pioneer Burial	Cemetery	Post-Contact - Early Agriculture and River Settlement and Railroad and Agricultural Development	Unevaluated
21WR0117	St. Cloud Site D1A	Habitation Site	Precontact - Woodland	Unevaluated

No previously documented architectural resources were identified within the Solar Project Area; however, 20 previously documented architectural resources were identified within the Solar Study Area (Table 5; Appendix A, Figures 3A, 3B, and 3C). One previously documented resource, Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367), has been determined eligible for listing in the NRHP. Minnesota Hwy 10 refers to U.S Highway 10, which is approximately 150 feet (45.7 meters) from the southeastern solar development area at its closest point. Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) is considered eligible for listing in the NRHP under Criterion A: Events for the important role it played in the transportation history of Minnesota.

The remaining 19 documented architectural resources within the Solar Study Area are currently unevaluated for listing in the NRHP. The resources are located approximately 400 feet to 0.9 mile (122 meters to 1.4 kilometers) from the Solar Project Area, although most are located in the city of Clear Lake, approximately 400 feet to 0.3 mile (122 meters to 0.5 kilometer) north of the northwestern solar development area (Appendix A, Figure 3c).

Table 5. Previously Inventoried Architectural Resources within the Solar Study Area

Inventory Number	Name	Address	NRHP Status
SH-BKT-005	Ed Johnson Farm	1xx Center St.	Unevaluated
SH-CLC-001	Schwab House	5xx Center St.	Unevaluated
SH-CLC-002	Clear Lake School	NE corner 4th St. & Center St.	Unevaluated
SH-CLC-003	St. Marcus Catholic Church	3xx Center St.	Unevaluated
SH-CLC-004	Methodist Episcopal Church	NE corner Church St. & Center St.	Unevaluated
SH-CLC-005	Clear Lake State Bank	1xx Center St.	Unevaluated
SH-CLC-006	Clear Lake City Hall	NW corner State St. & Center St.	Unevaluated
SH-CLC-007	farmhouse	E. of Co. Hwy. 6	Unevaluated
SH-CLC-008	farmstead	143 Center St.	Unevaluated
SH-CLC-009	house	146 Center St.	Unevaluated
SH-CLC-010	Clear Lake Farmers Elevator	430 State St.	Unevaluated
SH-CLT-004	halfway house	N. of Co. Hwy. 8	Unevaluated
SH-CLT-005	W. G. White Farmhouse	S. of Co. Hwy. 8	Unevaluated
SH-CLT-006	District School No. 23	N. of Co. Hwy. 8	Unevaluated
SH-CLT-015	house	147 Center St.	Unevaluated
SH-CLT-016	commerce	128 Market St.	Unevaluated
SH-CLT-017	house	143 Market St.	Unevaluated
SH-CLT-018	house	146 Market St.	Unevaluated
SH-CLT-019	BNSF Storage Building	149 Market St.	Unevaluated
SH-SCC-367	Minnesota Hwy 10, Elk River to St. Cloud	Minnesota Hwy 10	Eligible

5.2.2 Transmission Line Study Area

The file review failed to identify any previously documented archaeological resources within the Transmission Line Project Area; however, one previously documented archaeological resource was identified within the Transmission Line Study Area (Appendix A, Figure 4). Site 21WR0117 is a Woodland Period habitation site located approximately 0.4 mile (0.6 kilometer) west of the Transmission Line Project Area and is currently unevaluated for listing in the NRHP.

No previously documented architectural resources were identified within the Transmission Line Project Area; however, one previously documented architectural resource was identified within the Transmission Line Study Area

(Appendix A, Figure 5). The resource, Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367), has been determined eligible for listing in the NRHP. Minnesota Hwy 10 refers to U.S Highway 10, which is approximately 0.4 mile (0.6 kilometer) from the Transmission Line Project Area at its closest point. Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) is considered eligible for listing in the NRHP under Criterion A: Events for the important role it played in the transportation history of Minnesota.

Additionally, SHPO data indicated that the NRHP-listed Herbert Maximillian Fox House (SH-BKC-012) is located within the Transmission Line Study Area, approximately 0.6 mile (1.0 kilometer) east of the proposed Transmission Line Project Area. However, the Herbert Maximillian Fox House (SH-BKC-012) was moved from that location in 2006 and is currently on the grounds of the Sherburne County History Center, approximately 1.2 miles (1.9 kilometers) northeast of the Transmission Line Project Area and outside of the Transmission Line Study Area (NPS 2007).

5.3 HISTORIC DOCUMENT REVIEW

Tetra Tech reviewed historic atlases, topographic quadrangles, and aerial photographs to identify the presence of structures, towns, trails, roads, railroads, and other manmade features that may have been historically present within the Project Areas. Tetra Tech georeferenced the plat maps and plotted all structures present on historic documents within the Project Areas, making note of which structures are extant based on current aerial imagery. This was done to identify the location of non-extant structures and features over 50 years old, the minimum age for qualification as an historic resource.

5.3.1 1851 GLO Plats

A review of the 1851 GLO plats for Township 33 North, Range 29 West, Township 34 North, Range 29 West, and Township 34 North, Range 30 West revealed no historic features illustrated within the Project Areas (Appendix B, Map 1). A northwest-southeast road labeled “Road to Ft. Gaines” was illustrated approximately 0.6 mile (1.0 kilometer) northeast of both Project Areas. No other historic features were illustrated in the Project Areas or the surrounding sections. Both Project Areas were illustrated within wooded areas. Portions of two wetlands were illustrated within the Solar Project Area. The Mississippi River was illustrated adjacent to the south of the Solar Project Area and approximately 600 feet (183 meters) west of the Transmission Line Project Area. Lakes and wetlands were illustrated in the sections surrounding the Solar Project Area.

5.3.2 1874 A.T. Andreas Atlas

A review of the 1874 A.T. Andreas atlas for Sherburne County revealed that the Solar Project Area was located in Clear Lake Township and the Transmission Line Project Area was located in Becker and Clear Lake Townships (Appendix B, Map 2). The majority of both Project Areas were no longer illustrated within wooded areas. No structures were illustrated within either Project Area. A northwest-southeast trending road in the approximate alignment of Sherburne County Road 8 and an east-west trending road were illustrated transecting the southern portions of both Project Areas. The Road to Ft. Gaines northeast of the Project Areas was no longer illustrated, nor

were the wetlands within the Solar Project Area. An unlabeled northwest-southeast trending railroad and a parallel road were illustrated adjacent to the southeastern solar development area and approximately 0.4 mile (0.6 kilometer) northeast of the Transmission Line Project Area; the railroad was labeled the St. P&P Railroad (A.T. Andreas 1874) and the parallel road follows the approximate current path of U.S. Highway 10 (SH-SCC-367). Clear Lake Station was illustrated approximately 0.25 mile (0.40 kilometer) north of the northwestern solar development area, in the current location of the city of Clear Lake, and Becker Station and Post Office was illustrated approximately 1 mile (1.6 kilometers) east of the Transmission Line Project Area, in the current location of the city of Becker. Two structures were illustrated in sections surrounding the Solar Project Area.

5.3.3 1903 Northwest Publishing Company Plats

A review of the 1903 Northwest Publishing Company plats revealed that the Solar Project Area was located in rural areas of Clear Lake Township and that the Transmission Line Project Area was located in rural areas of Becker and Clear Lake Townships (Appendix B, Map 3). Eight structures, all houses, were illustrated within or immediately adjacent to the Project Areas; four were illustrated in each Project Area (Table 6). Additional roads were illustrated transecting the Project Areas; however, the east-west trending road illustrated on the 1874 atlas was no longer illustrated. A portion of a lake in the approximate location of Jones Lake was illustrated in the northwestern solar development area. The Northern Pacific Railroad and Great Northern Railroad were illustrated in the same alignment as the St. P&P railroad illustrated on the 1874 atlas. A cemetery was illustrated immediately north of the northwestern solar development area. Clear Lake was illustrated approximately 250 feet (76.2 meters) north of the northwestern solar development area and Becker was illustrated approximately 1 mile (1.6 kilometers) east of the Transmission Line Project Area. Additional roads and structures were illustrated in the surrounding area.

Table 6. Structures Illustrated within or immediately adjacent to the Project Areas on the 1903 Northwest Publishing Company Atlas

Landowner	Parcel Location	Structure Number	Project Area
Nancy E. Jones	NW ¼ of S19 T34N R29W	1	Solar
Benjamin & Carl Grant	NE ¼ of S28 T34N R29W	2	Solar
Helen J. Welch	NW ¼ of S27 T34N R29W	3	Solar
Henry Eckhoff	NE ¼ of S34 T34N R29W	4	Solar
Jacob Nelson	SW ¼ of S26 T34N R29W	5	Transmission Line
George Chandler	NE ¼ of S35 T34N R29W	6	Transmission Line
Ann Dyson	SE ¼ of S35 T34N R29W	7	Transmission Line
John Dyson	NE ¼ of S2 T33N R29W	8	Transmission Line

5.3.4 1914 Webb Publishing Company Atlas

A review of the 1914 Webb Publishing Company Atlas revealed no significant changes within the Project Areas, although the path of a road in the southern portion of the Project Areas had changed. No significant changes were observed in the surrounding area.

5.3.5 1938 Aerial Photographs

A review of the 1938 aerial photographs (University of Minnesota – John R. Borchert Library 2015) revealed that the majority of both Project Areas were agricultural cropland (Appendix B, Map 4). The rolling sand plain that encompasses the Project Areas is clearly visible on the aerial photographs. Five farmsteads were visible in the Project Area, two within the Solar Project Area (Structures 3 and 4) and three were within the Transmission Line Project Area (Structures 5, 7, and 8). All the farmsteads were in the locations of houses illustrated on the 1903 plats and 1914 atlas. A road in the current alignment of County Road 8 was visible transecting both Project Areas, portions of which followed the approximate path of a historic trail (Section 4.2.1). Additional section line or field roads were visible transecting and within the Project Areas. Two parallel railroads in the location of the Northern Pacific and Great Northern Railroads were observed. A road in the current location of U.S. Highway 10 (SH-SCC-367) was visible parallel to the two railroads. A cemetery was visible immediately north of the northwestern solar development area. Structures in the location of the city of Clear Lake were visible approximately 250 feet (76.2 meters) north of the northwestern solar development area and structures in the location of Becker were visible approximately 1 mile (1.6 kilometer) east of the Transmission Line Project Area. The Mississippi River was visible to the south of the Project Areas. Multiple lakes and wetlands were visible adjacent to and surrounding the Solar Project Area. Additional farmsteads, structures, and roads were visible surrounding both Project Areas.

5.3.6 1951 Aerial Photographs

A review of the 1951 aerial photographs (USGS Earth Explorer 2020b) revealed no significant changes within the Project Areas or the surrounding areas.

5.3.7 1991 USGS Topographic Maps

A review of the 1991 USGS 7.5-minute Clear Lake and Clearwater, Minnesota Topographic Quadrangles revealed the majority of both Project Areas were undeveloped (Appendix A, Figure 1). Two structures were illustrated within the Solar Project Area in the location of a previously identified farmstead (Structure 4). Seven structures were illustrated within the Transmission Line Project Area; five of the structures were illustrated in the location of a previously identified farmstead (Structure 5) and the remaining two structures were illustrated within the southern portion of the Transmission Line Project Area. The two structures appeared to be associated with a cluster of structures, roads, and a railroad loop in the current location of the Sherco Power Plant. The cemetery immediately north of the northwestern solar development area was labeled St. Marcus Cemetery. U.S. Highway 10 (SH-SCC-367) was illustrated as a divided highway approximately 150 feet (45.7 meters) from the Solar Project Area and 0.4 mile (0.6 kilometer) from the Transmission Line Project Area at its closest point. No other significant changes were illustrated.

5.3.8 2017 Aerial Photograph

A review of the 2017 aerial photograph (Google Earth Pro 2020) revealed that the majority of the Project Areas were agricultural cropland (Appendix A, Figure 6). An outbuilding with associated grain bins in the location of Structure 4 were the only structures visible in the Solar Project Area and the two structures associated with the Sherco Power Plant were the only structures visible within the Transmission Line Project Area. The Transmission Line Project Area was observed crossing roads and adjacent to additional structures associated with the Sherco Power Plant.

5.4 LITERATURE REVIEW SYNOPSIS

Based on the results of the file review, no previously documented archaeological or architectural resources are within either Project Area. However, a NRHP-eligible resource, Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367), is located in the Solar Study Area and the Transmission Line Study Area.

The historical document review revealed that the majority of both Project Areas were wooded prior to significant Euro-American settlement but have since been largely converted into agricultural cropland. A section of a Red River Trail transected both Project Areas and a historic military road associated with the Red River Trails was identified to have been near the Project Areas. The locations of eight farmsteads dating to circa 1900 were identified within the Project Areas; four were identified within the Solar Project Area and four were identified within the Transmission Line Project Area. Structures are no longer extant at three of the farmsteads in the Solar Project Area and all four of the farmsteads in the Transmission Line Project Area. Potential artifacts and features from these farmsteads, as well as other farmsteads in the surrounding area, may be present within the Project Areas.

6.0 RESULTS OF THE ARCHAEOLOGICAL SURVEY

The pedestrian survey of the Solar Project Area was conducted in September and October 2020. The pedestrian survey of the Transmission Line Project Area was conducted in December 2020. Additional photographs of the NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) were taken in January 2021.

6.1 RESULTS OF THE PEDESTRIAN SURVEY

6.1.1 Results of the Solar Project Area Survey

Land use within the Solar Project Area at the time of survey was primarily agricultural cropland interspersed with tree lines and vegetated areas (Appendix A, Figure 6; Appendix C, Photographs 1 through 16). Crop types within the Solar Project Area included soybeans, corn, potatoes, and hay/alfalfa; ground surface visibility in these agricultural cropland areas ranged between 25 and 100 percent, depending on crop type. Ground surface visibility within tree lines and vegetated areas ranged between 0 and 25 percent. The pedestrian survey failed to identify cultural resources within the Solar Project Area.

The NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) was observed to be a four-lane highway approximately 150 feet (45.7 meters) north of the southeastern solar development area, at its closest point (Appendix A, Figure 4; Appendix C, Photographs 17 and 18). A railroad corridor, tree lines, and structures were observed between the Solar Project Area and the highway. Additional development observed near the highway from the Solar Project Area included adjacent farmsteads, residences, a cell tower, an existing transmission line, and the Sherco Power Plant.

6.1.2 Results of the Transmission Line Project Area Survey

Land use within the Transmission Line Project Area at the time of survey was a mixture of agricultural cropland, wooded and vegetated areas, road rights-of-way (ROWs), and the Sherco Power Plant (Appendix A, Figure 6; Appendix C, Photographs 6 and 19 through 23). All agricultural cropland at the time of survey was harvested and ground surface visibility ranged between 50 and 100 percent. Ground surface visibility within wooded areas, vegetated areas, road ROWs, and the Sherco Power Plant ranged between 0 and 25 percent.

The NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) is approximately 0.4 mile (0.6 kilometer) from the Transmission Line Project Area at its closest point, but was not clearly visible from the Transmission Line Project Area (Appendix A, Figure 6; Appendix C, Photographs 24 and 25). Tree lines, structures, and an existing transmission line were observed between the Transmission Line Project Area and the highway. Additional development observed near the highway from the Transmission Line Project Area included farmsteads, residences, and the Sherco Power Plant.

7.0 CONCLUSIONS

The file review failed to identify any previously documented archaeological or architectural resources within either Project Area. However, the file reviews identified an NRHP-eligible architectural resource, Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) within the Solar Study Area and the Transmission Line Study Area. Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) is located approximately 150 feet (45.7 meters) from the Solar Project Area and approximately 0.4 mile (0.6 kilometer) from the Transmission Line Project Area at its closest points.

Based on the significance of Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) under Criterion A for its role in the history of transportation in Minnesota, it is Tetra Tech's opinion that construction of the Projects would not negatively affect the resource's ability to convey its historic associations with transportation. As a result, it is Tetra Tech's opinion that the NRHP eligibility of Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) would not be affected by the Projects. No additional assessment activities are required for the remaining 19 unevaluated resources within the Solar Study Area.

The pedestrian survey failed to identify any cultural resources within the Project Areas. No further work is recommended.

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APPENDIX A. FIGURES

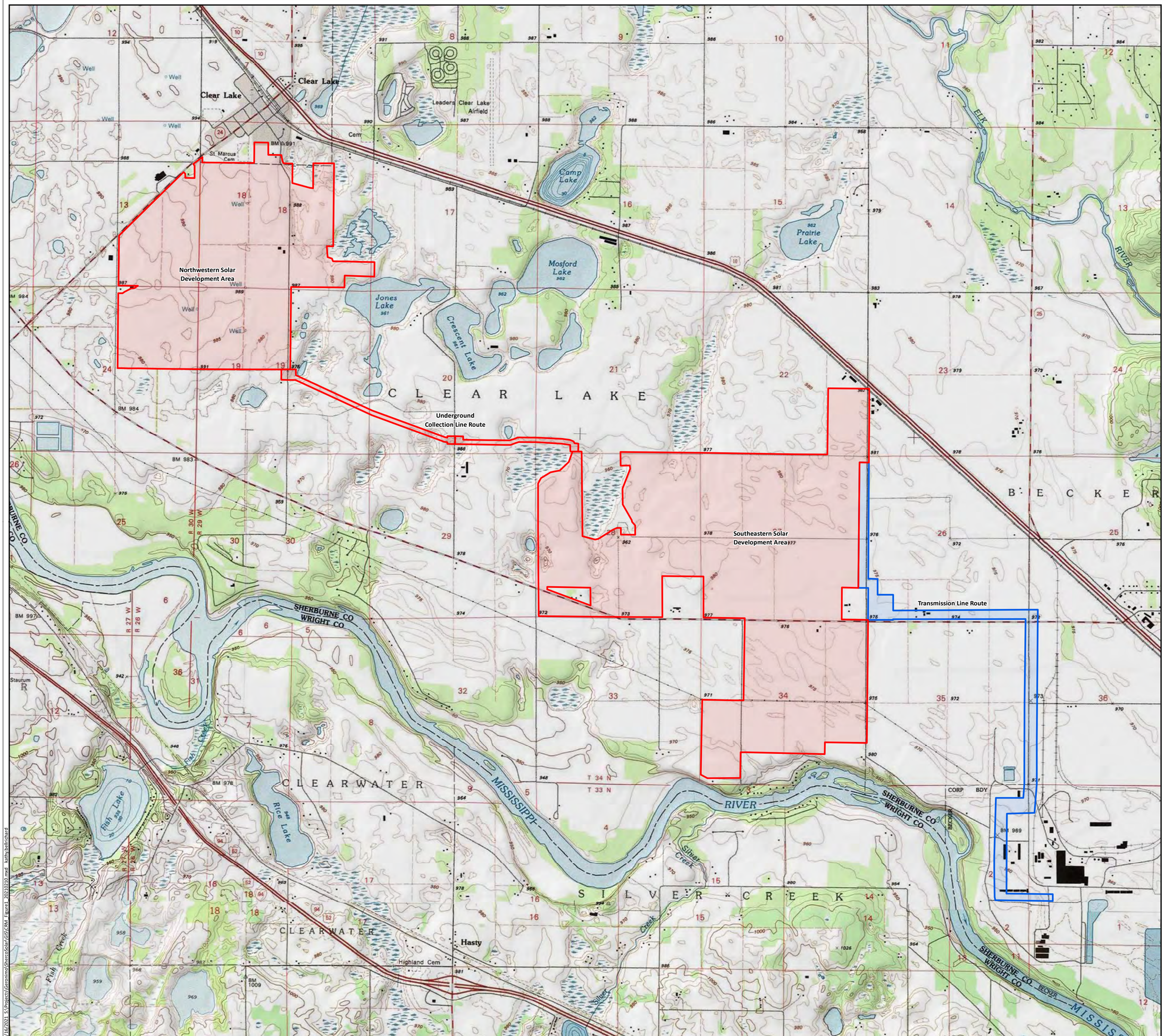

Figure 1: Project Locations
Sherco Solar
Sherburne County, Minnesota

TETRA TECH

Source: Map adapted from ArcGIS Map Server USA Topos - 24K Clearwater (1991), Clear Lake (1991), Silver Creek (1991) and Annandale (1974); Project data provided by Sherco Solar LLC. Scale 1:24,000.

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Solar Project Area

Transmission Line Project Area

1-mile Study Area

Archaeological Resources

Unevaluated for Listing in the NRHP

Unevaluated for Listing on the NRHP

0 1,000 2,000 3,000 4,000 Feet

N

Figure 2A: Previously Documented Archaeological Resources
Solar Study Area
Sherco Solar
Sherburne County, Minnesota

TETRA TECH

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Solar Project Area

Transmission Line Project Area

1-mile Study Area

Archaeological Resources

Unevaluated for Listing in the NRHP

Unevaluated for Listing on the NRHP

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0 1,000 2,000 3,000 4,000 Feet

N

Figure 2B: Previously Documented Archaeological Resources
Solar Study Area
Sherco Solar
Sherburne County, Minnesota

TETRA TECH

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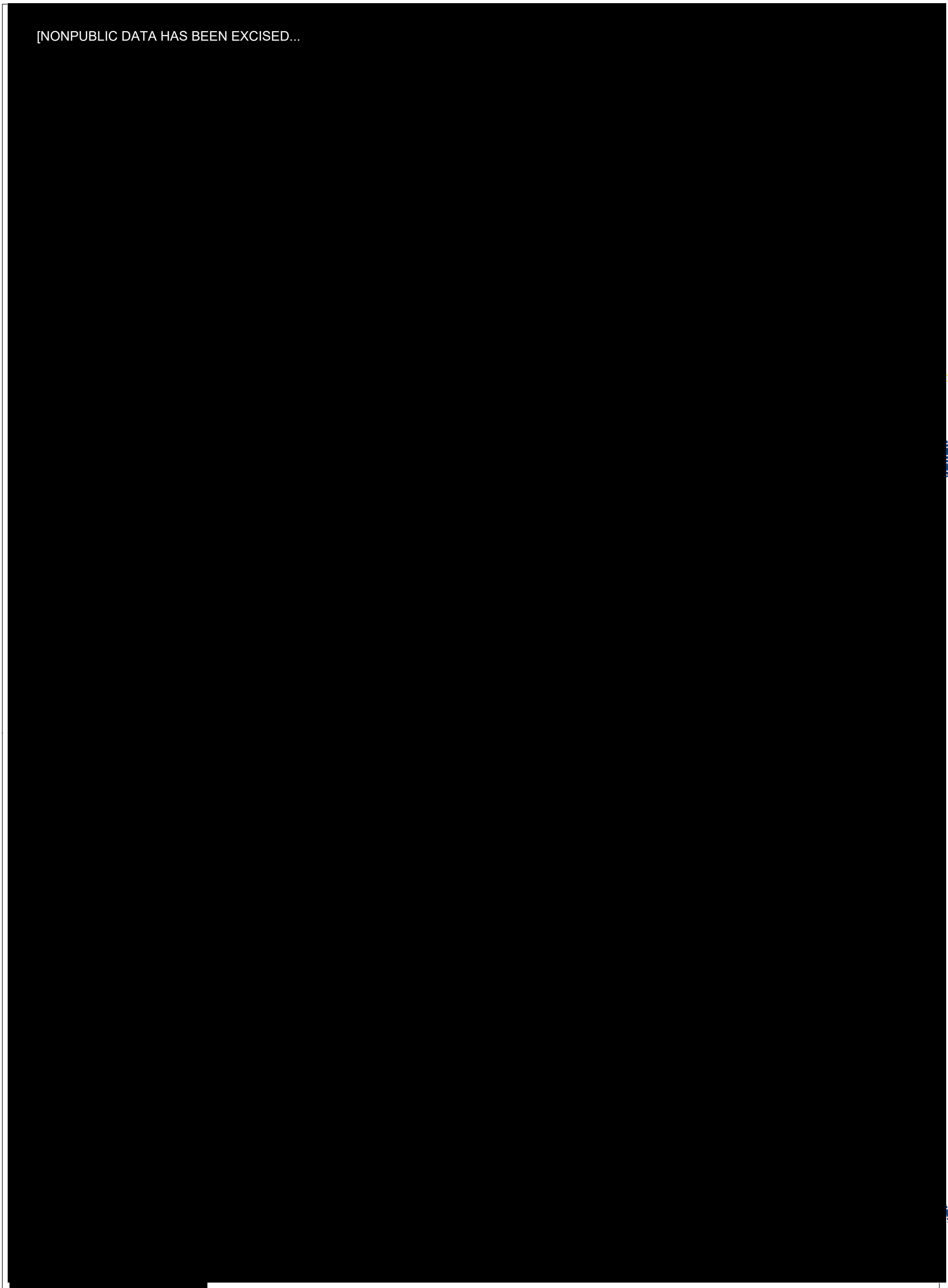

Solar Project Area

Transmission Line Project Area

1-mile Study Area

Architectural Resources

Eligible for Listing in the NRHP

Unevaluated for Listing in the NRHP

Historic Structure

...NONPUBLIC DATA HAS BEED EXCISED]

0 1,000 2,000 3,000 4,000 Feet

N

Figure 3A: Previously Documented Architectural Resources and Historic Structures
Solar Study Area
Sherco Solar
Sherburne County, Minnesota

TETRA TECH

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Solar Project Area

Transmission Line Project Area

1-mile Study Area

Architectural Resources

Eligible for Listing in the NRHP

Unevaluated for Listing in the NRHP

Historic Structure

0 1,000 2,000 3,000 4,000 Feet

N

Figure 3B: Previously Documented Architectural Resources and Historic Structures
Solar Study Area
Sherco Solar
Sherburne County, Minnesota

TETRA TECH

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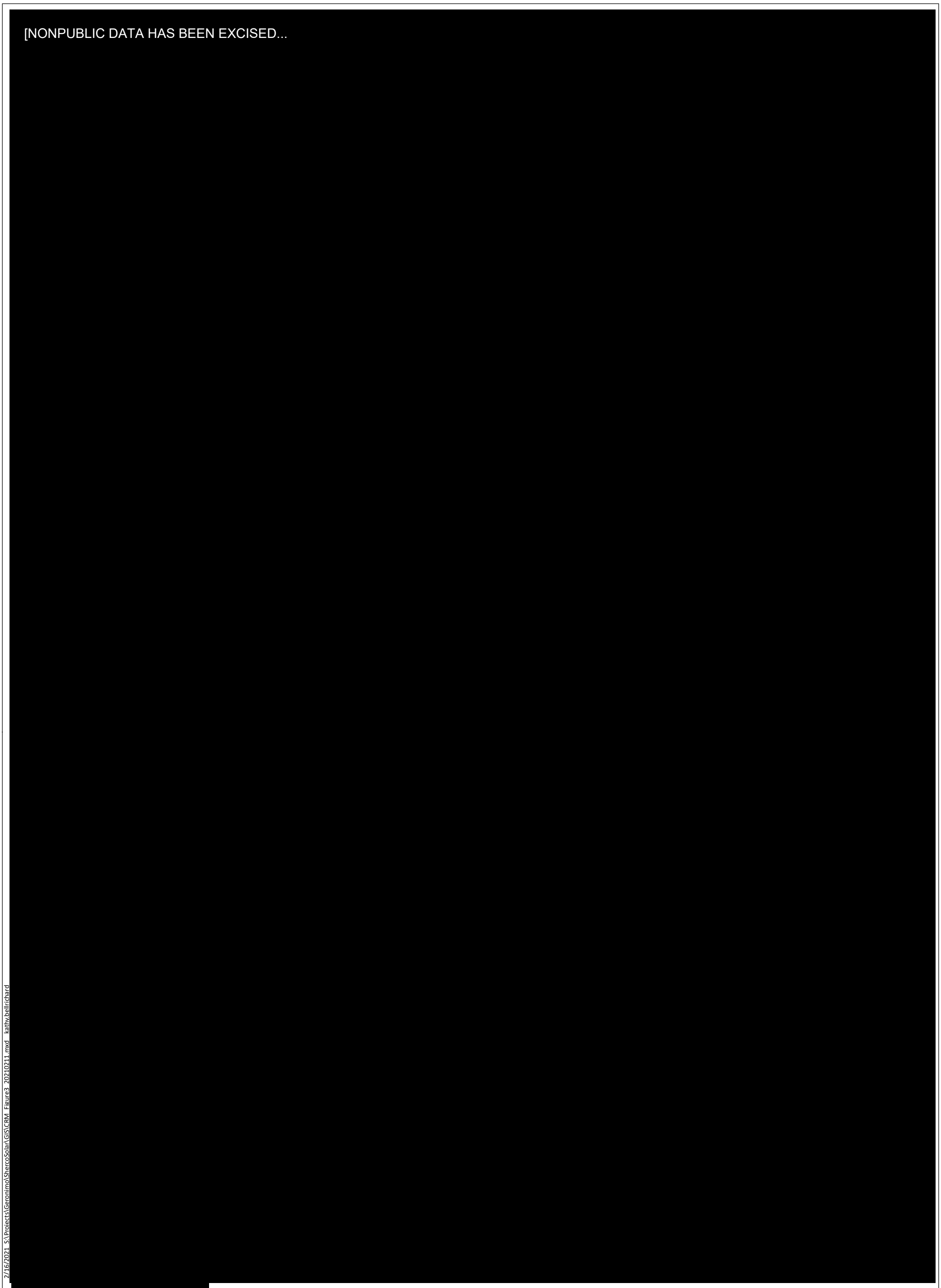

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Solar Project Area

Transmission Line Project Area

1-mile Study Area

Architectural Resources

Eligible for Listing in the NRHP

Unevaluated for Listing in the NRHP

Historic Structure

0 160 320 480 640 Feet

N

Figure 3C: Previously Documented Architectural Resources and Historic Structures
Solar Study Area
Sherco Solar
Sherburne County, Minnesota

TETRA TECH

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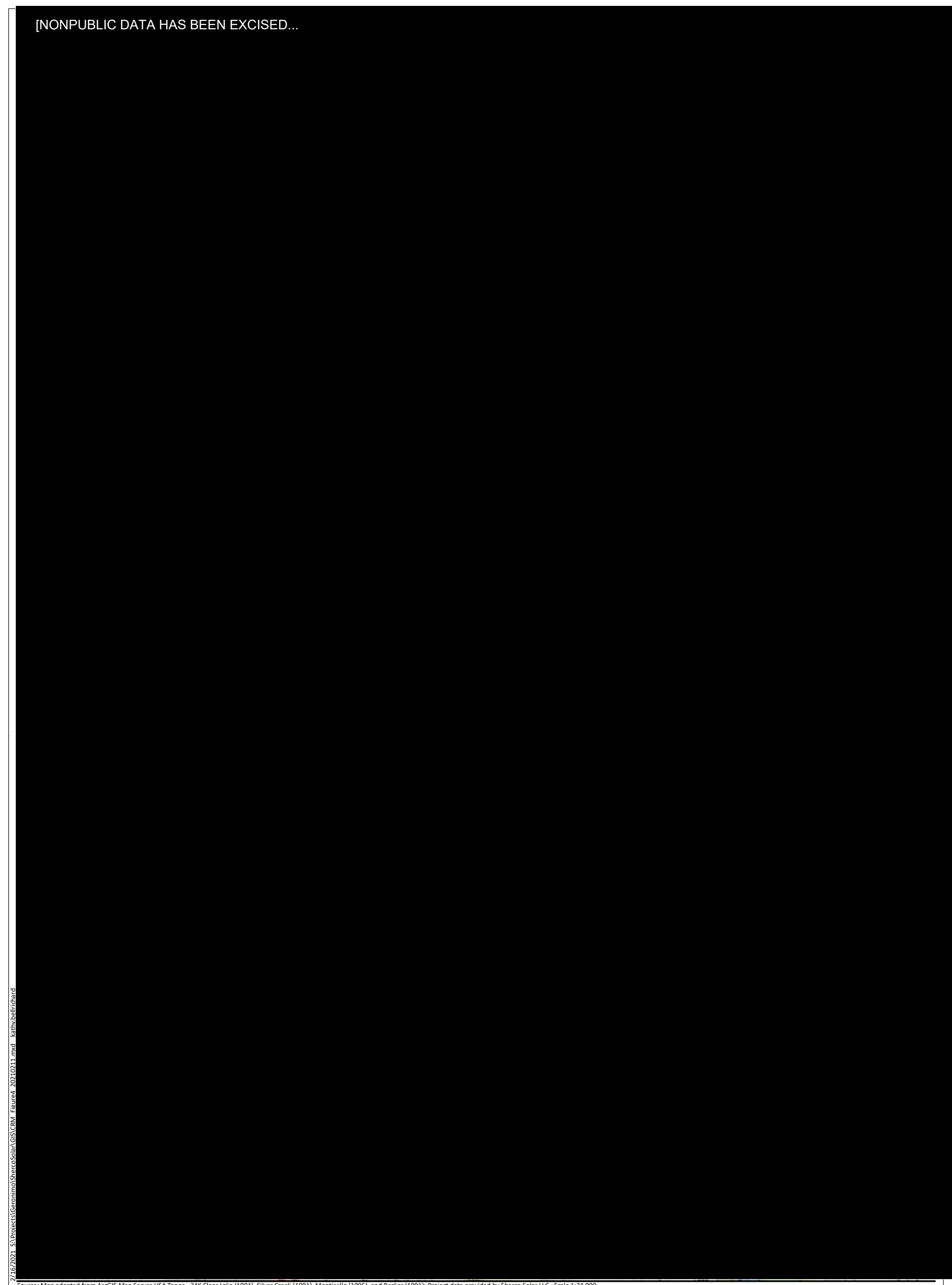


2/16/2021 S:\Projects\GeronimoSherco\SolarA\GIS\CRM Figure4 20210211.mxd kathy.bell.richard

Source: Map adapted from ArcGIS Map Server USA Topos - 24K Clear Lake (1991), Silver Creek (1991), Monticello (1995), and Becker (1991); Project data provided by Sherco Solar LLC. Scale 1:24,000.

Transmission Line Project Area

Solar Project Area

1-mile Study Area

Archaeological Resources

Unevaluated for Listing on the NRHP

...NONPUBLIC DATA HAS BEED EXCISED]

0 1,000 2,000 3,000 4,000 Feet

N

Figure 4: Previously Documented Archaeological Resources
Transmission Line Study Area
Sherco Solar
Sherburne County, Minnesota

TETRA TECH

[NONPUBLIC DATA HAS BEEN EXCISED...

Transmission Line Project Area

Solar Project Area

1-mile Study Area

Architectural Resources

Eligible for Listing in the NRHP

Historic Structure

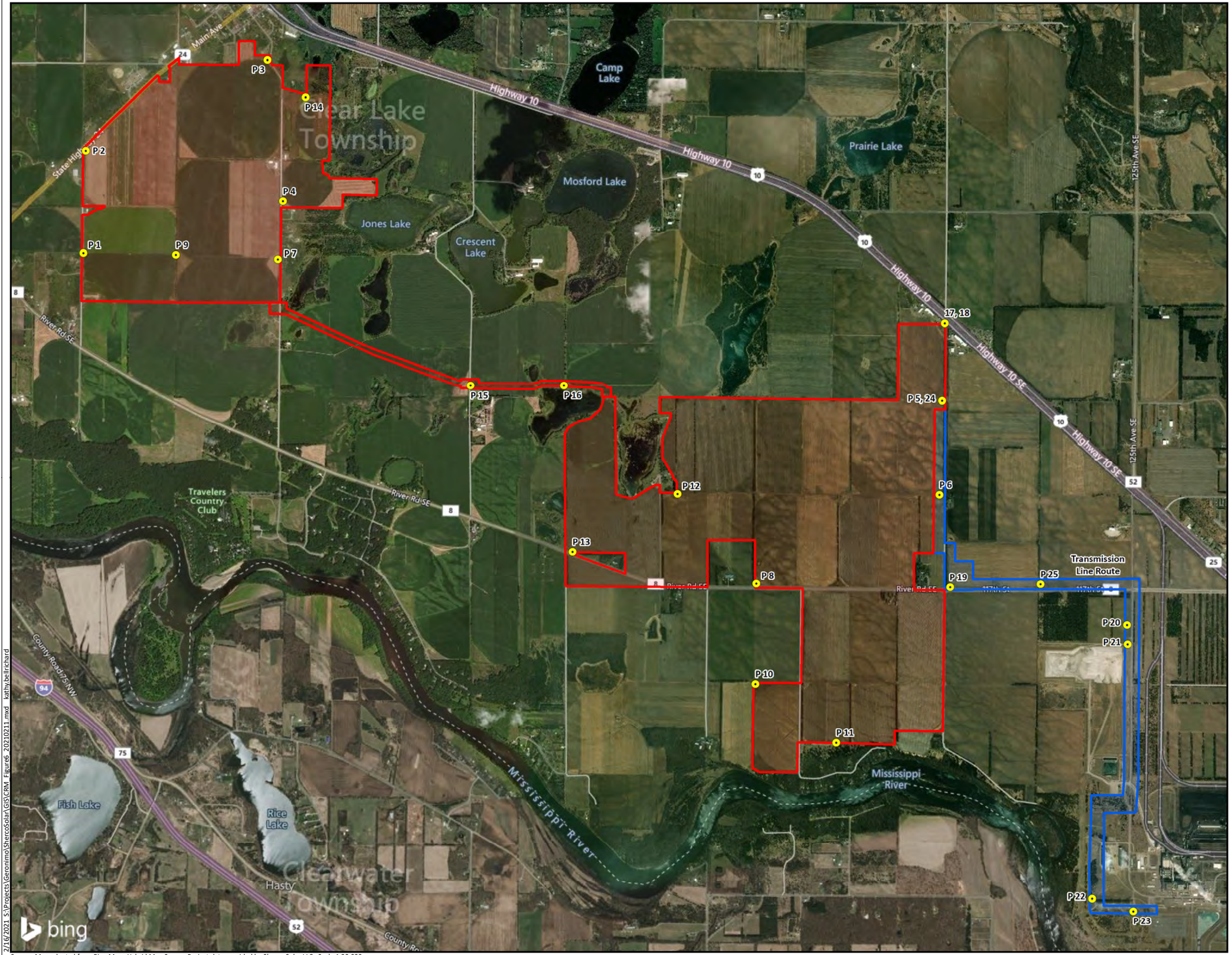
...NONPUBLIC DATA HAS BEED EXCISED]

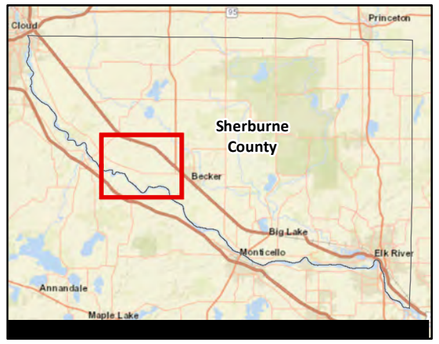
0 1,000 2,000 3,000 4,000 Feet

N

TETRA TECH

Figure 5: Previously Documented Architectural Resources and Historic Structures
Transmission Line Study Area
Sherco Solar
Sherburne County, Minnesota





Solar Project Area

Transmission Line Project Area

Photo Point

0 1,000 2,000 3,000 4,000 Feet

Figure 6: Projects Vicinity
Sherco Solar
Sherburne County, Minnesota

N

TETRA TECH

Source: Map adapted from Bing Maps Hybrid Map Server; Project data provided by Sherco Solar LLC. Scale 1:30,000.

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APPENDIX B. HISTORIC MAP LOG

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Solar Project Area

Transmission Line Project Area

0 1,500 3,000 4,500 6,000 Feet

Historic Map Log: Map 1
1851 GLO Plats

Sherco Solar
Sherburne County, Minnesota

N

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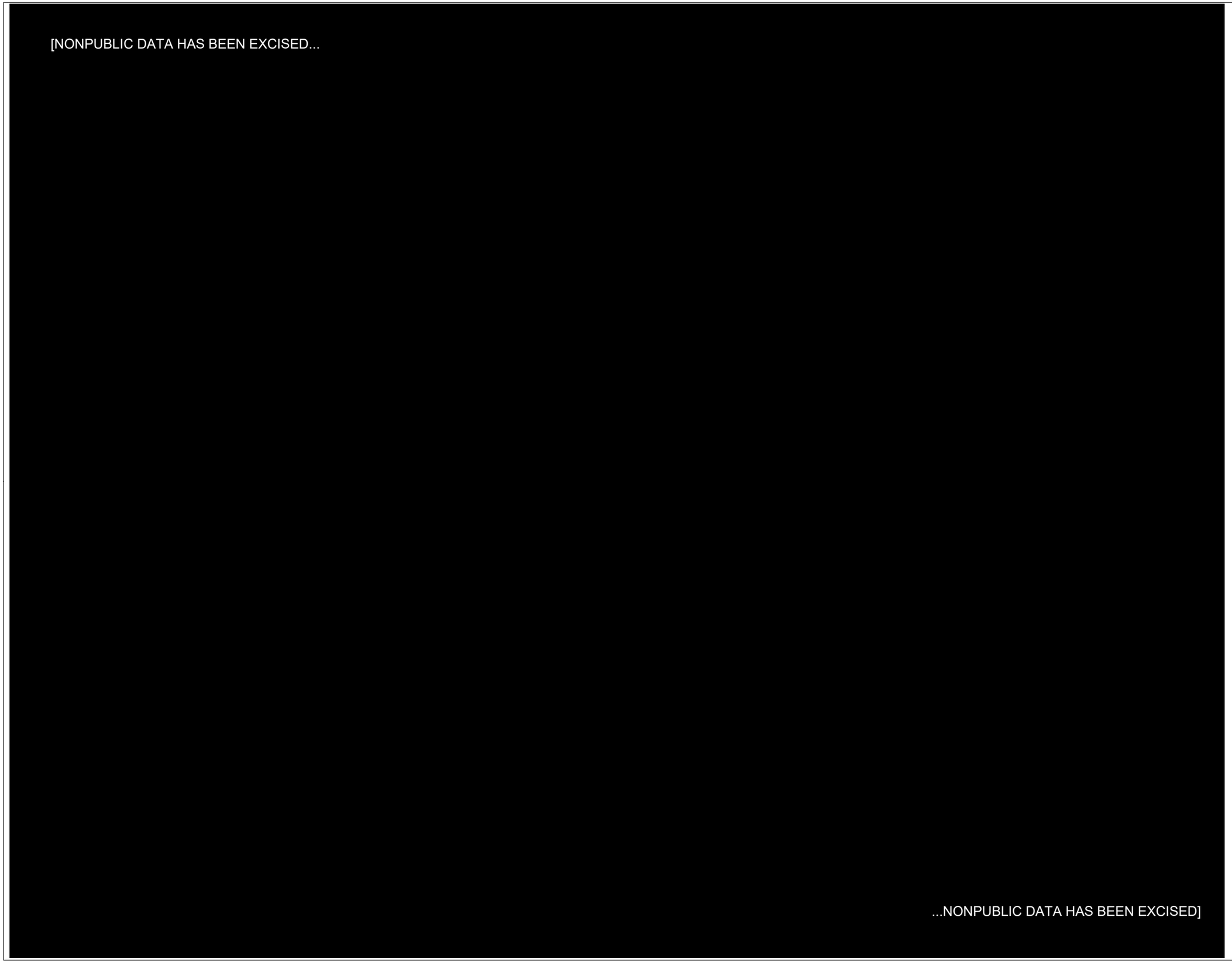

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Solar Project Area

Transmission Line Project Area

0 1,500 3,000 4,500 6,000 Feet

Historic Map Log: Map 2
1874 AT Andreas Atlas

Sherco Solar
Sherburne County, Minnesota

N

TETRA TECH

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Solar Project Area

Transmission Line Project Area

Historical Structure

Cemetery

0 1,500 3,000 4,500 6,000 Feet

Historic Map Log: Map 3
1903 Northwest Publishing Company Plats
Sherco Solar
Sherburne County, Minnesota

N

TETRA TECH

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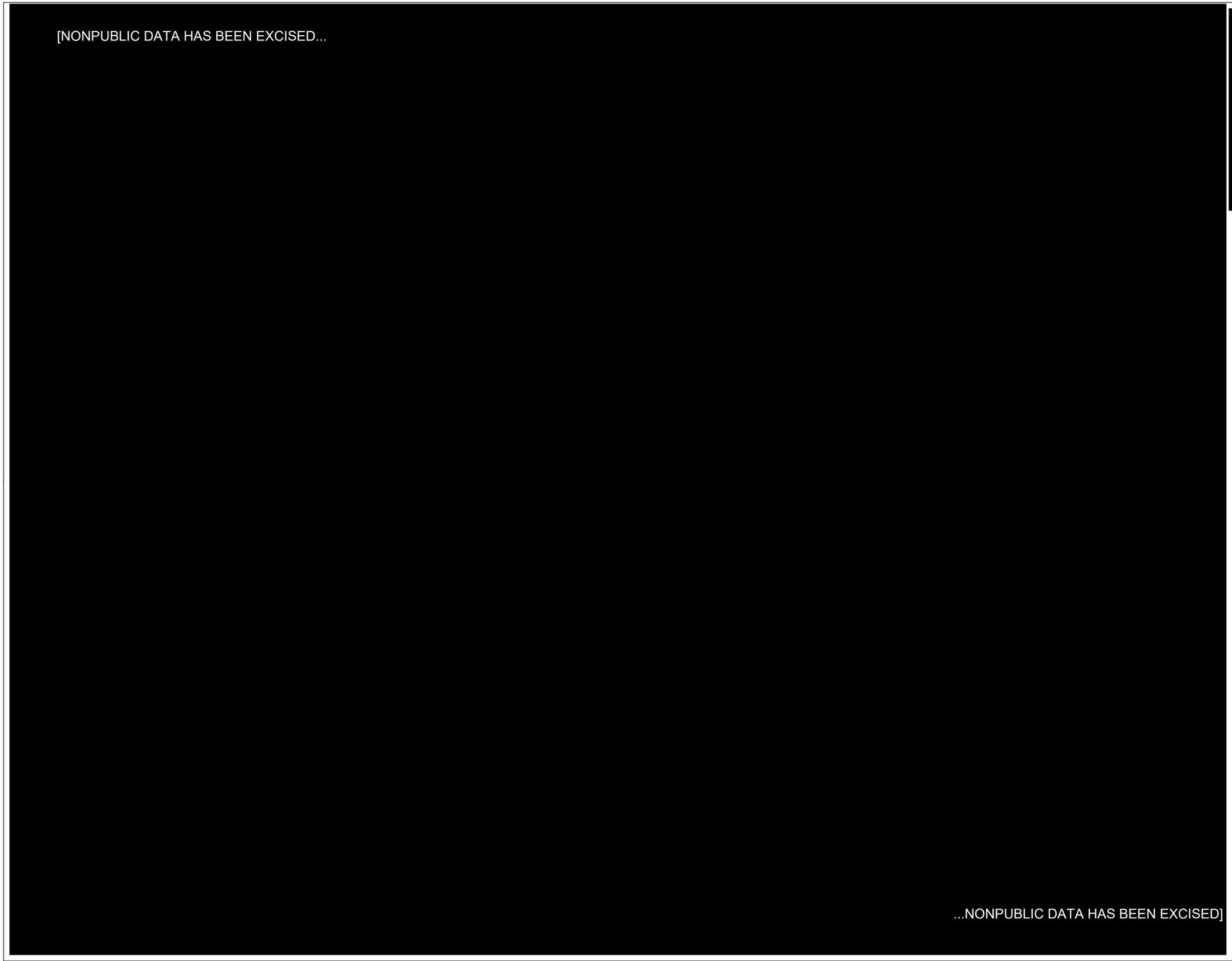

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Solar Project Area

Transmission Line Project Area

Historical Structure

Cemetery

0 1,500 3,000 4,500 6,000 Feet

Historic Map Log: Map 4
1938 Aerial Photographs

Sherco Solar
Sherburne County, Minnesota

N

TETRA TECH

APPENDIX C. PHOTO LOG

Photograph 1 (East): An overview of mature soybeans and corn in the Solar Project Area. Photograph taken September 22, 2020.

Photograph 2 (East): An overview of a harvested corn field in the Solar Project Area. Photograph taken September 23, 2020.

Photograph 3 (Southwest): An overview of a harvested potato field replanted with a cover crop in the Solar Project Area. Photograph taken September 23, 2020

Photograph 4 (East): An overview of a harvested potato field in Solar Project Area. Photograph taken September 23, 2020.

Photograph 5 (West): An overview of a harvested corn field and harvested potato field replanted with a cover crop in the Solar Project Area. Photograph taken September 24, 2020.

Photograph 6 (South): An overview of a hay field in the Solar Project Area and the Transmission Line Project Area. Photograph taken September 24, 2020.

Photograph 7 (East): An overview of a harvested potato field and mature corn field in the Solar Project Area. Photograph taken September 25, 2020.

Photograph 8 (West): An overview of a vegetated area and harvested potato field replanted with a cover crop in the Solar Project Area. Photograph taken September 28, 2020.

Photograph 9 (West): An overview of a mature corn field in Solar Project Area. Photograph taken September 28, 2020

Photograph 10 (East): An overview of a harvested potato field in the Solar Project Area. Photograph taken October 1, 2020.

Photograph 11 (East): An overview of a mature soybean field in the Solar Project Area. Photograph taken October 1, 2020.

Photograph 12 (East): An overview of a mature soybean field in the Solar Project Area. Photograph taken October 5, 2020.

Photograph 13 (West): An overview of a harvested potato field in the Solar Project Area. Photograph taken October 6, 2020.

Photograph 14 (East): An overview of a harvested corn field in the Solar Project Area. Photograph taken October 6, 2020.

Photograph 15 (East) An overview of agricultural cropland in Solar Project Area. Photograph taken October 8, 2020.

Photograph 16 (East) An overview of a mature soybean field in the Solar Project Area. Photograph taken October 8, 2020.

Photograph 17 (East): An overview of the NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) from County Road 53, adjacent to the Solar Project Area. Photograph taken January 6, 2021.

Photograph 18 (Southwest): An overview of the Solar Project Area from County Road 53, adjacent to the NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367). Photograph taken January 6, 2021.

Photograph 19 (East): An overview of a harvested potato field in the Transmission Line Project Area. Photograph taken December 22, 2020.

Photograph 20 (North): An overview of an agricultural field in Transmission Line Project Area. Photograph taken December 9, 2020.

Photograph 21 (South): An overview of the Sherco Power Plant in the Transmission Line Project Area. Photograph taken December 9, 2020.

Photograph 22 (North): An overview of the Sherco Power Plant in the Transmission Line Project Area. Photograph taken December 9, 2020.

Photograph 23 (East): An overview of a wooded area in the Transmission Line Project Area. Photograph taken December 9, 2020.

Photograph 24 (East): A view looking towards the NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) from the Transmission Line Project Area. The red arrow indicates the location of Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367). Photograph taken September 24, 2020.

Photograph 25 (East): A view towards the NRHP-eligible Minnesota Hwy 10, Elk River to St. Cloud (SH-SCC-367) from the Transmission Line Project Area. Photograph taken December 22, 2020.

A REPORT FOR PHASE I ARCHAEOLOGICAL SURVEY

Sherco Solar One Facility and Transmission Line

Sherburne County, Minnesota

FEBRUARY 23, 2021

PREPARED FOR:

Xcel Energy®

PREPARED BY:

Westwood

Westwood

Phase I Archaeological Survey

Sherco One Solar Facility and Transmission Line

Sherburne County, Minnesota

Prepared For:

Xcel Energy
414 Nicollet Mall, (GO6)
Minneapolis, MN 55401

Prepared By:

Ryan Grohnke
Rigden Glaab
Sara Nelson
Jake Schaffer

Westwood Professional Services
12701 Whitewater Drive, Suite 300
Minnetonka, MN 55343

Project Number: R0028209.00
Date: February 23, 2021

Abstract

Xcel Energy retained Westwood Professional Services, Inc., (Westwood) to conduct a Phase I Archaeological Survey of the proposed Sherco Solar One Facility and associated transmission line in Sherburne County, Minnesota. To better define and describe the potential effects of the Project on archaeological resources, in compliance with the Power Plant Siting Act, archaeological field investigations were conducted in the Project area. Rigden Glaab, M.A., RPA, served as Principal Investigator for the Project. Field investigations were conducted in September and October 2020 by Mr. Glaab; Westwood Cultural Resources Manager, Ryan P. Grohnke; Permit Lead, Dean T. Sather; and Archaeological Technician, Sara Nelson.

The Project is located in Minnesota Archaeological Region 4e – Central Lakes Deciduous (East). The Project area is approximately 1,757 acres with an associated 3.8-mile transmission line corridor. Field methods consisted of pedestrian survey, conducted generally in agricultural fields exhibiting 25–95% ground surface visibility.

No significant archaeological resources were observed in either the solar facility Project Area or the transmission line route. It is recommended the Project proceed as planned. Should there be additions or changes to the proposed construction plans, Westwood should be contacted to complete additional survey.

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Tables

Appendices

Exhibits

1.0 Introduction

Xcel Energy retained *Westwood Professional Services, Inc*., (Westwood) to conduct a Phase I Archaeological Survey of the proposed Sherco Solar One Facility (Project). The Project area for the solar facility is located on 1,757 acres of agricultural land southeast of the City of Becker in Sherburne County. It is situated in sections 4-9, 16 and 17 of Township 33N, Range 28W (Exhibit 1a). The associated transmission line is approximately 3.8 miles in length and located in sections 5, 6, 8, 9, and 16 of Township 33N, Range 28W and section 1 of Township 33N, Range 29W (Exhibit 1b).

To define and describe the potential effects of the Project on archaeological resources, in compliance with the site permit process of the Power Plant Siting Act, archaeological field investigations were conducted in the Project area. Rigden Glaab, M.A., RPA, served as Principal Investigator for the cultural resource investigations and directly oversaw the field investigations. Mr. Glaab meets the Secretary of the Interior's professional qualification standards, as stipulated in 36 CFR 61, and is licensed to conduct archaeological reconnaissance surveys on MN state lands (License #19-016). Ryan P. Grohnke, Westwood Cultural Resources Manager, assisted in managing the Project.

2.0 Scope of Work

A Phase I Archaeological Survey was conducted to determine whether any undocumented, significant archaeological resources are present within the proposed Project's Area of Potential Effect (APE) and to define vertical and horizontal boundaries of identified sites. If new sites are identified, investigators assess proposed construction impacts and provide recommendations on avoidance or additional work. The APE for this Project includes any location where ground disturbance is anticipated to occur, including the entire 1,757-acre Project area (Exhibits 1a and 2a) and the 3.8 mile long (42-meter wide) transmission line (Exhibits 1b and 2b). Any changes to the project boundary that may require additional ground disturbance would result in additional cultural review at that time.

3.0 Survey Methods

Project survey methods included background research, a literature review, and field investigations in the form of pedestrian survey. Environmental background and historic contexts were used to assess site probability and determine site types most likely to be encountered in the area.

The background research and literature review involved detailed file review in the online Portal maintained by the Office of the State Archaeologist (OSA) and a request for data and files from the Minnesota State Historic Preservation Office (SHPO), specifically examining site maps, archaeological site forms, burial files, and cultural resource survey reports. Other sources investigated included the Historic Andreas Atlas, Trygg Maps, and county histories and plat books. The background research and literature review identified previous cultural resource investigations and previously recorded archaeological sites, along with levels of disturbance and potential for sites within the APE.

Fieldwork consisted of pedestrian visual ground surface survey, completed in 15-meter interval transects throughout the entire proposed Project area. Most effective visual inspection is conducted on ground surfaces, such as cultivated fields exhibiting exposed soils. Generally, pedestrian survey is utilized in areas where surface visibility is greater than 25%. Significant slopes, wetlands, and heavily disturbed areas may be excluded from survey.

4.0 Results of Background Investigations

4.1 Environmental Background

The Project is located in a lightly populated agricultural region in central Minnesota in Sherburne County and is currently comprised almost entirely of agricultural land. Ground surface visibility (GSV) ranges from 25% to 95%.

4.1.1 Landscape

The Project is located in the Anoka Sand Plain and Mississippi Valley Outwash (51h) level IV ecoregion of the North Central Hardwood Forests (51) of the Mixed Wood Plains (EPA 2020). The Anoka Sand Plain and Mississippi Valley Outwash ecoregion level IV is characterized by sandy lake plains and terraces along the Mississippi River (White 2020). The topography of the region is level to gently rolling (MnDNR 2020). The Anoka Sand Plain and Mississippi Valley Outwash is bound by the Big Woods (51i) to the south and the St. Croix Stagnation Moraines (51a) to the southwest. The McGrath Till Plain and Drumlins (51k) surround the Anoka Sand Plain and Mississippi Valley Outwash ecoregion to the west, north, and east (EPA 2020).

Prior to Euro-American settlement, the landscape of the Anoka Sand Plain and Mississippi Valley Outwash was primarily comprised of oak barrens, openings, terraces along the Mississippi River, and savannas in sandy areas (White 2020; MnDNR 2020).

Following Euro-American settlement, the regional landscape is composed of agricultural lands, urban areas, and forests (MnDNR 2020). Agricultural areas are predominantly used for corn and soybean production, as well as vegetable and sod farming (MnDNR 2020; White 2020). In 2013, approximately 25% of the region was wetlands, 25% deciduous forest, and 20% corn and soybeans (White 2020). The Minnesota Department of Natural Resources (MnDNR) notes that fire and drought have been important natural disturbance factors in the region (MnDNR 2020).

4.1.2 Flora

The Anoka Sand Plain and Mississippi Valley Outwash was previously dominated by bur oak (*Quercus macrocarpa*) and northern pin oak (*Quercus ellipsoidalis*); however, drought and land use changes have reduced populations for the previously dominant species of the oak barrens and savannas (MnDNR 2020). Jack pine (*Pinus banksiana*) was also found along the northern boundary of the region (MnDNR 2020). Wet prairie species were previously identified in the eastern portion of the region (MnDNR 2020). The former wet prairies are mainly bogs with patches of aspen (*Populus tremuloides*) or

other hardwood tree species (White 2020). The current landscape flora consists of a mixture of row crop agriculture, pastures, deciduous forests, and urban developed lands (White 2020).

4.1.3 Fauna

The region was previously home to wildlife species such as bison (*Bison bison*), elk (*Cervus canadensis*), and wolf (*Canis lupus*). Present wildlife species in the region include those adapted to human disturbance and the dominant agricultural landscape, such as white-tailed deer, coyote, Canada goose, and bald eagle (Wilken *et al.* 2011). Rivers, streams, and lakes provide habitat for a variety of species, like walleye (*Sander vitreus*), northern pike (*Esox lucius*), sunfish (Family *Centrachidae*), and carp (*Cyprinus carpio*; Wilken *et al.* 2011).

4.1.4 Soils

Soils in the region are predominantly comprised of psamments (droughty, upland sandy soils), with lesser areas of hemists (organic soils) in depressions and tunnel valleys, and aquolls (poorly drained prairie soils) along the Mississippi River (MnDNR 2020). The Project soils are largely of the Hubbard-Mosford complex, which is a loamy sandy soil that is considered to be somewhat excessively drained (USDA 2020).

4.1.5 Geology

A key to the geological origin of the central Minnesota surface is glacial advances dating back as early as 1.2 million years ago (MGS 2020). Sherburne County's geologic deposits are composed of glacial till, lacustrine sand, outwash deposits, terrace deposits, peat deposits, and floodplain alluvium from the Des Moines Lobe, some 14,000 years ago (MGS 2020; Lusdardi 2013). The Project is located in an area of upland terrace deposits (MGS 2020; Lusardi 2013). Glacial Lake Anoka covered much of Sherburne County during the most recent glacial episode in Minnesota (MGS 2020). The sand plains found in the Project area are a result of the outwash from the Mississippi River when it was blocked by the Grantsburg lobe near St. Cloud, Minnesota (White 2020). The Quaternary overburden associated with the Upper Terrace is generally less than 10 feet in thickness (Lusardi 2013). Surface glacial deposits are usually less than 200 feet thick in the Anoka Sand Plain and Mississippi Valley Outwash ecoregion (MnDNR 2020). The Project is situated in the central portion of the Mississippi River – St. Cloud Watershed. Drainageways are well-defined in close proximity to the proposed Project.

4.2 Cultural History

In general, there are five major archaeological traditions in Minnesota that consist of the Paleoindian, Archaic, Woodland, Plains Village, and the later Mississippian, Oneota and Psinomani periods (Anfinson 1997; Arzigian 2008; Dobbs 1990; Gibbon 2012). These traditions represent varying degrees of cultural adaptations to changing environmental conditions, endemic population growth, and the movement of Native American groups in the past. The following cultural context presents an interpretation of this history based on current archaeological research and broadly accepted models for pre-contact social lifeways. A brief narrative of historic period developments within the state is as follows:

4.2.1 Paleoindian Period (13,000 to 9,000 Before Present [B.P.])

The Paleoindian Period represents the earliest evidence of human occupation in Minnesota, typically separated into the Early Paleoindian (13,000–12,500 B.P.) and Late Paleoindian (12,500–9000 B.P.) periods (Frison 1998). Spear technology is important during this timeframe, as opposed to an emphasis on atlatl and bow and arrow lithic technology seen during later periods. This reflects a subsistence strategy focused on large game hunting and high mobility. However, Gibbon (2012:37) suggests foraging behavior may have been broader spectrum, as evidenced by the long temporal overlap of eastern Archaic and Paleoindian traditions in Minnesota. Paleoindian settlement and mobility patterns constitute a major discussion point in archaeological research.

Clovis culture is commonly regarded as the first evidence of human occupation in Minnesota during the Early Paleoindian period. Its signature implement, the Clovis projectile point, is made from high quality lithic materials and has a central channel flake that extends part way up the proximal shaft of the tool (Frison 1998). Folsom is another Early Paleoindian technology that temporally follows Clovis during the Early Paleoindian Period. Its projectile point is typically made from high quality materials as well, with the central channel flake extending the entire length of the implement to the distal tip (Hofman 1995). Clovis and Folsom projectile points were used to hunt now-extinct forms of game, including *Bison antiquus* and mammoths. Evidence for Early Paleoindian occupation in Minnesota is limited to isolated finds of projectile points. Clovis isolated finds (N=30) have been found in central and southeastern Minnesota, while Folsom isolated finds (N=20) are documented in the western and southern parts of the state (OSA 2019).

The Late Paleoindian Period in Minnesota is characterized by an unfluted variety of projectile points similar to earlier lanceolate forms that are associated with the Plano Complex (Dobbs 1990). Agate Basin, Eden, Hell Gap, and Scottsbluff are varieties of projectile points found during this time, which are often associated with bison kill sites. Late Paleoindian sites are significantly more common in Minnesota, with over 200 recorded. The Browns Valley Site in western Minnesota and the Bradbury Brook Site are important Late Paleoindian localities in the region (OSA 2019).

Paleoindian archaeology in Minnesota mirrors the initial expansion of *Homo sapiens sapiens* during the height of the Eurasian Upper Paleolithic periods into North America (Gilligan 2010:16). The focal point of this migration is hypothesized to have occurred in a region termed Beringia, which extends from the Verkhoyansk Mountains in Siberian Russia to the edge of the now extinct Laurentide glacial ice sheet in western Canada (Hoffecker and Elias 2007). Traditionally, the shallow waters of the Bering Sea are argued to have served as the principal access point into the Americas when sea levels were reduced due to extensive glaciation that occurred during the Pleistocene Epoch (2.588 million to 12,000 B.P.).

The proposition that the Bering land bridge may have served as passageway for early human migrations was first suggested by the Spanish Missionary, Fray Jose de Acosta, in A.D. 1590 (Hoffecker and Elias 2007:2). Although Spain had not yet explored these

waters, de Acosta thought it was the only logical explanation for how indigenous populations would have come to the Americas. Eric Hultén (1937) later coined the term "Beringia" to describe the Quaternary ecology of this unique region. The designation Beringia is named for the famous Danish explorer Vitus Bering, who, by way of Russian contract, was the first European to sail the strait in 1728.

The area associated with the bridge is termed the Bering-Chukchi Platform, which extends 1600 km from the Arctic Ocean to the eastern Aleutians (Hoffecker and Elias 2007:5). Although the majority of this region is flat, the topography is punctuated by a few small islands, such as St. Lawrence Island and Wrangle Island. The majority of the shelf lies beneath less than 100 m of water and drops to 30 m near the Chukotka Peninsula, Russia. Over the 2.6 million year course of the Quaternary Period, 100 Marine Isotope Stages (MIS [Oxygen 16/18 ratios]) have been documented, which show the repeated exposure and inundation of the land bridge constituting 50 glacial/interglacial oscillations (2007:7–8). Initial human migrations into North America appear to be associated with the cold snap brought on by the Younger Dryas (12,900–11,700 B.P.), which effectively lowered sea levels by 50 m exposing the platform.

The archaeological record for humans expanding into North America is manifested at both interior and coastal sites. Early interior sites include that of Swan Point, Broken Mammoth, and Healy Lake, Alaska, which suggest population movements between the Laurentide and Cordilleran ice sheets between 13,000–11,000 B.P. (Holmes 2001; Cook 1996; Yesner 2001). Concurrently, a rapid coastal migration is also indicated at several South American localities, such as Monte Verde, which demonstrate potential evidence for groups moving by boat down the Pacific shoreline at approximately 15,000 B.P. (Dillehay 1989; Dixon 1999; Fladmark 1979). Recent genetic work with mtDNA haplogroups in the Americas and Asia appear to confirm the archaeological evidence, showing simultaneous coastal/interior population movement occurring between 18,700 and 14,200 B.P. (O'Rourke 2009; Perego et al. 2009). Alternatively, although followed by much criticism, Bradley and Stanford (2004) suggest that the progenitors of Clovis, and perhaps other groups, were the product of Atlantic migrations associated with peoples of the Solutrean cultures in France. Current genetic evidence refutes this claim; however, the issue does highlight an important debate in Alaskan archaeology (O'Rourke 2009; Perego et al. 2009).

The Pleistocene history of Minnesota is long and complex, with most of the state and surrounding regions being covered in glaciers between 18,000 B.P. and 11,000 B.P. (Manz 2019:23). Glaciers did not fully recede until approximately 10,000 years ago, where only the southwestern and southeastern parts of the state remained unglaciated. A dominant feature following deglaciation was Glacial Lake Agassiz. This overlapped the northwest portion of the state and formed during the retreat of the Des Moines Lobe, which principally drained to the south via Glacial River Warren (Gibbon 2012:38). As Lake Agassiz further retreated north, the modern Red River of the North began to form flowing towards the Hudson Bay. In terms of human occupation potential, the southern part of the state is likely the highest probability area to encounter archaeological sites, as it was unglaciated (Gibbon 2012:Map 2.1). Elk, mammoth, and extinct forms of bison

(e.g., *Bison antiquus*) may have been hunted by Pleistocene Native Americans of this time frame in Minnesota; however, other resources were probably equally important.

Waguespack (2007:69–70) highlights current evidence for early migrations into North America that indicate hunter and gatherers may have been generalized foragers, as opposed to explicitly large game predators. Historically, the first evidence for the Paleoindian Period comes from New Mexico where archaeologists uncovered fluted projectile points in association with extinct megafauna at sites, such as Blackwater Draw (Cook 1927; Figgins 1927). These important early finds quickly placed the antiquity of humans on the mid-continent of North America at the end of the Late Pleistocene (Howard 1936). Much of the debate generated by these discoveries overly focused on the role mega-fauna placed in the subsistence economy of Paleoindian hunter and gatherers. This pattern is different from many of the interior localities dating prior to 11,000 B.P. (e.g., the Village Lake Site at Healy Lake in Alaska [Cook 1969]), which exhibit a broad-spectrum diet. Bison and Wapiti appear to be the predominant large game that were hunted during this early period; however, birds and other small mammals were also exploited (Yesner 2001).

Analogous patterns have been observed outside of Minnesota, including eastern Great Basin sites, such as Bonneville Estates Rock Shelter, which demonstrate a broad spectrum diet occurring between 13,100 and 12,000 B.P. (Goebel 2007; Graf 2007:103). The archaeological record from this site suggests the prehistoric inhabitants were participating in a mixed foraging and hunting strategy. The identification of this trend in the Great Basin has led to the suggestion that this early phase be called the "Paleoarchaic" instead of "Paleoindian" in recognition of the markedly different subsistence strategies that were similar to later archaic groups (Graf and Schmitt 2007; Willig 1988; Willig and Aikens 1988). Realistically, the debate about whether early Paleoindians were generalized foragers or large game specialists likely rests "on the relationship between what could have been hunted and what was actually taken" (Waguespack 2007:70; Waguespack and Surovell 2003).

In contrast to these views, Kelly and Todd (1988) take the position that early populations of hunter and gatherers entering into the North American continent were heavily dependent on terrestrial fauna, as opposed to plant resources, since this was a more reliable food source. They argue that the strategies employed by these foragers were starkly different from that of modern hunter and gatherers, in that groups were not operating in seasonally restricted spaces. An optimal foraging analysis for procuring large game has recently been conducted by Byers and Ugan (2005). Specifically, they identified variables that may have deterred Paleoindians from focusing exclusively on mega-fauna, including the large number of individuals needed for processing, difficulty in procuring game, and distribution of game within different environmental patches. The authors conclude that the phenomena of exclusive large mammal hunting likely only occurred in a "narrow range" of places where game was abundant and processing time was low, such as in the Great Plains (2005:1625). Minnesota and surrounding areas were likely encompassed by this narrower range, as suggested by Kelly and Todd (1988).

Continuing with the issue of broad spectrum versus predominant large game hunting has been problematic to the debate of humans entering into the North American continent. Guthrie (1990) has supported the notion that humans could have easily followed the wide trails of proboscideans across the land bridge. Haynes (2001) reasons that modern African elephants can serve as an analogy for understanding how Pleistocene hunters may have interpreted herd characteristics. Such behavioral patterns include 1) the speed, direction, and health of an elephant herd based on the distribution/content of dung, and 2) the relative size of the animals based on the track width. Elephants create a series of fixed and habitually used trails that would have allowed initial colonizers into interior Alaska as a means to systematically explore the landscape. Conversely, Yesner (2001:317) sees the process of colonization into interior Alaska as involving a "push-pull" factor, presenting evidence for the existence of proboscideans in Siberia up to 9,000 B.P. This suggests that hunters would have been encouraged to remain in western Beringia for a longer period of time to procure this higher ranked resource. Foragers may have only episodically crossed the land bridge as eastward movement began to develop as the principal subsistence cycle.

A theoretical trajectory of incipient occupation into novel landscapes has been proposed by Beaton (1993) to describe the initial colonization of Australia (also see Yesner 2001). His model breaks down human entry into two categories: transient explorers and estate settlers. Beaton suggests that the settlement pattern associated with transient explorers would be lineal, conforming principally to significant geographic features, such as mountains, rivers, etc. This type of occupation may be associated with the earliest sites in Minnesota, which could be situated along the margins of major river corridors (e.g., Glacial River Warren). High mobility and small populations are necessary with the transient model, since groups are entering into an unfamiliar landscape leading to potentially high extinction rates. In contrast, estate settlers inhabit new lands in a more radial fashion, since there is a greater degree of familiarity with the resources present. Kelly and Todd (1988) argue that immigrant Paleoindians would have needed to switch territories frequently due to unfamiliar landscapes. This would have been an adaptive method to adjust to resource stress by either switching territories or adjusting the types of foods being consumed. In reality, the Early and Late Paleoindian Periods in Minnesota likely represented a combination of these alternating mobility strategies.

4.2.2 Archaic Period (9,000 to 2,500 B.P.)

Approximately 9,000 B.P., a new mode of subsistence strategy began to emerge in the archaeological record across North America (Emerson et al. 2011). The general pattern of this change is the replacement of lanceolate spear-points used during the Paleoindian period, and the adoption of atlatl technology with the presence of groundstone implements. This represents a fundamental difference from earlier forager behavior with a diversification of economy that incorporated more plants into the diets of Native Americans. The Archaic Period in Minnesota began substantially later than other regions starting around 9,000 B.P., principally in the southeastern part of the state (Anfinson 1997; Gibbon 2012). Important Archaic innovations include the use of grooved mauls and axes, canine domestication, copper tools, and incipient horticulture. The Archaic Period in Minnesota is poorly known; however, it comprises its longest temporal frame of human occupation.

Xeric environmental conditions began around 9,000 B.P. with the spread of prairie grassland across most of southern and western Minnesota (Anfinson 1997). Many of the lakes created as a product of Pleistocene glaciation started to dry during this time, leading to a reduction in game (e.g., bison, fish, birds, etc.) dependent on these resources. These environmental transformations promoted a diversification in hunting strategies, which differed dramatically from the Paleoindian period.

Minnesota experienced a wide variety of changing environmental conditions based on its different ecotones across the state during this time. Consequently, the traditional models of Early, Middle, and Late Archaic found elsewhere in North American do not directly apply. These different environmental regimes necessitated a variety of adaptive strategies to successfully subsist. Archaeologists have defined these internal periods within the state as follows: Prairie Archaic, Lake Forest Archaic, Shield Archaic, and Riverine Archaic (OSA 2019).

The Prairie Archaic Period is found across the western parts of Minnesota, representing an adaption to grassland environments. Key game hunted during this period were bison, which remained a focus throughout the entirety of the Archaic Period. Itasca State Park Site contains one of the best examples of the Prairie Archaic pattern. This site dates approximately to between 9,550 and 7,950 B.P. and yielded the remains of an extinct species of bison and the presence of a side-notched dart point. Other important localities from the Prairie Archaic Period include the Granite Falls Site and the Canning Site. A regional variation of the Prairie Archaic during the later periods is the presence of copper tools in the northwestern part of the state, with few examples in the southwestern areas as well (Anfinson 1997).

The temporal period, known as the Lake Forest Archaic, accompanies archaeological sites from about 7,950 B.P. in much of central and northern Minnesota (Anfinson 1997; Gibbon 2012). Prior to this period, most sites in this region would have mirrored those found in grasslands, whose economy focused on bison hunting. As a result, the Prairie Archaic pattern would have been prevalent during the earliest periods based on the similar environment. The expansion of woodlands during the mesic environments of the post-glacial thermal maximum led to a greater diversification of both plant and animal species. The Mississippi River corridor also served as a conduit for archaic groups from other regions, which ultimately influenced the potential spread of technologies and new lifeways into Minnesota. The site of Petaga Point in Kathio State Park is one of the best examples of the Lake Forest Archaic Period and contains evidence of Old Copper culture.

The Shield Archaic Period characterizes sites from far northeastern Minnesota, whose assemblages are the product of Native American adaptations found farther north in Canada (i.e., Canadian Shield). An important characteristic of Shield Archaic sites is the lack of groundstone tools and copper artifacts found often associated with archaic groups elsewhere in Minnesota (Anfinson 1997; Gibbon 2012). Shield Archaic sites in Canada are typically found near lakes and rivers where caribou and other migratory game may have crossed. Similar to other northern adapted populations, these groups may have

utilized specialized technologies, such canoes, snowshoes, toboggans, bark and skin-covered shelters, bark containers, and efficient winter clothing. The Fowl Lake Site is an important Minnesota site near the Canadian border that exemplifies the archaeological record of this period.

The Riverine Archaic period is found at sites located along the lower Mississippi River and other drainages in southeastern Minnesota (Anfinson 1997; Gibbon 2012). The river valley bottomlands provided a rich and varied source of animals and plants that were exploited by Native American populations. Common riverine resources included aquatic tubers, fish, waterfowl, mussels, deer, elk, and bison may have been taken in the uplands. The fertile floodplains also provided suitable locations for horticulture where plants, such as squash and various early cultigens, were grown. The King Coulee Site in Wabasha County is one of the most complete archaic sites from this region and dates to between 3,450–2,450 B.P. A slate gorget, mussel shells, squash seeds, and stemmed projectile points were recovered during the excavations (OSA 2019).

4.2.3 Woodland Tradition (3,000 B.P. to 950 B.P.)

Substantial cultural changes began to occur in Minnesota approximately 2,500 years ago, with Native American adaptations mirroring broader trends across the southern and eastern United States (Arzigian 2008). This timeframe, known as the Woodland Period, is marked by the presence of burial mounds, pottery, bow and arrow technology (ca. 1,450 B.P.), and intensive plant cultivation. Archaeological settlement patterns show Native American groups beginning to aggregate into larger populations along lakes, rivers, and associated drainages. Woodland archaeological sites are often broken into one of a classic tripartite temporal division of Early (3,000–2,150 B.P.), Middle (2,150–1,450 B.P.), and Late Woodland (1,450–950 B.P.) Periods (Emerson et al. 2008).

Traditionally, variations in the Woodland Period across time and space are argued to derive from broader influences that shaped significant trends in cultural practices. These interaction spheres include the Adena (Early Woodland Period), Hopewell (Middle Woodland Period), and Mississippian (Late Woodland Period) Cultures (Anfinson 1997; Gibbon 2012). While these divisions work well for other regions of North America, they do not neatly apply to archaeological sites in Minnesota (Arzigian 2008).

Major Woodland complexes in the various regions of the state include Laurel, Brainerd, and Blackduck (northern Minnesota); Malmo, St. Croix, Onamia, and Kathio (central Minnesota); Fox Lake and Lake Benton (southwestern Minnesota); and La Moille, Howard Lake, Sorg, and Effigy Mound (southeastern Minnesota) (Arzigian 2008). Pottery is an important distinguishing characteristic of these complexes, which are commonly named for the associated type site where they were first discovered. Ceramic vessels range in form from globular to conoidal with shell or sand grit as temper, and designs across the body (e.g., net impressions, patterned incisions). Lithic technology during this timeframe shows a preference for smaller projectile points utilized principally in bow and arrow technology.

A hallmark characteristic of the Woodland Period in Minnesota is presence of burial mounds, of which 12,000 have been recorded in the state (OSA 2019). The areas surrounding Red Wing, Lake Minnetonka, and Mille Lacs Lake have the highest concentrations of burial mounds. Many of these structures have been destroyed due to historic and modern development.

The subsistence strategies of Woodland groups in Minnesota varied widely based on the type of resources available. Wild rice was central to groups living in the northeast quarter of the state, which was husked in excavated pits and parched in ceramic vessels (Arzigian 2008). Other resources hunted or gathered included deer, fish, and various plants, such as maple sap for sugar. Farther west, around the Red River Valley and southern Minnesota, bison continued to be important as they were in the Archaic Period (OSA 2019). The "Three Sisters" of squash, beans, and corn were grown in small garden plots, which were further supplemented with other resources (e.g., fish and aquatic mammals).

4.2.4 Mississippian, Oneota, Plains Village, and Psinomani Traditions (950 B.P. to European Contact)

The Woodland Period ends throughout most of Minnesota around 950 B.P., with the exception of the northern portions of the state (Arzigian 2008; Gibbon 2012). The dominant regional influence was the site of Cahokia in the American Bottom near the modern city of St. Louis, Missouri on the Mississippi River (Pauketat 2009). This influence is most clearly seen in archaeological sites near Red Wing, Minnesota, that contain Cahokian-style ceramics, large palisaded villages, and evidence of corn horticulture. The presence of square earthen mounds may reflect Cahokian socio-religious belief systems. In Minnesota, the manifestation of this interaction is called the Silvernale Phase (Gibbon 2012).

A widespread cultural complex called Oneota in Minnesota is concurrent with the regional influences of Cahokia, lasting from approximately 950 B.P. until the time of French contact (Gibbon 2012). These mobile groups shared Middle Mississippian traits that included corn horticulture and shell-tempered ceramics (e.g., globular vessels with high rims), but lacked permanent structures, such as burial mounds. Oneota is manifested in different types called Orr (southeastern Minnesota), Blue Earth (south-central Minnesota), and Ogechie (central Minnesota). Siouan languages were spoken at the time of French contact (OSA 2019).

Plains Village groups from the region of the Missouri River in the Dakotas began to interact with the Oneota in western Minnesota after 950 B.P. (Anfinson 1997; Ahler and Kay 2007). These groups hunted bison, practiced corn horticulture, and lived within earth-lodges protected within palisaded forts (e.g., Double Ditch Site in North Dakota). Globular shaped ceramic jars with crushed rock temper are a hallmark technology of this period. Important Plains Village ceramic complexes in western Minnesota include Cambria, Great Oasis, and Big Stone (OSA 2019).

Psinomani groups are believed to be the ancestors of the modern Dakota people, who lived in east central Minnesota (Gibbon 2012). The principal ceramic type associated

with this group is Sandy Lake, whose form is more similar to a bowl rather than the globular jars of Oneota varieties. There is evidence of blended ceramic styles with Oneota Native Americans.

4.2.5 Contact Period and Post-Contact (A.D. 1650 to Present)

The Fur Trade in Minnesota involving Europeans and Native Americans first started in the early 1600s and marked the beginning of contact between these two populations. The historical implications of this interaction were felt in numerous ways both economically and with great social consequence (e.g., small pox). The major players in this arena of interaction were first the French followed by the British, and much later the Americans. French explorers Marquette and Joliet were among the first Europeans to reach the headwaters of the Mississippi entering Minnesota in 1673 (Kellogg 1917).

Throughout this early period up until the 1850s, fur drove much of the European exploration of Minnesota, leading to the establishment of American settlements, including the important Fort Snelling in 1824 (Hansen 1918). This ultimately led to Minnesota becoming a territory in 1849, later achieving statehood on May 11, 1858. In the 1860s, intensive agriculture and ever-increasing European settlements displaced numerous Native American groups. These tensions culminated in the tragic Dakota Conflict of 1862 (Carley 1976).

The period after the 1860s, Minnesota became an epicenter for the agriculture, lumber, and mining industries. Agriculture was prevalent in the southern and western parts of the state, while lumber was cut and iron mined in the northeastern areas. The Mesabi, Cuyuna, and Vermilion Iron Ranges were focal points in the procurement of iron, historically employing thousands of people (Upham 2001). Railroad lines were also economically important in Minnesota, making Minneapolis/St. Paul a focal point in transcontinental railways of the 19th and 20th centuries.

5.0 Literature Review

On September 15, 2020, Westwood Cultural Resource Manager, Ryan Grohnke, requested a database search from the SHPO. Additionally, he reviewed the Minnesota state archaeological site files available via the online Portal maintained by the OSA to obtain a list of previously recorded archaeological sites and historic structures located within the proposed study area. The Project area was reduced in size between the original database search and the field survey. Information below details resources in proximity to the current Project boundary as reviewed in the field (Exhibits 3a and 3b).

Due to precautions required by the Minnesota Governor's Stay Safe MN orders placed in response to the COVID-19 pandemic, in person review at SHPO and OSA was not allowed. This limited Westwood's ability to review previous survey reports and other materials house on-site at these locations.

5.1 Previous Cultural Resources Surveys

Westwood was unable to review previous reports housed at SHPO or OSA for the 2020 literature review. No evidence of previous surveys in the Project area was provided by SHPO.

5.2 Previously Recorded Cultural Resources – Solar Facility

5.2.1 Previously Recorded Archaeological Resources

The Project is located in Minnesota Archaeological Region 4e – Central Lakes Deciduous (East). Prehistoric sites in this region are generally located near lakes and major rivers (Gibbon et al. 2002).

No previously recorded archaeological sites have been identified within the solar facility Project Area. Three previously recorded archaeological sites are within one mile of the Project. All three sites are of low research potential (Table 5-1).

Table 5-1: Previously Recorded Archaeological Sites – Solar Facility

Site No.	Site Name	Site Type	NRHP Eligibility	Project/Buffer
21SH0035		Lithic Scatter	Low Research Potential	Buffer
21SH0036		Lithic Scatter	No Research Potential	Buffer
21SH0068	Bale	Single Artifact	Not Evaluated/Site Destroyed	Buffer

Key: Site No. = site designation applied by Office of the State Archaeologist; Site Name = unofficial site name as listed on site form; Site Type = brief description of site as designated on site form; NRHP Eligibility = Eligibility or listing status in the National Register of Historic Places; Project/Buffer = location within Project area or one-mile buffer.

5.2.2 Previously Documented Historic/Architectural Resources

Thirteen historic/architectural resources have been previously inventoried within one mile of the proposed solar facility Project Area, with no resources being located within the Project boundary (Table 5-2). Three of the inventoried resources, the Great Northern Railway Branch Line Big Lake Township Segment, Northern Pacific Railway Branch Line Big Lake Township Segment, and Minnesota Hwy 10, Elk River to St. Cloud are eligible for listing in the National Register of Historic Places (NRHP). The three NRHP eligible resources are in the buffer, but immediately adjacent to the Project Area.

Table 5-2: Previously Recorded Historic/Architectural Resources – Solar Facility

Inventory No.	Name	Address	NRHP Eligibility	Project/Buffer
SH-BKC-003	House	SE corner Central Ave & Pleasant Ave	Unevaluated	Buffer
SH-BKC-009	House	xxx Central Ave.	Unevaluated	Buffer
SH-BKT-009	House		Unevaluated	Buffer
SH-BKT-013	Farm (Removed)	15830 TH 10	Unevaluated	Buffer
SH-BKT-014	House	16014 TH 10	Unevaluated	Buffer

Table 5-2: Previously Recorded Historic/Architectural Resources – Solar Facility				
Inventory No.	Name	Address	NRHP Eligibility	Project/Buffer
SH-BKT-015	Farmstead	14116 CSAH 11	Unevaluated	Buffer
SH-BKT-017	Farmstead	15254 CSAH 11	Unevaluated	Buffer
SH-BKT-019	Bridge 71501		Unevaluated	Buffer
SH-BLT-009	Great Northern Railway Branch Line Big Lake Twp Segment		Eligible	Buffer – Immediately Adjacent to Project
SH-BLT-010	Northern Pacific Railway Branch Line Big Lake Twp Segment		Eligible	Buffer – Immediately Adjacent to Project
SH-BLT-011	Farmstead	17244 TH 10	Unevaluated	Buffer
SH-BLT-012	House	17420 TH 10	Unevaluated	Buffer
SH-SCC-367	Minnesota Highway 10, Elk River to St. Cloud	MN Highway 10	Eligible	Buffer – Immediately Adjacent to Project

Key: Inventory No. = designation applied by SHPO; Name = unofficial name or resource type as listed on inventory form; Address = location as listed on inventory form, verified in GIS if possible; NRHP Eligibility = eligibility or listing status in the NRHP; Project/Buffer = location within project area or one-mile buffer.

5.3 Previously Recorded Cultural Resources – Transmission Line

5.3.1 Previously Recorded Archaeological Resources

The Project is located in Minnesota Archaeological Region 4e – Central Lakes Deciduous (East). Prehistoric sites in this region are generally located near lakes and major rivers (Gibbon et al. 2002).

No previously recorded archaeological sites have been identified within the transmission line route Project Area. Three previously recorded archaeological sites are within one mile of the Project. All three sites are of low research potential (Table 5-1).

Table 5-3: Previously Recorded Archaeological Sites – Transmission Line				
Site No.	Site Name	Site Type	NRHP Eligibility	Project/Buffer
21SH0035		Lithic Scatter	Low Research Potential	Buffer
21SH0036		Lithic Scatter	No Research Potential	Buffer
21WR0117	St. Cloud Site D1A	Artifact Scatter	Not Evaluated	Buffer

Key: Site No. = site designation applied by Office of the State Archaeologist; Site Name = unofficial site name as listed on site form; Site Type = brief description of site as designated on site form; NRHP Eligibility = Eligibility or listing status in the National Register of Historic Places; Project/Buffer = location within Project area or one-mile buffer.

5.3.2 Previously Documented Historic/Architectural Resources

Six historic/architectural resources have been previously inventoried within one mile of the proposed transmission line route Project Area, with no resources being located within the Project route (Table 5-2). Three of the inventoried resources, the Great

Northern Railway Branch Line Big Lake Township Segment, Northern Pacific Railway Branch Line Big Lake Township Segment, and Minnesota Hwy 10, Elk River to St. Cloud are eligible for listing in the National Register of Historic Places (NRHP). The three NRHP eligible resources are in the buffer, but immediately adjacent to the Project area.

Table 5-4: Previously Recorded Historic/Architectural Resources – Transmission Line

Inventory No.	Name	Address	NRHP Eligibility	Project/Buffer
SH-BKT-013	Farm (Removed)	15830 TH 10	Unevaluated	Buffer
SH-BKT-014	House	16014 TH 10	Unevaluated	Buffer
SH-BKT-015	Farmstead	14116 CSAH 11	Unevaluated	Buffer
SH-BLT-009	Great Northern Railway Branch Line Big Lake Twp Segment		Eligible	Buffer – Immediately Adjacent to Project
SH-BLT-010	Northern Pacific Railway Branch Line Big Lake Twp Segment		Eligible	Buffer – Immediately Adjacent to Project
SH-SCC-367	Minnesota Highway 10, Elk River to St. Cloud	MN Highway 10	Eligible	Buffer – Immediately Adjacent to Project

Key: Inventory No. = designation applied by SHPO; Name = unofficial name or resource type as listed on inventory form; Address = location as listed on inventory form, verified in GIS if possible; NRHP Eligibility = eligibility or listing status in the NRHP; Project/Buffer = location within project area or one-mile buffer.

5.4 Other Sources

Potential cultural resources were observed in or near the Project Areas in An Illustrated Historical Atlas of the State of Minnesota (Andreas 1874). A railroad was observed which follows the previously mentioned railroad route adjacent to the Project in Sections 5, 8, and 9 of Township 33, Range 28. A road, no longer extant, is shown traveling through the Project area in Sections 7, 8, and 16 of Township 33, Range 28, Sherburne County.

6.0 Field Investigations

Westwood Archaeological Principal Investigator, Rigden Glaab; Cultural Resources Manager, Ryan P. Grohnke; Archaeological Technician, Sara Nelson; and Permit Lead, Dean T. Sather conducted the field investigations September 23, 2020 through October 12, 2020. Representative photographs of the Project area can be viewed in Appendix A (see Exhibit 4 for photo key).

6.1 Solar Facility

Topography throughout the APE is generally level to rolling hills. The land is primarily agricultural consisting of center pivot irrigation with a mix of potatoes, corn and soybeans. Field conditions generally comprised recently harvested and/or disced fields with ground surface visibility ranging from 25–95%, which enabled the use of pedestrian survey.

Areas outside of the center pivot locations were currently grass covered with some recently planted trees. Review of historic aerials had indicated the entire Project area has been historically plowed removing the potential for intact cultural features. These locations were generally of low potential for archaeological resources and had a general ground surface visibility of 10-40% or extensive animal burrows that could be examined, which still allowed for pedestrian survey to be utilized. In addition, a portion of the NE ¼, NW ¼ of Section 17 was grass covered. This area showed signs of significant ground disturbance including gravel pit or gravel pit test areas as well as being used as a potato dumping area. According to historic aerials, this area was also previously plowed removing the possibility of intact cultural features. Much of the area had sparse vegetation and animal burrows allowing for pedestrian survey. No archaeological resources were observed.

6.2 Transmission Line

The eastern 2.3 miles of the transmission line was within or immediately adjacent to the solar facility area. These locations were surveyed with pedestrian survey during the survey of the solar facility. Field conditions generally comprised recently harvested and/or disced fields with ground surface visibility ranging from 25–95%. A 1.5-mile portion of the transmission line located to the west of the Project and west of Sherburne Avenue is located in heavily disturbed portions of the Sherburne Power Plant. Rigden Glaab visually examined this area and determined the level of disturbance precludes the possibility for intact archaeological deposits. No archaeological resources were observed.

7.0 Summary and Recommendations

The current archaeological survey for the Sherco Solar One Facility identified no archaeological resources. It is recommended that no additional archaeological investigations are warranted in the current APE consisting of the solar facility and the transmission line. It is recommended that the Project be allowed to proceed as planned.

Westwood stresses that if construction plans are altered to include areas not previously surveyed, those locations must be examined for cultural resources. Although an archaeological survey was completed, the possibility of unidentified resources remains. If unrecorded archaeological sites are discovered during construction, all ground-disturbing activities in the area should stop and archaeologists at Westwood should be contacted. Further, if human remains are encountered during construction activities, all ground disturbing activity must cease, and local law enforcement must be notified. *Minnesota Statute 307.08, the Private Cemeteries Act, prohibits the intentional disturbance of human burials.*

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Appendix A

Representative Photographs of Project Area

Photo 1. Facing southeast in the northernmost corner of the Solar Facility APE. Highway 10 is on the left.

Photo 2. Facing south in the northern portion of the Solar Facility APE.

Photo 3. Facing north in the northern portion of the Solar Facility APE.

Photo 4. Facing west in the northwest portion of the Solar Facility APE and along the transmission line route.

Photo 5. Facing east in the northwest portion of the Solar Facility APE.

Photo 6. Facing northeast in the northwest portion of the Solar Facility APE.

Photo 7. Facing east in the central portion of the Solar Facility APE.

Photo 8. Facing west in the northeast portion of the Solar Facility APE and along the transmission line route.

Photo 9. Facing northeast in the northeast portion of the Solar Facility APE and along the transmission line route.

Photo 10. Facing north in the central portion of the Solar Facility APE.

Photo 11. Facing east in the central portion of the Solar Facility APE and facing the transmission line route.

Photo 12. Facing south in the west-central portion of the Solar Facility APE. Previous disturbances evident.

Photo 13. Facing northeast in the west-central portion of the Solar Facility APE. Previous disturbances evident, including a historic trash dump and a gravel pit.

Photo 14. Facing north in the central portion of the Solar Facility APE and along the transmission line route.

Photo 15. Facing north in the southwestern portion of the Solar Facility APE.

Photo 16. Facing northwest in the south-central portion of the Solar Facility APE.

Photo 17. Facing north in the southeast corner of the Solar Facility APE.

Photo 18. Facing west along the southern boundary of the Solar Facility APE. 157th Street SE is on the left.

Photo 19. Facing east in the southwest corner of the Solar Facility APE. 157th Street SE is on the right.

Photo 20. Facing north in the southwest corner of the Solar Facility APE. 157th Street SE is on the right.

Photo 21. Facing south along transmission line, north of the western boundary Solar Facility APE.

Photo 22. Facing west along transmission line, west of the Solar Facility APE.

Photo 23. Facing east from the western end of the transmission line, west of the Solar Facility APE.