Appendix J

Wetland Delineation Report

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Wetland Delineation Report

Otter Tail Power Company

Solway Solar Project

Beltrami County, Minnesota

August 2024

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Introduction

Otter Tail Power Company (OTP) has proposed the Solway Solar Project (Project) in Solway, Minnesota. The Project Area is located in Section 16, Township 147, Range 35 in Beltrami County, Minnesota (see Figure 1). HDR conducted a field delineation of wetlands for the proposed Project on August 7th and 8th, 2024 to identify wetlands and other Waters of the U.S. within the Project Area.

This wetland delineation was completed by HDR Environmental Scientists Torin McCormack and Katie Lueth. Mr. McCormack holds a Bachelor of Science in Geography with a minor in Wetland Ecology from Bemidji State University and has 15 years of experience in wetland delineation. Mrs. Lueth holds a Bachelor of Science degree in Ecology and Environmental Biology from University of Wisconsin – Eau Claire in Eau Claire, Wisconsin and has 9 years of experience with HDR in wetland delineation across the United States. Mrs. Lueth is a Certified Wetland Professional (#1407) by the Minnesota Wetland Professional Certification Program.

Methods

The Project Area is within the United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) Land Resource Region (LRR) K – Northern Lake States Forest and Forage Region, and Major Land Resource Area (MLRA) 57 – Northern Minnesota Gray Drift. Wetlands identified in the field were delineated in accordance with methods outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (1987 Manual) (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Determination Manual: Northcentral and Northeast Region (Version 2.0*) (USACE 2012). The U.S. Army Corps of Engineers (USACE) defines areas as wetlands based on the following:

> Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (33 Code of Federal Regulations [CFR] 328 3.b)

Wetland delineations are based on the presence of the following three parameters:

- The area must exhibit indicators of wetland hydrology
- The area must have a predominance of hydrophytic vegetation
- The area must have a presence of hydric soils

Atypical areas or problem areas may be missing one or more of the three parameters, and still can be classified as wetlands.

Offsite Review

Initial offsite evaluation for the presence of wetlands within the Project Area was performed using available information including: U.S. Geological Survey (USGS) topographic maps, Minnesota Department of Natural Resources (MNDNR) National Wetland Inventory (NWI) maps and Public Water Inventory (PWI) maps and USDA NRCS Websoil Survey information. Historic and high-resolution aerial photographs of the Project Area were also reviewed within the context of precipitation history. This analysis generated potential wetlands within the Project Area that were used to determine focus areas for field review.

Onsite Review

The Routine Determination, Onsite Inspection Necessary delineations included a search of the entire 500 acre Project Area.

Onsite review focused on wetlands identified as part of the offsite review as well as all low-lying and/or wet areas not identified by the offsite data sources. Maps of all delineated wetland boundaries are shown in Figure 3. Data sheets for representative wetland areas were collected according to the 1987 Manual and Northcentral-Northeast Regional Supplements and are included in Appendix A.

Upland and wetland data plots were collected at representative wetland features. At each plot location, a soil pit was dug for observation of soil and hydrology characteristics. Hydric soil and wetland hydrology characteristics were identified using methods described in the 1987 Manual and Northcentral-Northeast Regional Supplement. The vegetation was analyzed for plant species dominance in a 5-foot radius from the sample pit for the herbaceous layer, in a 15-foot radius for shrub layer, and in a 30-foot radius for overstory trees. The wetland indicator status of plants was identified using the National Wetland Plant List 2017. Each of the paired upland and wetland data plots were taken in close proximity, based on field observation of the apparent wetland edge.

Data collection points and the wetland boundaries were mapped using a Global Positioning System (GPS) unit with sub-meter accuracy. Using geographic information system (GIS), an accurate delineation map (see Figure 3) was created from the GPS data and field drawings, providing a permanent record of the onsite wetland delineation boundaries for the proposed Project.

Site Description

The proposed Project is located in southern Beltrami County, Minnesota. This area is within the Chippewa Plains Ecological Subsection as defined by the MNDNR (MNDNR 2024). The Chippewa Plains Subsection is characterized by gently rolling lake plains and till plains. Historically, deciduous and conifer forests dominated the area. Presently, much of the subsection is forested and forestry is one of the most important land uses. Tourism and recreation are also important land uses. Soils range from sandy to clayey, depending on the parent material. The drainage network throughout the subsection is poorly developed due to the age and the generally flat characteristics of the landforms.

Precipitation History Prior to Field Delineations

The USACE Antecedent Precipitation Tool (APT) (v1.0.19) was used to document antecedent precipitation conditions for the time of the delineation on August 7th, 2024. Antecedent precipitation is defined as precipitation occurring on-site prior to the field reviews. Antecedent precipitation is an important factor to consider when evaluating potential wetland hydrology indicators. Additionally, antecedent precipitation helps to determine whether a site review is conducted during “normal environmental conditions” for that time of year. Precipitation data for the Project Area was identified as having a three-month-prior rating of “Normal” at the time of the field delineation update, with a three-month-prior score of 12, June 8-August 7, 2024. APT output is included as Appendix C of this report.

Soils

Table 1 lists the USDA NRCS soil map units that occur within the Project Area along with their corresponding hydric rating. Locations of soil map units are shown in Figure 2.

Table 1. Mapped Soil Types Onsite

Map Unit Symbol	Map Unit Name	Percentage Hydric Rating
199B	Sol cobbly sandy loam, 1 to 6 percent slopes	3
272	Bemidji loamy sand	5
563	Northwood muck	100
620B	Cutaway loamy fine sand, 1 to 6 percent slopes	10
672	Willosippi loam	95
709B	Lengby sandy loam, 1 to 6 percent slopes	5
1959	Nary cobbly fine sandy loam	3
1991	Stuntz loam	5

Results

Forty-eight wetlands, totaling 13.80 acres were identified within the Project Area. Wetlands were classified based on the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979) and U.S. Fish and Wildlife Service (USFWS) Circular 39 (USFWS 2011) wetland types. Narratives describing each of the delineated resource types are included in this section. Table 2 summarizes the acreages of features delineated in the Project Area. The locations of each delineated feature are shown in Figure 3. USACE routine wetland determination data forms for representative wetlands are included as Appendix A to this report. Ground level photographs of delineated features are included as Appendix B to this report.

Table 2. Summary of Delineated Features

Feature ID	Cowardin Type	Circular 39 Type	Acreage	Corresponding Data Form	Wetland Location (Latitude, Longitude)
Wetland 1	PEM	Type 2	1.54	W1	47.5550350364 -95.13915231
Wetland 2	PEM	Type 2	0.08	W2	47.5550859128 -95.1378959967

Table 2. Summary of Delineated Features

Feature ID	Cowardin Type	Circular 39 Type	Acreage	Corresponding Data Form	Wetland Location (Latitude, Longitude)
Wetland 3	PEM	Type 2	0.04	W3	47.5558618529 -95.1364234424
Wetland 4	PEM	Type 2	2.22	W3	47.556200585 -95.134574688
Wetland 5	PFO	Type 7	0.53	W4	47.5548880245 -95.1324755354
Wetland 6	PEM	Type 2	0.38	W3	47.5543339391 -95.1310928521
Wetland 7	PFO	Type 7	0.03	W4	47.5565256528 -95.1310925466
Wetland 8	PEM	Type 2	0.03	W3	47.5573203822 -95.131208591
Wetland 9	PEM	Type 2	0.05	W3	47.5565129393 -95.1281115206
Wetland 10	PEM	Type 2	0.04	W3	47.5572996781 -95.128257291
Wetland 11	PEM	Type 2	0.21	W5	47.5540749682 -95.1393001255
Wetland 12	PEM	Type 2	0.01	W5	47.5541574685 -95.1390439089
Wetland 13	PEM	Type 2	0.05	W6	47.5539010158 -95.1387366276
Wetland 14	PEM	Type 2	0.06	W7	47.5535361645 -95.1388620064
Wetland 15	PEM	Type 2	0.39	W7	47.5538684912 -95.137872928

Table 2. Summary of Delineated Features

Feature ID	Cowardin Type	Circular 39 Type	Acreage	Corresponding Data Form	Wetland Location (Latitude, Longitude)
Wetland 16	PEM	Type 2	0.22	W3	47.554227491 -95.1374705726
Wetland 17	PEM	Type 2	0.28	W3	47.5541662139 -95.1361972951
Wetland 18	PEM	Type 2	0.18	W3	47.5548466443 -95.1367606861
Wetland 19	PEM	Type 2	0.43	W3	47.5537003802 -95.1344849571
Wetland 20	PEM	Type 2	0.78	W7	47.5529528857 -95.1383350546
Wetland 21	PEM	Type 2	0.45	W7	47.5533247745 -95.1364455679
Wetland 22	PEM	Type 2	0.01	W7	47.5521190074 -95.1383581216
Wetland 23	PEM	Type 2	0.61	W7	47.5509070609 -95.1410150947
Wetland 24	PEM	Type 2	0.44	W7	47.5516758522 -95.1388533996
Wetland 25	PUB	Type 3	0.14	W2	47.5517357638 -95.1394472992
Wetland 26	PEM	Type 2	0.14	W7	47.551373453 -95.1398386188
Wetland 27	PEM	Type 2	0.36	W7	47.5513297661 -95.1400415905

Table 2. Summary of Delineated Features

Feature ID	Cowardin Type	Circular 39 Type	Acreage	Corresponding Data Form	Wetland Location (Latitude, Longitude)
Wetland 28	PEM	Type 2	0.03	W8	47.5507036804 -95.1387771474
Wetland 29	PEM	Type 2	0.08	W8	47.5504282614 -95.140438255
Wetland 30	PEM	Type 2	0.08	W8	47.5502300905 -95.1400573002
Wetland 31	PEM	Type 2	0.40	W8	47.5495741439 -95.1403453028
Wetland 32	PFO	Type 7	0.15	W10	47.5498973605 -95.1391008792
Wetland 33	PFO	Type 7	0.14	W10	47.549656704 -95.1396381867
Wetland 34	PFO	Type 7	0.10	W10	47.5492954411 -95.1399630211
Wetland 35	PEM	Type 2	0.04	W8	47.5496254307 -95.1382101645
Wetland 36	PEM	Type 2	0.03	W8	47.5494694215 -95.1385628099
Wetland 37	PEM	Type 2	0.01	W8	47.5493468172 -95.1375609763
Wetland 38	PFO	Type 7	0.21	W10	47.549205071 -95.1387125438
Wetland 39	PEM	Type 2	0.14	W8	47.5490652488 -95.1410825555

Table 2. Summary of Delineated Features

Feature ID	Cowardin Type	Circular 39 Type	Acreage	Corresponding Data Form	Wetland Location (Latitude, Longitude)
Wetland 40	PEM	Type 2	0.15	W8	47.5484306131 -95.1412338489
Wetland 41	PEM	Type 2	0.19	W8	47.5483515156 -95.1402388461
Wetland 42	PEM	Type 2	0.19	W9	47.5480100067 -95.14131977
Wetland 45	PEM	Type 2	0.42	W9	47.5476915953 -95.1401975317
Wetland 46	PEM	Type 2	0.11	W9	47.5471225486 -95.1413047161
Wetland 47	PEM	Type 2	0.14	W9	47.5472985062 -95.1404976481
Wetland 48	PFO	Type 7	0.13	W1p	47.5434313152 -95.1368520816
Wetland 49	PEM	Type 2	0.57	W11	47.5435442202 -95.1304321403
Wetland 50	PEM	Type 2	0.82	W11	47.5441162364 -95.1280030239

TYPE 2 (PEM) WETLANDS

Data Points: Wetland Plot 1, Wetland Plot 2, Wetland Plot 3, Wetland Plot 5, Wetland Plot 6, Wetland Plot 7, Wetland Plot 8, Wetland Plot 9, Wetland Plot 11

A total of 10.99 acres of PEM Type 2 wetland was delineated within the Project Area. These systems were associated with saturated meadows. Dominant herbaceous vegetation that characterizes these wetlands included Reed Canary Grass (*Phalaris arundinacea*), Kentucky Blue Grass (*Poa pratensis*), Fowl Bluegrass (*Poa palustris*), Brome Sedge (*Carex bromoides*), Canada Blue Joint (*Calamagrostis canadensis*),

Cheatgrass (*Bromus tectorum*), Ostrich Fern (*Matteuccia struthiopteris*), Sandbar Willow (*Salix interior*), Water Smartweed (*Polygonum amphibium*), Water Plantain (*Alisma subcordatum*), Bladder Sedge (*Carex intumescens*), Wild Mint (*Mentha arvensis*), and Lake Sedge (*Carex lacustris*). Hydric soil indicators observed at these sites included Histic Epipedon (A2), Black Histic (A3), Redox Dark Surface (F6), Sandy Redox (S5), 2cm Muck (A10), 5cm Mucky Peat (S3). Hydrology indicators observed included Surface Water (A1), High Water Table (A2), Saturation (A3), Sparsely Vegetated Concave Surface (B8), Water-Stained Leaves (B9), Surface Soil Cracks (B6), Drainage Patterns (B10), Moss Trim Lines (B16), Thin Muck Surface (C7), Geomorphic Position (D2), Microtopographic Relief (D4), and FAC-Neutral Test (D5).

TYPE 3 (PUB) WETLANDS

Data Points: NA

A total of 0.14 acres of PUB Type 3 wetland was delineated within the Project Area. This area was an open water pond with an unconsolidated bottom. Dominant herbaceous vegetation observed in this wetland was Lake Sedge (*Carex lacustris*), Water Plantain (*Alisma subcordatum*), and Reed Canary Grass (*Phalaris arundinacea*). Because of water depth, a soil sample was not taken. Hydrology indicators included Surface Water (A1), High Water Table (A2), Saturation (A3), Inundation Visible on Aerial Imagery (B7), Geomorphic Position (D2), and FAC-Neutral Test (D5).

TYPE 7 (PFO) WETLANDS

Data Points: Wetland Plot 4, Wetland Plot 10

A total of 1.28 acres of PFO Type 7 wetland was delineated within the Project Area. These systems were associated with forested ephemeral ponds within wooded areas. Dominant vegetation present in the PFO wetlands included Green Ash (*Fraxinus pennsylvanica),* Basswood (*Tilia americana*), Bluejoint (*Calamagrostis canadensis*), Reed Canary Grass (*Phalaris arundinacea*), Bladder Sedge (*Carex intumescens*), Sweet Woodreed (*Cinna arundinacea*) Spotted Trumpetweed (*Impatiens capensis*). Hydric soil indicators observed included Sandy Redox (S5), Stripped Matrix (S6), Thin Dark Surface (S9), and Coast Prairie Redox (A16). Hydrology indicators observed included Water Stained Leaves (B9), Morphological Adaptations in the form of buttressed roots, Surface Soil Cracks (B6), Moss Trim Lines (B16), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2), Microtopographic Relief (D4), and FAC-Neutral Test (D5).

ARTIFICIAL WETLANDS

Data Points: Wetland Plot 11

A total of 1.39 acres of PEM wetland associated with Wetland 49 and Wetland 50 are likely artificial wetlands associated with a constructed water detention pond and drainage from the adjacent facility. The project will seek a jurisdictional determination from the USACE to determine if the wetlands are regulated by the USACE under Section 404 of

the Clean Water Act. Figure 5 depicts the area before the construction of the facility to support the likelihood of non-jurisdictional status.

Conclusions

Forty-eight wetland areas were identified and delineated within the Project Area. The wetland boundaries were delineated in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0*) (USACE 2012) and are subject to review and approval by the USACE and Minnesota Department of Transportation and Beltrami County (Local Governmental Units responsible for implementing the Minnesota Wetland Conservation Act). Any proposed impacts to the wetland will require additional coordination with and authorization from these agencies.

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Figures

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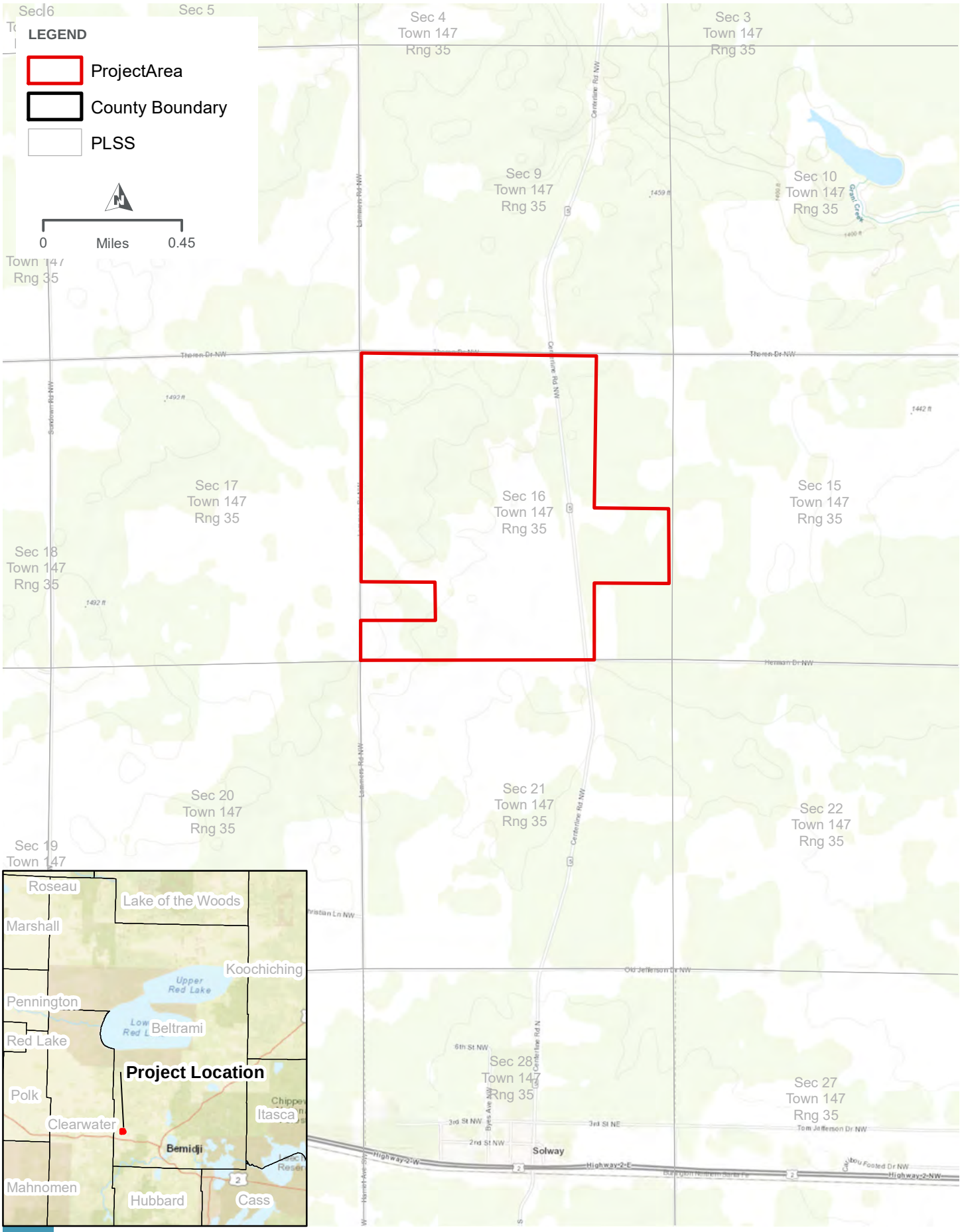

FIGURE 1. PROJECT LOCATION MAP

SOLWAY SOLAR PROJECT

BELTRAMI COUNTY, MN

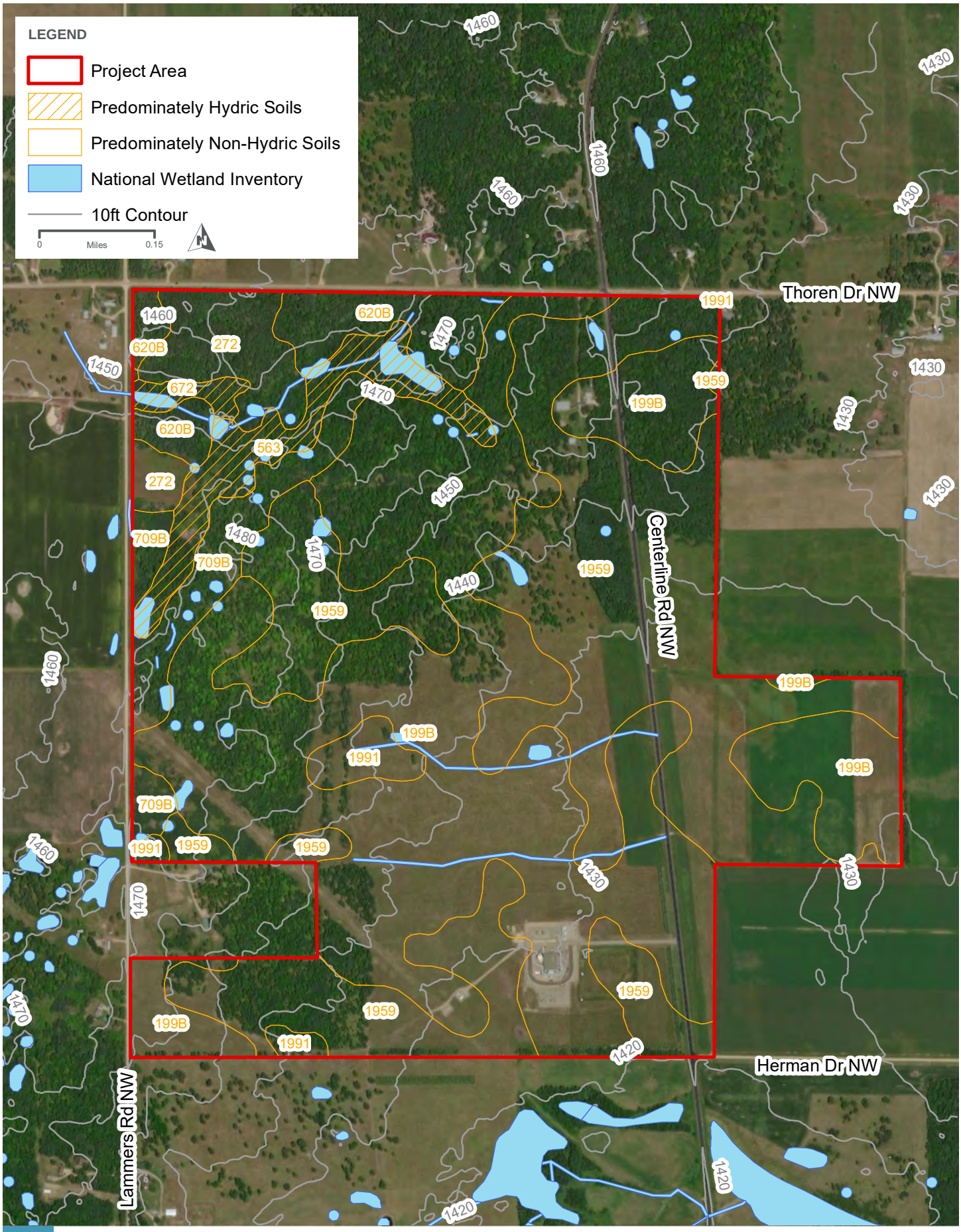

FIGURE 2. NWI, SOILS, AND TOPOGRAPHY

SOLWAY SOLAR PROJECT

BELTRAMI COUNTY, MN

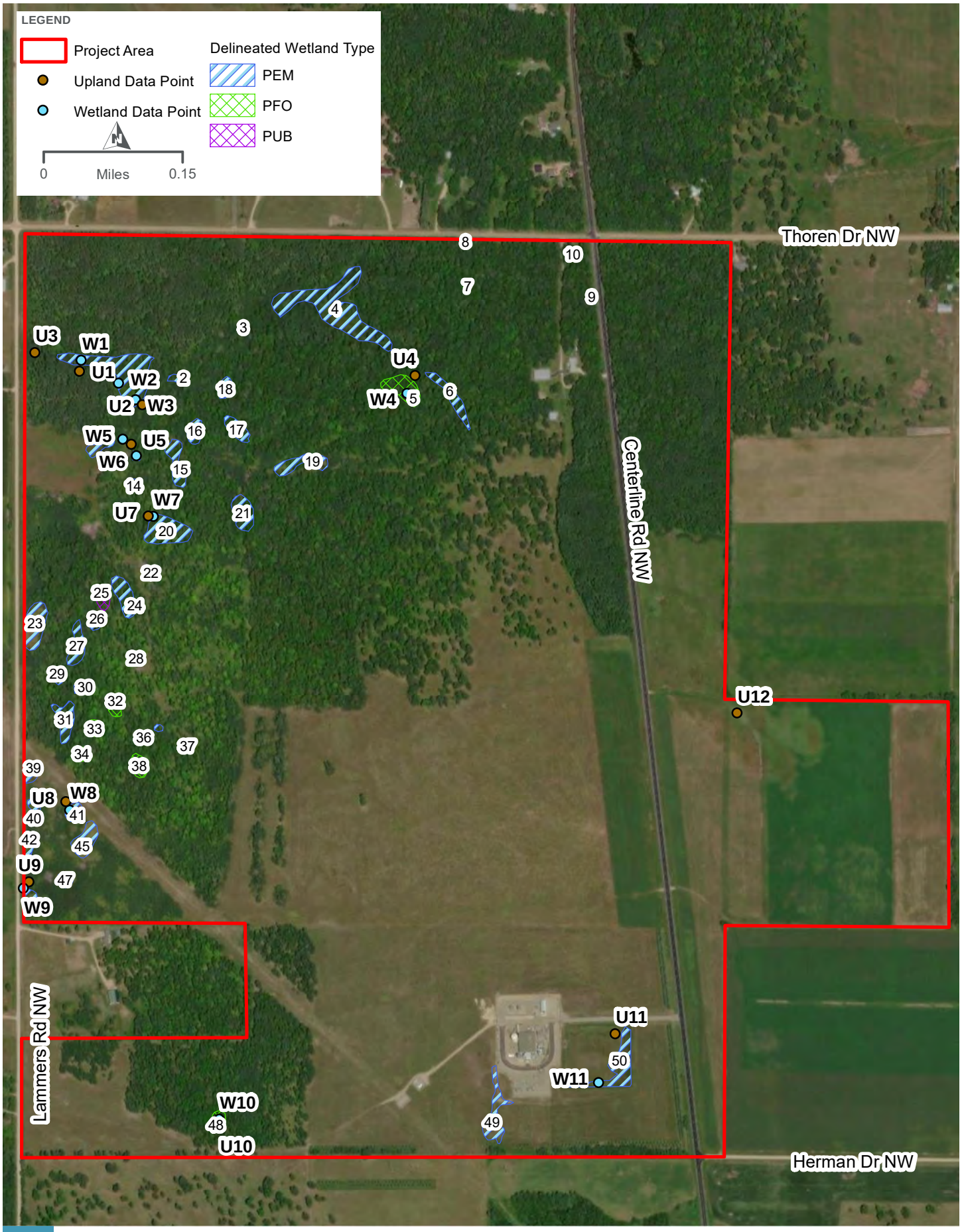

FIGURE 3. DELINEATED WETLANDS

SOLWAY SOLAR PROJECT

BELTRAMI COUNTY, MN

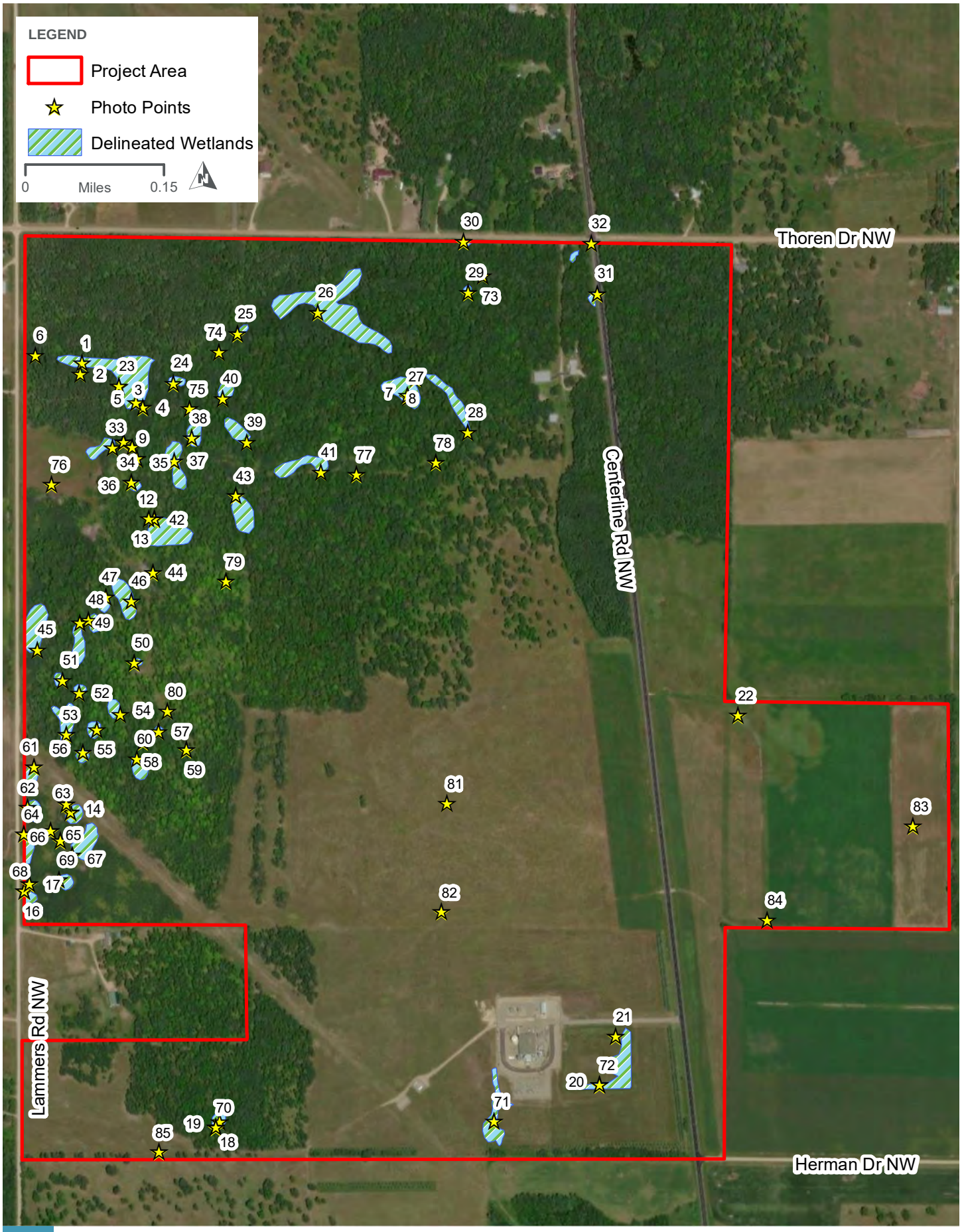

FIGURE 4. PHOTO LOCATIONS

SOLWAY SOLAR PROJECT

BELTRAMI COUNTY, MN

FIGURE 5. HISTORICAL AERIAL IMAGERY (1991)

SOLWAY SOLAR PROJECT

BELTRAMI COUNTY, MN

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Appendix A
Data Sheets

The full wetland report with all appendices are available at MPUC request.

Appendix B
Photo Log

The full wetland report with all appendices are available at MPUC request.

Appendix C
USACE Antecedent Precipitation Tool Output

The full wetland report with all appendices are available at MPUC request.