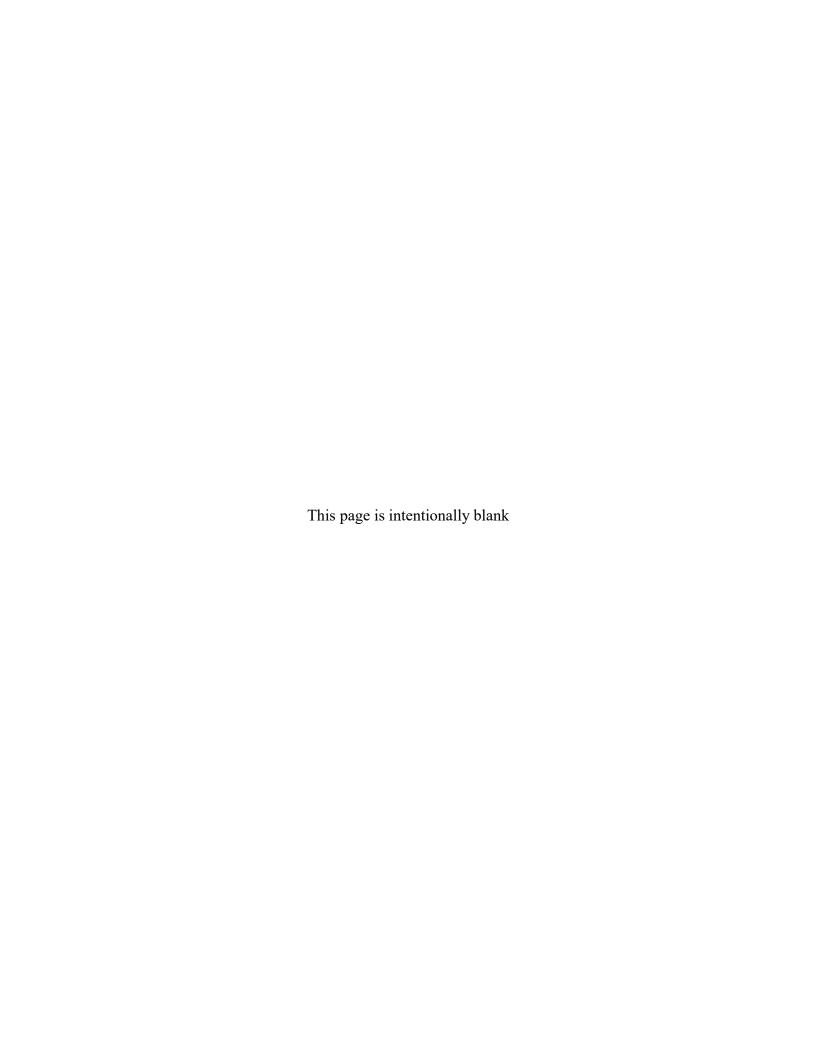
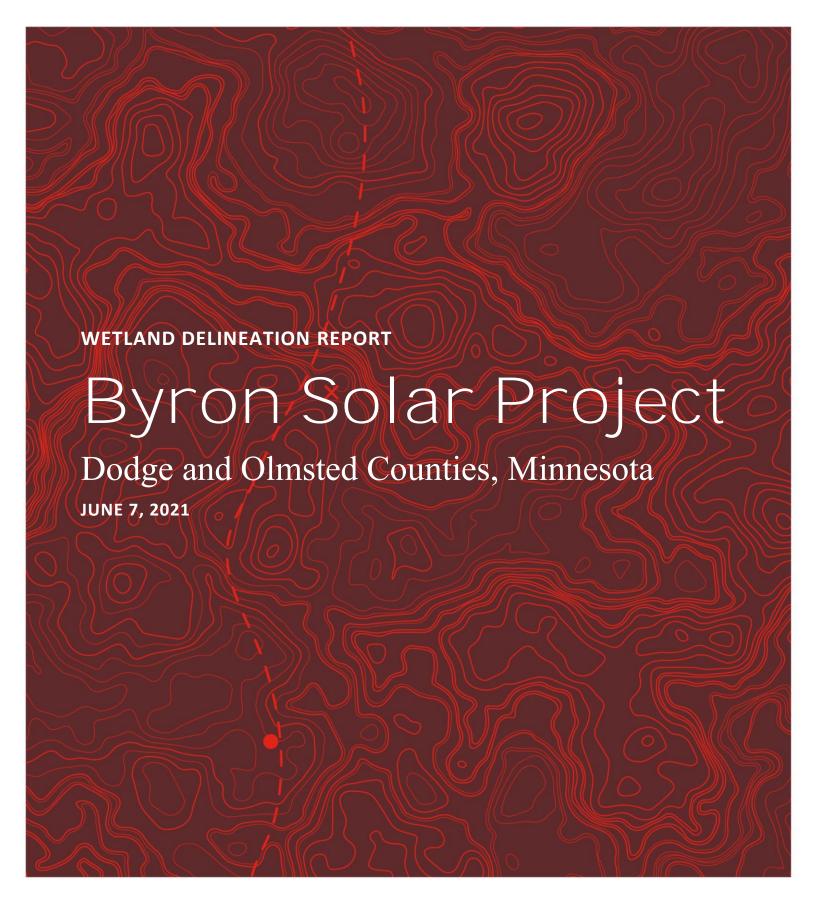
Appendix K Wetland Delineation Report

Byron Solar Project

Dodge and Olmsted counties, Minnesota





PREPARED FOR:

EDF Renewable Development, Inc. 10 Second Street Northeast, Suite 400 Minneapolis, MN 55413 **PREPARED BY:**





Wetland Delineation Report

Byron Solar Project

Prepared for:

EDF Renewable Development, Inc. 10 Second Street Northeast Suite 400 Minneapolis, MN 55413 Prepared by:

Westwood Professional Services 12701 Whitewater Drive, Suite 300 Minnetonka, MN 55343 (952) 937-5150

Project Number: 0028109.00

Date: 6/7/2021

CONTENTS

List o	f Exhibits	. ii
List o	f Appendices	. ii
1.0	DUDDOGE	
1.0	PURPOSE	
2.0 3.0	SITE LOCATION AND DESCRIPTION	
3.0	WETLAND DELINEATION METHODOLOGY	
	3.2 Offsite Hydrology Review	
	3.3 Field Work	
4.0	RESULTS	
1.0	4.1 Mapping	
	4.2 Antecedent Precipitation	
	4.3 Offsite Hydrology Review	
	4.4 Field Investigation	6
5.0	CONCLUSIONS	10
6.0	LITERATURE CITED	11
7.0	CERTIFICATION	11
TAB	LES	
TABL	.E 2.0: PROJECT AREA SECTION, TOWNSHIP, AND RANGE	1
TABL	.E 4.1: SOIL SUMMARY	1
TABL	.E 4.2: 2020 PRECIPITATION DOCUMENTATION WORKSHEET	5
TABL	.E 4.3: 2021 PRECIPITATION DOCUMENTATION WORKSHEET	5
TABL	.E 4.4.1: WETLAND SUMMARY TABLE	7
TABL	.E 4.4.2: NON-WETLAND SAMPLE POINT SUMMARY TABLE)
TABL	E 4.4.3: WATERCOURSE SUMMARY TABLE	10

EXHIBITS

Exhibit 1: Project Location

Exhibit 2: Water Resources Overview Map
Exhibit 2-1 to 2-8: Water Resources Mapbook

Exhibit 3: NRCS Soils Overview Map Exhibit 3-1 to 3-8: NRCS Soils Mapbook

Exhibit 4: Offsite Hydrology Review Overview Map

Exhibit 4-1 to 4-8: Offsite Hydrology Review Mapbook

Exhibit 5: Delineated Wetlands Overview Map Exhibit 5-1 – 5-8: Delineated Wetlands Mapbook

APPENDICES

Appendix A: Wetland Delineation Data Forms Appendix B: Wetland Delineation Photographs

Appendix C: Offsite Hydrology Review

1.0 PURPOSE

This report and the attached exhibits and appendices constitute the wetland delineation report for the Byron Solar Project ("Project"), which covers approximately 1,846 acres (2.9 square miles). Dodge County and Olmsted County SWCD are the Local Governmental Units (LGUs) that administer the Minnesota Wetland Conservation Act (WCA) in this area. This report provides the required documentation for wetland boundary determinations in conformance with the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory, Waterways Experiment Station, 1987) and the Regional Supplement to the USACE Wetland Delineation Manual: Midwest Regional Supplement (US Army Engineer Research and Development Center, 2010). The Joint Application Form for Activities Affecting Water Resources in Minnesota is included with the cover memo to this report.

2.0 SITE LOCATION AND DESCRIPTION

The Project Area is located north and south of US Highway 14, north of 670th St, west of 120th Ave SW, and east of County Road 13 (Exhibit 1). See Table 2.0 for a detailed description of the Project Area location.

Table 2.0: Project Area Section, Township, and Range

Township	Range	Sections
T106N	R16W	2, 3, 10, 11, 12, 13, 14, 15
T107N	R15W	30, 31
T107N	R16W	25, 26, 30, 35, 36

The Project Area and surrounding land use consists primarily of row crop agriculture with scattered rural residences and occasional pastureland.

3.0 WETLAND DELINEATION METHODOLOGY

3.1 **Mapping**

Prior to reviewing the Project Area in the field, Westwood reviewed the National Wetlands Inventory (NWI) mapping, the National Hydrography Dataset (NHD) and the Minnesota Department of Natural Resources (MN DNR) Public Waters Inventory (PWI) (Exhibit 2). Westwood also reviewed the Natural Resource Conservation Service (NRCS) Soil Survey Geographic database (SSURGO2) for Dodge and Olmsted Counties (Exhibit 3).

3.2 Offsite Hydrology Review

Westwood reviewed historical aerial photography to identify potential wetlands in cropped portions of the property using the July 1st, 2016 Minnesota Board of Water and Soil Resources (BWSR)/USACE-accepted protocol for conducting off-site wetland determinations, *Guidance for Offsite Hydrology/Wetland Determinations*. A total of 12 different aerial photographs were reviewed for years between 1991 and 2018.

3.3 Field Work

Between October 28 and October 31, 2020, and April 28 and 29, 2021, a certified wetland delineator from Westwood conducted a field review using a level two routine determination method set forth in the USACE Wetlands Delineation Manual and the supplemental methods set forth in the Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region. Soils, vegetation, and hydrology data were recorded on data forms and are included in Appendix A of this report. Photographs from the delineation are included in Appendix B.

Wetlands were classified according to Wetlands of the United States (U.S. Fish and Wildlife Service Circular 39; Shaw and Fredine; 1971) and Wetlands and Deepwater Habitats of the United States (FWS/OBS Publication 79/31; Cowardin et. al. 1979). Common names and scientific names for vegetation identified in this report and on the attached data forms generally correspond with the nomenclature used in the 2016 National Wetland Plant List (Lichvar 2016). Field data was located using a Trimble GPS unit capable of sub-meter accuracy.

Drainages within the Project Area were considered non-wetland Waters of the U.S. (WOTUS), as they may not exhibit all parameters required for wetlands (i.e. predominance of hydrophytes, hydric soils and jurisdictional hydrology). Accordingly, their boundaries were delineated in the field by documenting their Ordinary High Water Marks (OHWMs) as determined according to the USACE Regulatory Guidance Letter No. 05-05 (U.S. Army Corps of Engineers 2005). USACE regulations set forth at 33 CFR 328.3(e) defines the OHWM for purposes of Clean Water Act (CWA) lateral jurisdiction. The term OHWM means that line on the shore established by the fluctuations of water and indicated by physical characteristics including the following:

- Natural line impressed on the bank
- Changes in the character of soil
- Presence of litter and debris
- Vegetation matted down, bent, or absent
- Leaf litter disturbed or washed away
- Deposition
- Bed and banks
- Change in plant community

- Shelving
- Destruction of terrestrial vegetation
- Wracking
- Sediment sorting
- Scour
- Multiple flow events
- Water staining

4.0 RESULTS

4.1 Mapping

Exhibit 3 depicts the water resources mapped within the Project Area. A total of 45 NWI-mapped wetlands are located within the Project Area, including 19 R4sBC wetlands, 15 PEM1B wetlands, five PEM1Af wetlands, one PFO1B wetlands, two PSS1B wetlands, two R5UBH, and one PUBFx wetland. Fourteen NHD flowlines and one NHD water basin is also mapped within the Project Area; no PWI waterbodies or watercourses are mapped. The NRCS SSURGO2 for Dodge and Olmsted Counties indicate that the soils listed in Table 4.1 are mapped within the Project Area (Exhibit 3). Based on the NRCS Web Soil Survey Hydric Rating, there are no all-hydric soil units and three predominantly hydric soil units (Tripoli silty clay loam, o to 2 percent slopes; Clyde silty clay loam, 0 to 3 percent slopes; Garwin silty clay loam) mapped within the Project Area. All other soil units mapped within the Project Area are rated as partially hydric, predominantly non-hydric, or non-hydric.

Table 4.1 Soils Mapped within Project Area							
Map Symbol ¹	Map Unit Name ²	Rating ²	Percent Hydric Soil ³				
1027A	Coland-Spillville complex, 0 to 2 percent slopes, flooded	Partially Hydric	55				
M506B	Kasson silt loam, 1 to 6 percent slopes	Non-hydric	0				
M507A	Marquis silt loam, 1 to 3 percent slopes	Non-hydric	0				
M508A	Oran silt loam, 1 to 3 percent slopes	Predominantly Non-hydric	5				
M509B	Mantorville loam, 2 to 6 percent slopes	Non-hydric	0				
M509C2	Mantorville loam, 6 to 12 percent slopes, moderately eroded	Non-hydric	0				
M511A	Readlyn silt loam, 1 to 3 percent slopes	Predominantly Non-hydric	5				
M515A	Tripoli silty clay loam, 0 to 2 percent slopes	Predominantly Hydric	90				
M517A	Clyde silty clay loam, 0 to 3 percent slopes	Predominantly Hydric	95				
M518B	Clyde-Floyd complex, 1 to 4 percent slopes	Partially Hydric	60				
M523C2	Bassett-Kasson complex, 6 to 12 percent slopes, moderately eroded	Non-hydric	0				
M526B	Winneshiek silt loam, 2 to 6 percent slopes	Non-hydric	0				

Table 4.1 Soils Mapped within Project Area							
Map Symbol ¹	Map Unit Name ²	Rating ²	Percent Hydric Soil ³				
M526C2	Winneshiek silt loam, 6 to 12 percent slopes, moderately eroded	Non-hydric	0				
M527D2	Nasset-Winneshiek complex, 12 to 18 percent slopes, moderately eroded	Non-hydric	0				
N514B	Joy-Ossian, occasionally flooded, complex, 1 to 5 percent slopes	Predominantly Non-hydric	25				
N555B	Tama-Dinsmore complex, 2 to 6 percent slopes	Non-hydric	0				
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	Non-hydric	0				
176	Garwin silty clay loam	Predominantly Hydric	95				
203	Joy silt loam, 1 to 4 percent slopes	Predominantly Non-hydric	5				
285A	Port Byron silt loam, 0 to 2 percent slopes	Predominantly Non-hydric	0				
285B	Port Byron silt loam, 2 to 6 percent slopes	Non-hydric	0				
285C	Port Byron silt loam, 6 to 12 percent slopes	Non-hydric	0				
293C	Oronoco loam, 6 to 12 percent slopes	Non-hydric	0				

4.2 Antecedent Precipitation

Antecedent precipitation data was evaluated for the 3 months prior to the site visit using the *Wetland Delineation Precipitation Data Retrieval from a Gridded Database* tool. Results from these data indicate antecedent precipitation was normal prior to the field review. Table 4.2 and Table 4.3 **constitutes the "NRCS Method/3-Month Prior Method" to determine antecedent** precipitation using the Precipitation Documentation Worksheet from the Minnesota Climatology Working Group.

Table 4.2. Precipitation Documentation Worksheet (Score using 1981-2010 normal period)							
A 'R' following a monthly total indicates a provisional value derived from	month: September	second prior month: August 2020	third prior month: July 2020				
estimated precipitation total for this location:	4.04R	3.94R	3.64				
there is a 30% chance this location will have less than:	2.02	3.49	3.37				

there is a 30% chance this location will have more than:	4.53	5.13	5.25
type of month: dry normal wet	normal	normal	normal
monthly score:	3 * 2 = 6	2 * 2 = 4	1 * 2 = 2
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	12 (normal)		

Table 4.3. Precipitation Documentation Worksheet (Score using 1981-2010 normal period)							
values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: March 2021	second prior month: February 2021	third prior month: January 2021				
estimated precipitation total for this location:	1.78R	0.68R	0.84				
there is a 30% chance this location will have less than:	1.24	0.45	0.54				
there is a 30% chance this location will have more than:	2.31	0.90	1.19				
type of month: dry normal wet	normal	normal	normal				
monthly score:	3 * 2 = 6	2 * 2 = 4	1 * 2 = 2				
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	12 (normal)						

4.3 Offsite Hydrology Review

Initially, 56 suspect wetland areas were identified (Suspect Areas 1-17, 19-35, 37-39, 46, 48-65) and reviewed against various years of aerial imagery prior to the field determination (Exhibit 4; Appendix C). Based on aerial review results, 42 areas (Suspect Areas 2-4, 6-17, 19, 21, 23, 27-29, 31-33, 35, 37-39, 49, 48-51, 53, 54, 56, 59, 60, 61, 62, 63 and 64) warranted a field visit for confirmation due to signatures in at least 30 percent of years with normal antecedent precipitation or presence of mapped NWI wetlands. Some areas below the 30 percent threshold were also delineated based on field conditions.

4.4 Field Investigation

Between October 28 and October 31, 2020, and April 28 and April 29, 2021, a certified wetland delineator from Westwood delineated 25 wetland areas (WB_01-WB_17 and WB_101 – WB_108; Exhibit 5). Detailed information for each wetland is included in the Wetland Summary Table (Table 4.4.1). Detailed data forms are provided in Appendix A and photographs in Appendix B. The boundaries of all wetlands followed distinct changes in topography and/or plant communities between the upland and wetland sample locations. Five areas (NW-08, NW-09, NW-15, NW-22, NW-25) mapped on the NWI and as NHD flowlines were determined to be located in upland forest, upland swales, or harvested crop fields. See Table 4.4.2 for a summary of all non-wetland sample points taken during the field investigation.

Table 4.4.1: Wetland Summary Table

Wetland ID	Ac. (Onsite)	Sq. Ft. (Onsite)	NWI	NHD	Plant Community	PLS	Mapbook Page
P-01	0.30	12,973	Yes	No	PUBGx/Excavated Pond	S13 T106N R16W	6
WB_01	0.11	4,613	No	No	Type 1/PEM1Af/Seasonally Flooded Basin	S13 T106N R16W	6
WB_02	4.26	185,222	Yes	Yes	Type 1/2 PEM1A/B Seasonally Flooded Basin/Fresh (Wet) Meadow	S13 T106N R16W	6
WB_03	0.02	690	Yes	Yes	Type 2/PEM1B/Fresh (Wet) Meadow	S13 T106N R16W	6
WB_04	0.01	578	Yes	Yes	Type 2/PEM1B/Fresh (Wet) Meadow	S13 T106N R16W	6
WB_05	1.95	85,203	Yes	No	Type 2/PEM1B/Sedge Meadow	S13 T106N R16W	6
WB_06	0.05	2,125	Yes	Yes	Type 2/PEM1B/Fresh (Wet) Meadow	S13 T106N R16W	6
WB_07	0.25	11,083	Yes	Yes	Type 2/PEM1B/Fresh (Wet) Meadow and Sedge Meadow	S13 T106N R16W; S12 T160N R16W	4; 6
WB_08	0.07	3,141	Yes	Yes	Type 2/PEM1B/Fresh (Wet) Meadow	S13 T106N R16W	6
WB_09	0.44	19,263	No	Yes	Type 1/PEM1Af/Seasonally Flooded Basin	S11 T106N R16W	3
WB_10	0.14	5,973	No	No	Type 1/PEM1Af/Seasonally Flooded Basin	S10 T106N R16W	3
WB_11	0.08	3,697	No	Yes	Type 1/PEM1Af/Seasonally Flooded Basin	S15 T106N R16W	5
WB_12	0.33	14,263	Yes	Yes	Type 1/PEM1A/Seasonally Flooded Basin	S15 T106N R16W	5
WB_13	0.01	233	No	No	Type 1/PEM1A/Seasonally Flooded Basin	S15 T106N R16W	5
WB_14	3.87	168,896	Yes	Yes	Type 2/PEM1B/Fresh (Wet) Meadow	S10 T106N R16W; S11 T106N R16W; S14 T106N R16W; S15 T106N R16W	3; 5

Wetland ID	Ac. (Onsite)	Sq. Ft. (Onsite)	NWI	NHD	Plant Community	PLS	Mapbook Page
WB_15	2.05	89,396	No	No	Type 1/PEM1Af/Seasonally Flooded Basin	S11 T106N R16W	4
WB_16	0.08	3,369	Yes	No	Type 1/PEM1A/Seasonally Flooded Basin	S13 T106N R16W	6
WB_17	0.32	13,784	Yes	Yes	Type 2/PEM1B/Fresh (Wet) Meadow	S2 T106N R16W; S35 T107 R16W	2
WB_101	0.47	20,385	No	No	Type 2/3 PEM1Bf/PEM1Cf Fresh (wet) Meadow/Shallow Marsh	S31 T107N R15W	3
WB_102	0.13	5,769	No	No	Type 1/PEM1A/ Seasonally Flooded Basin	S31 T107N R15W	3
WB_103	2.04	89,041	Yes	Yes	Type 2/PEM1B/Fresh (wet) Meadow	S36 T107N R16W	3
WB_104	0.26	11,335	Yes	Yes	Type 1/PEM1A/ Seasonally Flooded Basin	S35 T107N R16W	2
WB_105	0.22	9,473	Yes	Yes	Type 1/PEM1A/ Seasonally Flooded Basin	S35 T107N R16W	2
WB_106	0.13	5,809	Yes	Yes	Type 1/PEM1A/ Seasonally Flooded Basin	S35 T107N R16W	2
WB_107	0.07	2,884	No	No	Type 1/PEM1A/ Seasonally Flooded Basin	S2 T106N R16W	5
WB_108	0.05	2,072	No	No	Type 1/PEM1A/ Seasonally Flooded Basin	S11 T106N R16W	5

Table 4.4.2: Non-wetland Sample Point Summary Table

Non-Wetland ID	NWI	NHD	PLS	Mapbook Page
NW-01	No	No	S13 T106N R16W	6
NW-02	No	No	S13 T106N R16W	6
NW-03	No	No	S13 T106N R16W	6
NW-04	No	No	S13 T106N R16W	6
NW-05	No	No	S13 T106N R16W	6
NW-06	No	No	S13 T106N R16W	6
NW-07	No	No	S13 T106N R16W	6
NW-08	Yes	No	S13 T106N R16W	6
NW-09	Yes	Yes	S13 T106N R16W	6
NW-10	No	No	S13 T106N R16W	6
NW-11	No	No	S13 T106N R16W	6
NW-12	No	No	S13 T106N R16W	6
NW-13 A	No	No	S12 T106N R16W	4
NW-13 B	No	No	S12 T106N R16W	4
NW-15	Yes	Yes	S11 T106N R16W	4
NW-16	No	No	S11 T106N R16W	3
NW-17	No	No	S11 T106N R16W	3
NW-18	No	No	S14 T106N R16W	5
NW-19	No	No	S11 T106N R16W	4
NW-20	No	No	S11 T106N R16W	4
NW-21	No	No	S11 T106N R16W	3
NW-22	Yes	Yes	S10 T106N R16W	3
NW-23	No	No	S10 T106N R16W	3
NW-24	No	No	S3 T106N R16W	1
NW-25	Yes	Yes	S3 T106N R16W	1
NW-26	No	No	S2 T106N R16W	2
NW-27	No	No	S13 T106N R16W	6
NW-101	No	No	S31 T107N R15W	3
NW-102	No	No	S35 T107N R16W	2
NW-103	No	No	S35 T107N R16W	2
NW-104	No	No	S35 T107N R16W	2
NW-105	No	No	S35 T107N R16W	1
NW-106	No	No	S11 T106N R16W	5
NW-107	No	No	S3 T106N R16W	4

In addition to the 25 wetlands delineated, Westwood also mapped three watercourses (WC-O1, WC-O4, and WC-O5) within the Project Area. All of these features exhibited OHWM characteristics and corresponded with NWI and/or NHD flowline mapping. A summary of delineated watercourses is provided in Table 4.4.3.

Table 4.4.3: Watercourse Summary Table

Watercourse ID	Stream Type	Ac.	Sq. Ft.	PLS	Page
WC-01	Perennial	1.48	64,277	S13 T106N R16W	6
WC-04	Intermittent	0.02	1,004	S11 T106N R16W	4
WC-05	Perennial	0.02	890	S2 T106N R16W	2

5.0 CONCLUSIONS

Westwood reviewed the Project Area associated with the Byron Solar Project in Dodge and Olmsted Counties, Minnesota for the presence of jurisdictional wetlands. The field investigation identified 25 wetlands and three watercourses on-site. On behalf of EDF Renewable Development, Inc., Westwood requests that Dodge County and Olmsted SWCD, as the WCA LGUs, and the USACE review and process this report and enclosed Joint Application Form and provide written concurrence that the extent of aquatic resources on the Project have been accurately identified. Please consider this report a formal Wetland Boundary request pursuant to Minn. Rules 8420.0405 and the CWA.

6.0 LITERATURE CITED

- Cowardin, L.M., V.M. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Biological Services Program, Washington, DC, USA. FWS/OBS-79/31. 103pp.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.
- Shaw, S.P. and C.G. Fredine. 1971. Wetlands of the United States. U.S. Fish and Wildlife Circular 39. U.S. Department of the Interior, Washington, D.C. 67 pp.
- U. S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Army Corps of Engineers, St. Paul District and Minnesota Board of Water and Soil Resources. 2016. *Guidance for Offsite Hydrology/Wetland Determinations*.
- United States Department of Agriculture, Natural Resources Conservation Service, 2010. Field Indicators of Hydric Soils in the United States, Version 7.0. C.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.). USDA NRCS, in cooperation with the National Technical Committee for Hydric Soils.

7.0 CERTIFICATION

I certify that, to the best of my knowledge and belief, the wetland delineation completed for this Site is consistent with current wetland delineation practices and guidelines. I have the specific qualifications, education, training, and experience to complete wetland delineations and determinations in accordance with federal and state requirements.

Sincerely,

WESTWOOD PROFESSIONAL SERVICES

David Kuhlmann

David Muhlua

Senior Wildlife Biologist

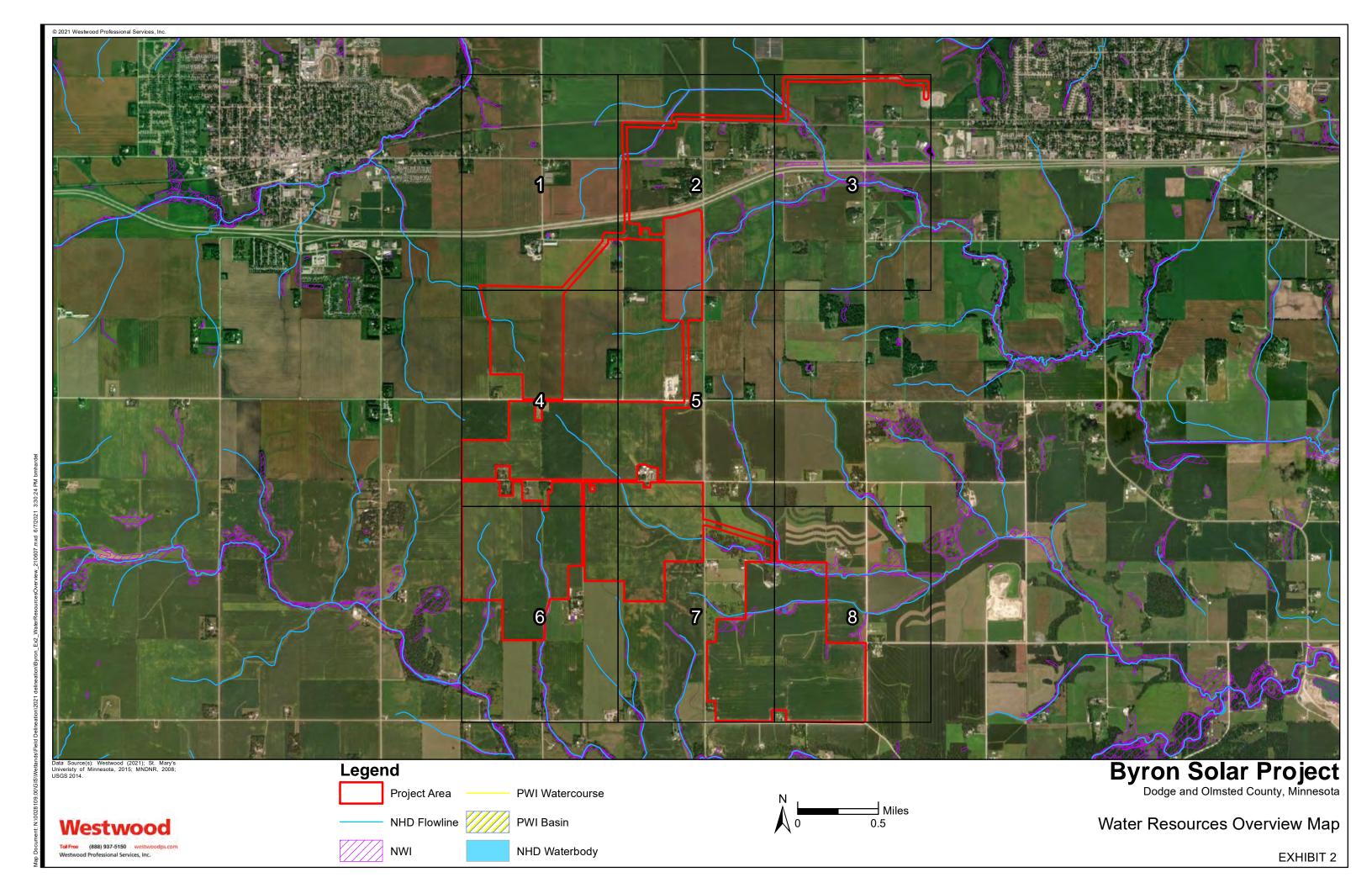
MN Certified Wetland Delineator No. 1315

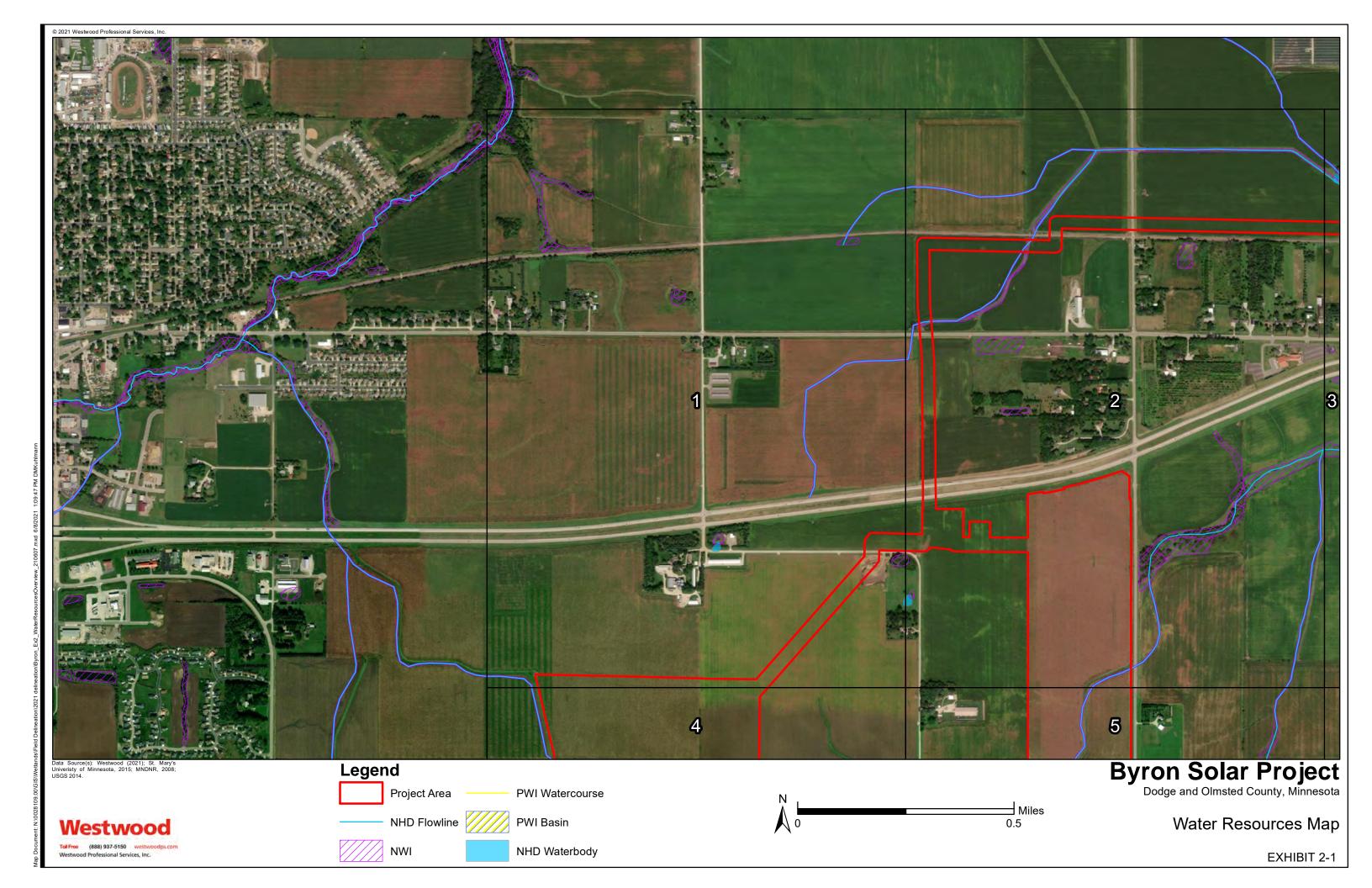
Westwood

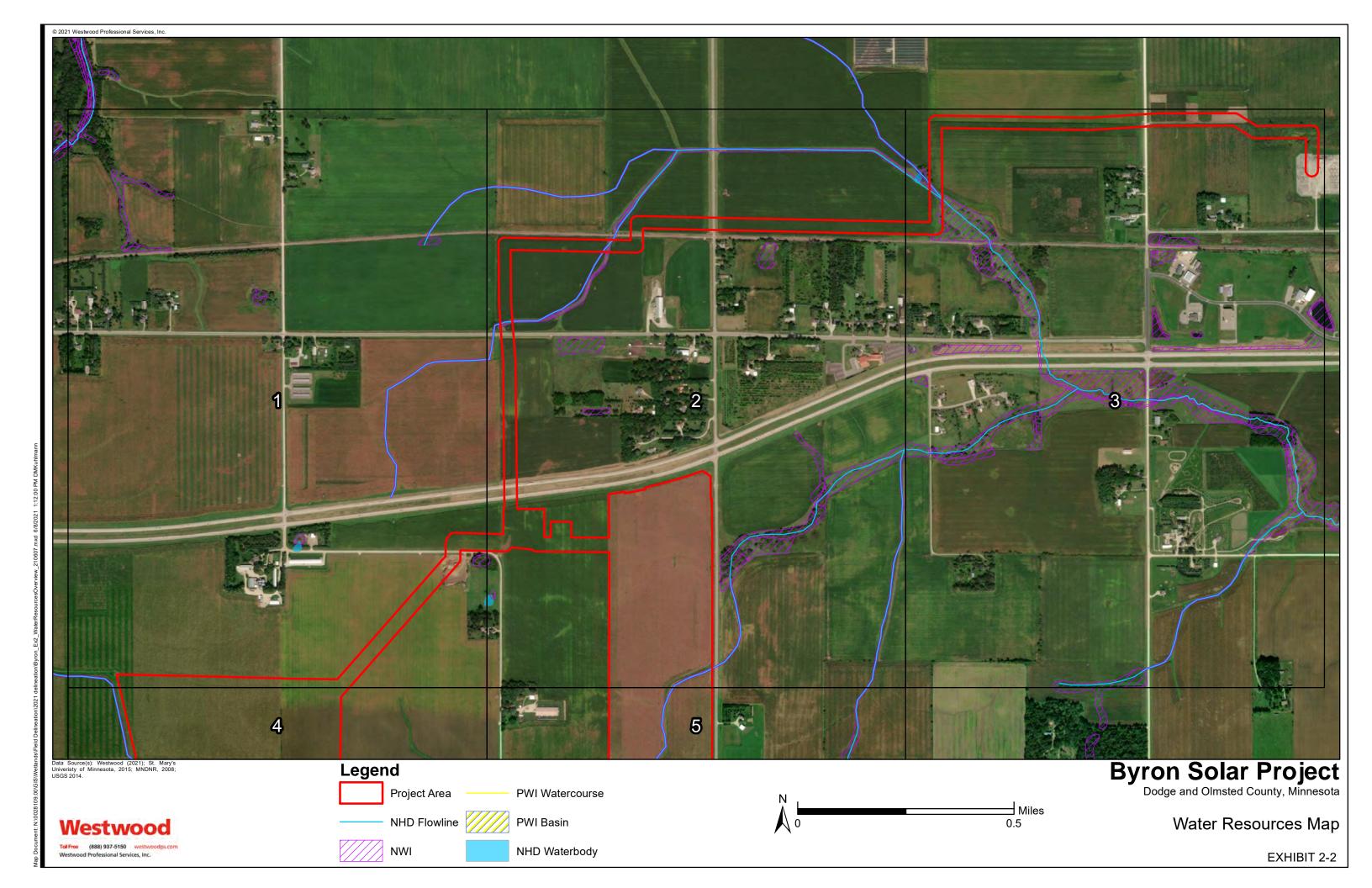
Exhibits

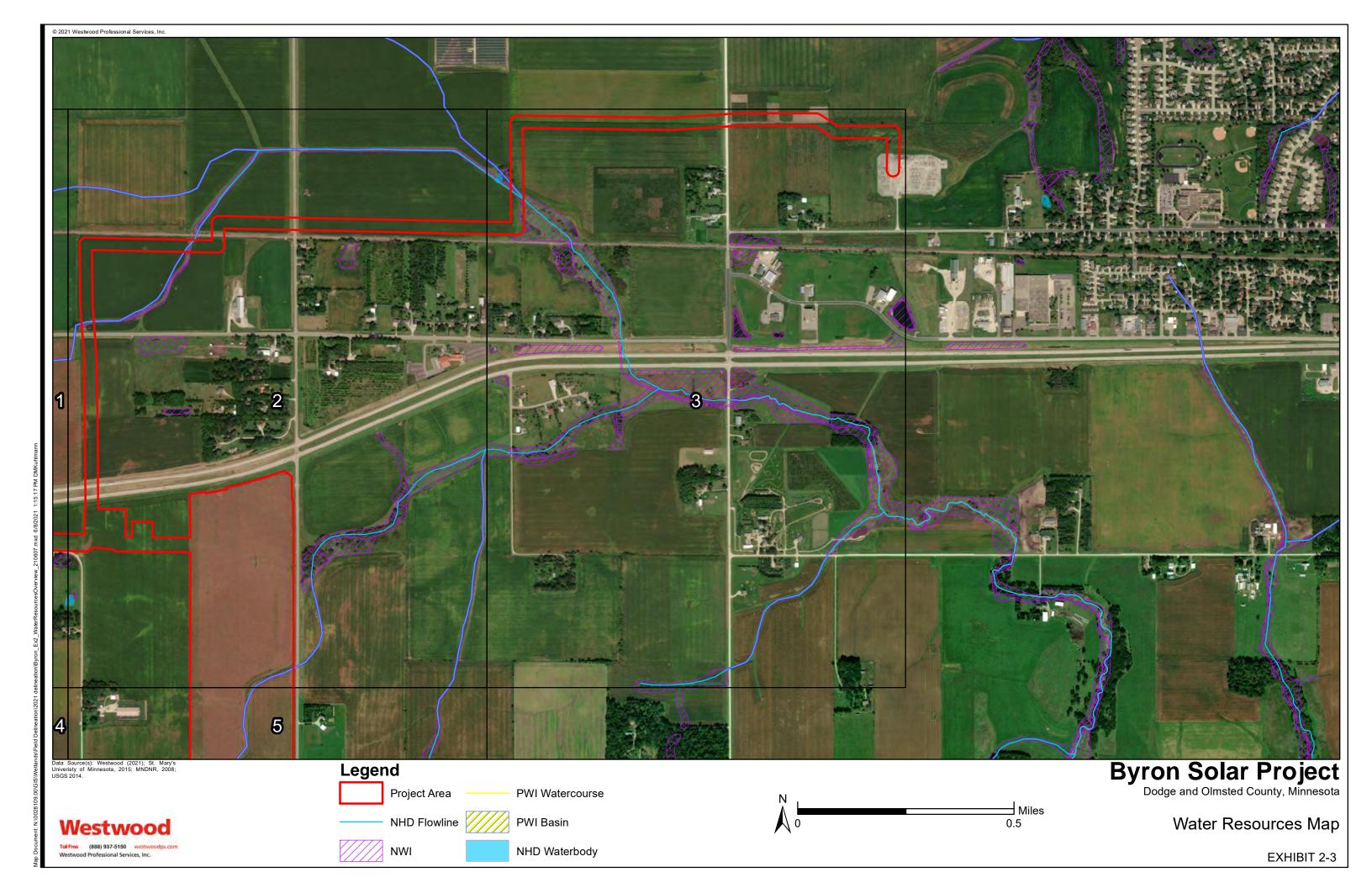
Byron Solar Project

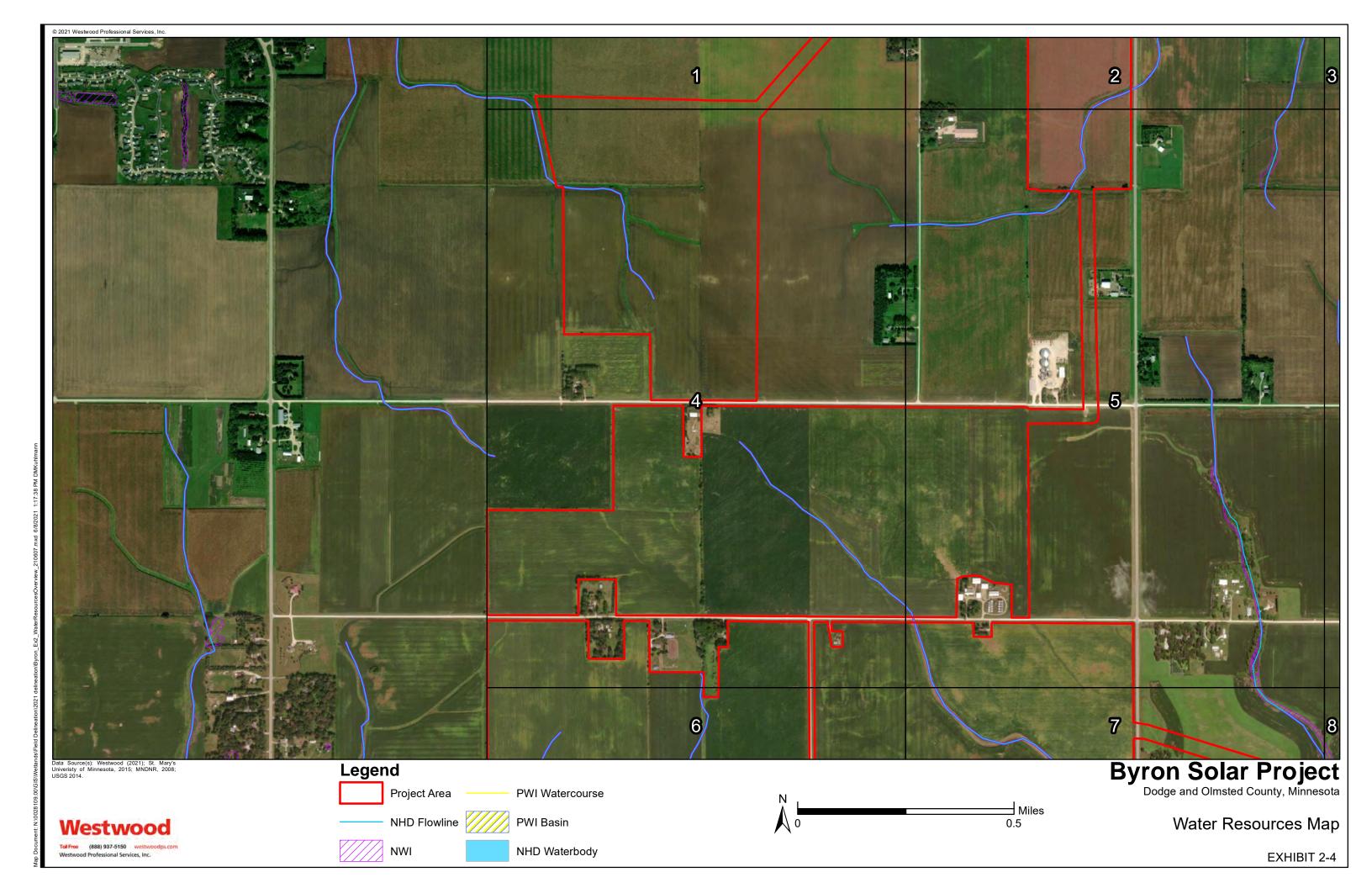
Dodge and Olmsted Counties, Minnesota

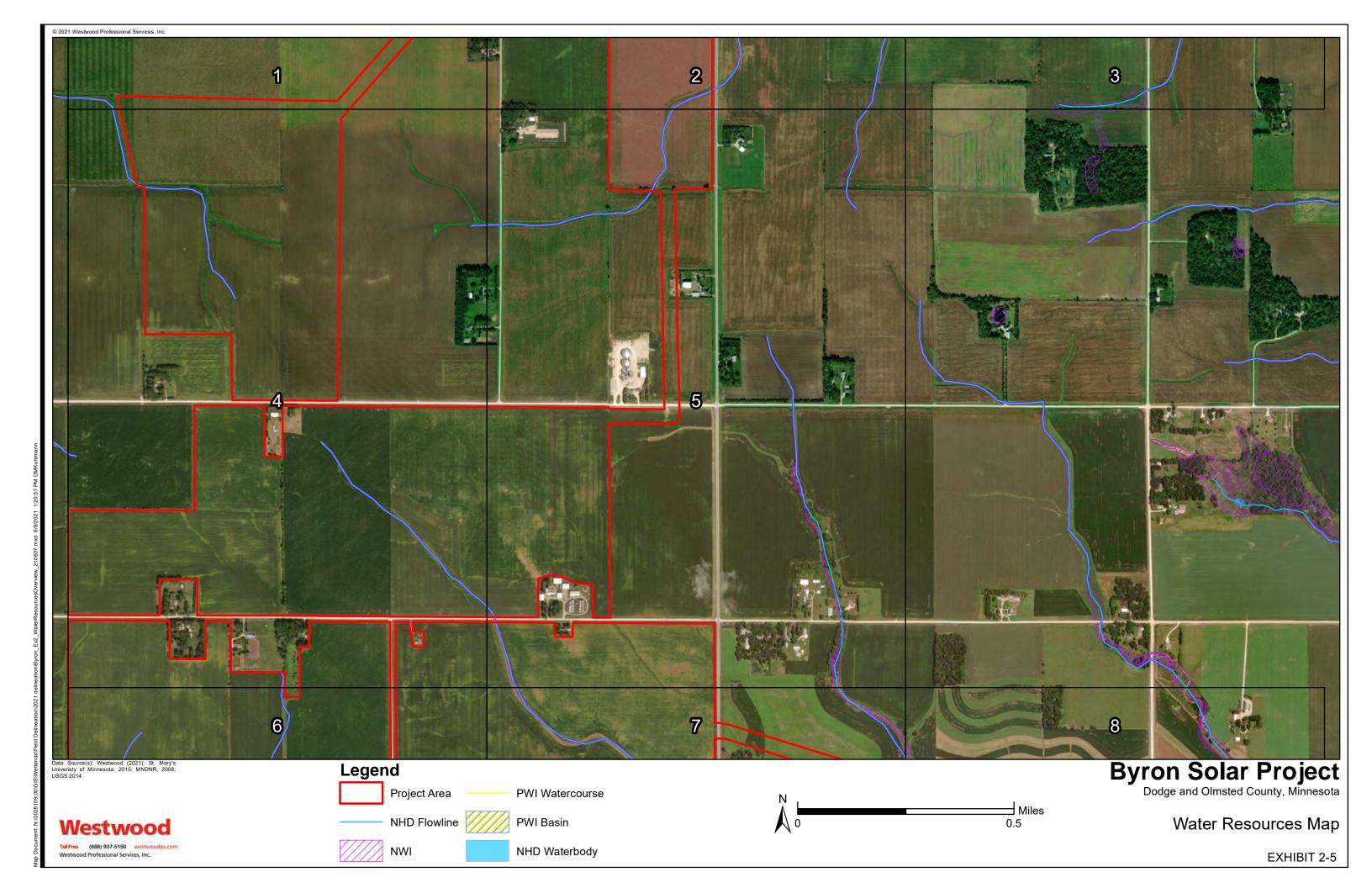


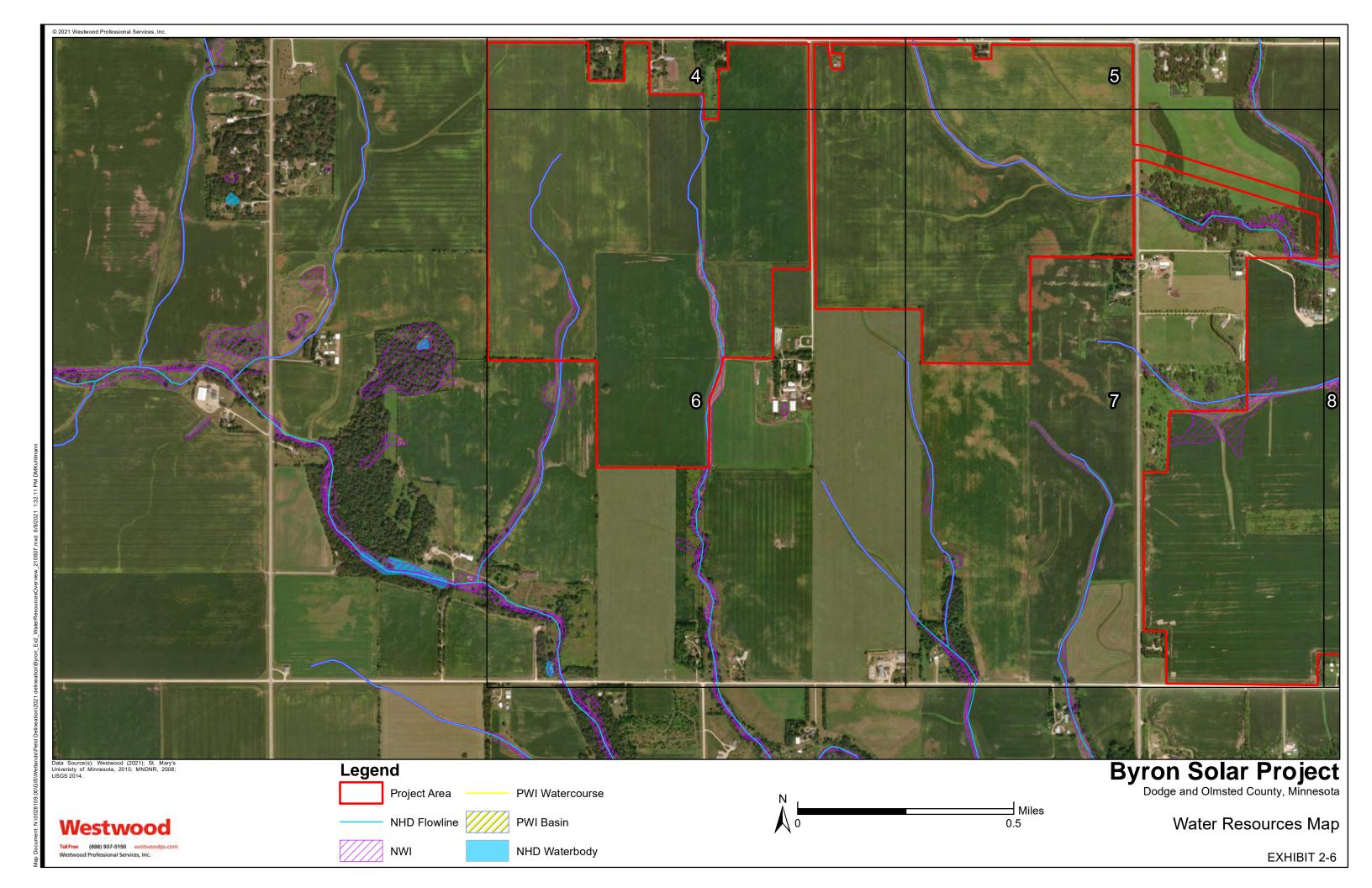


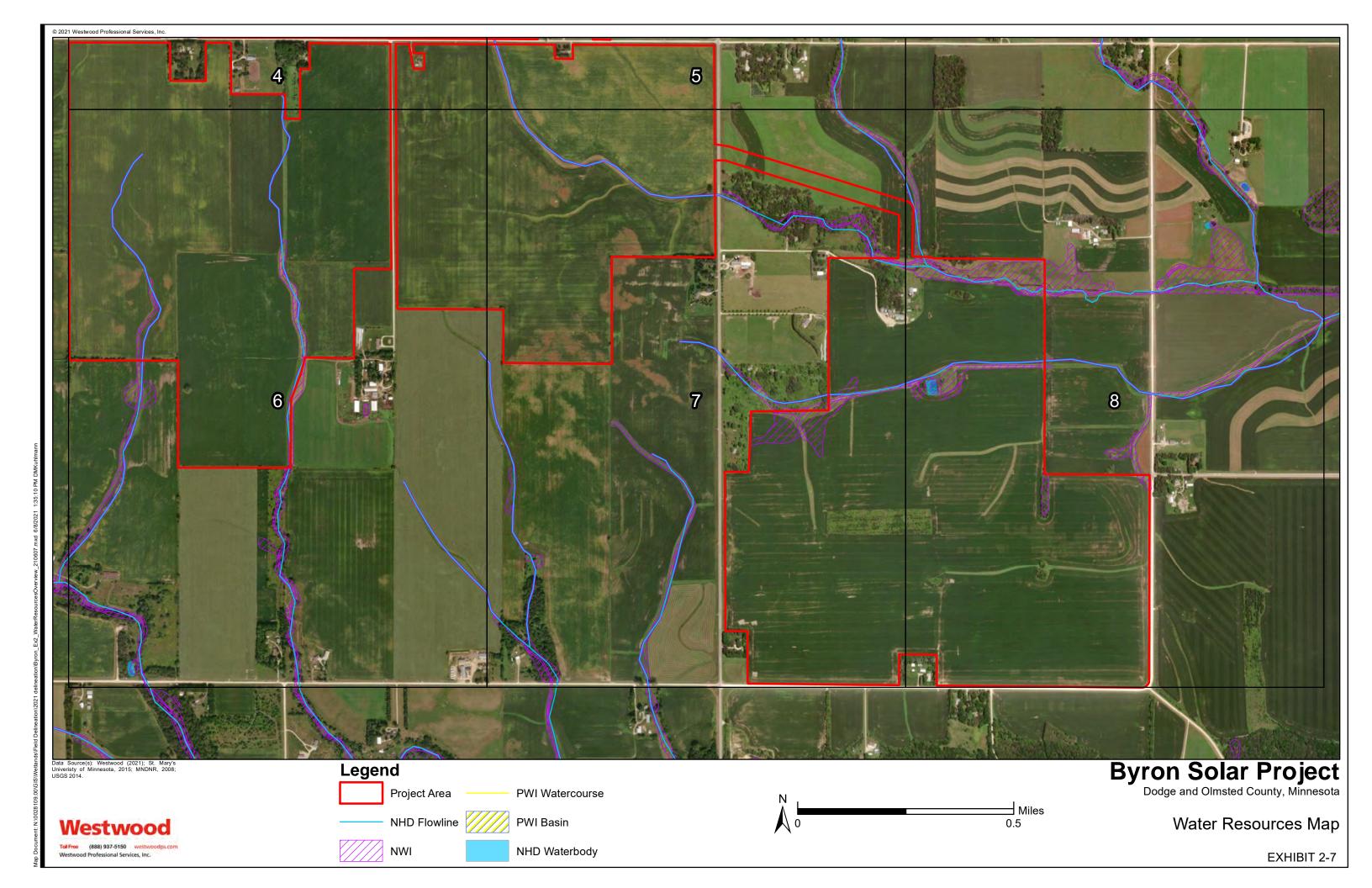


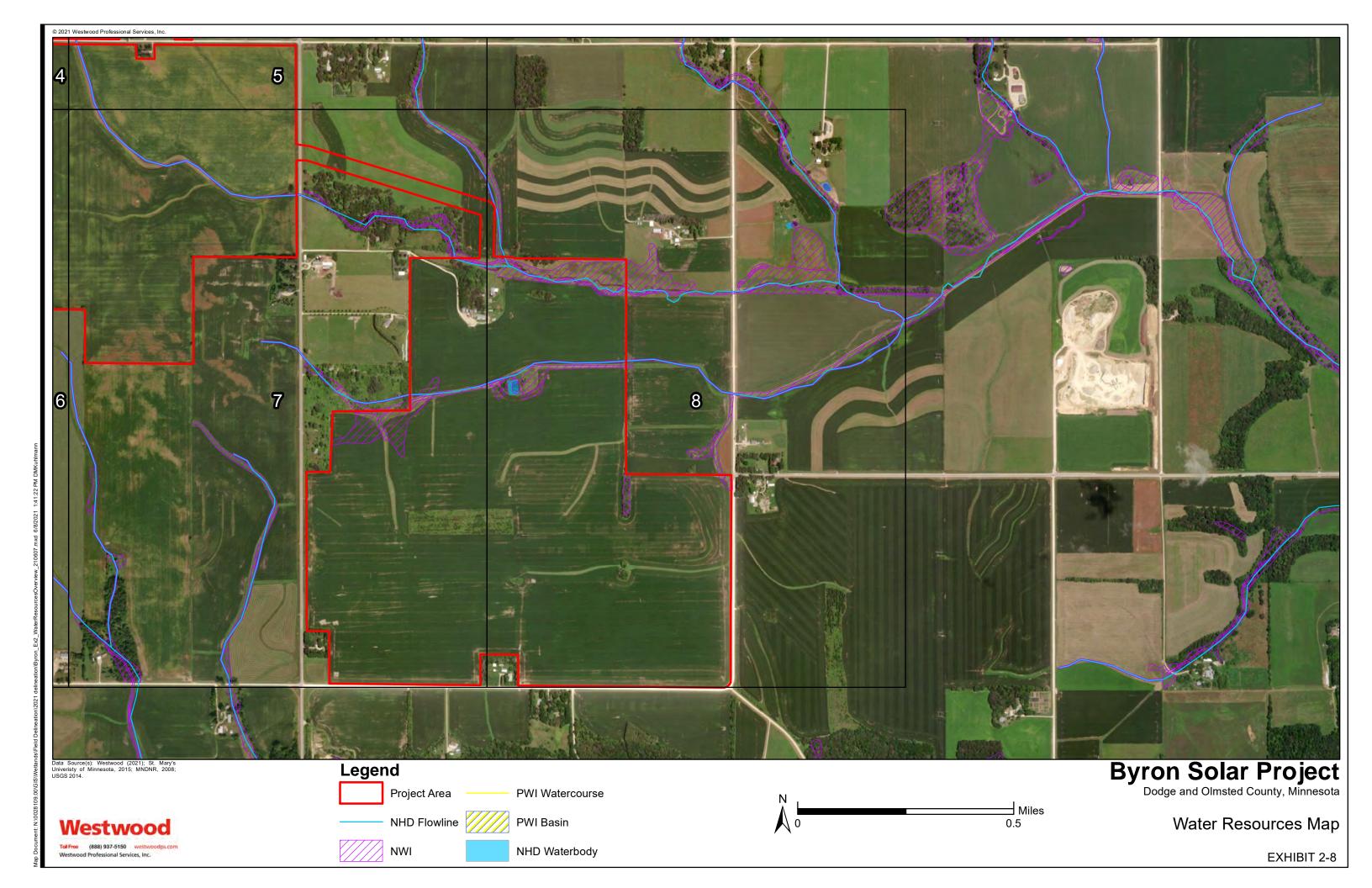


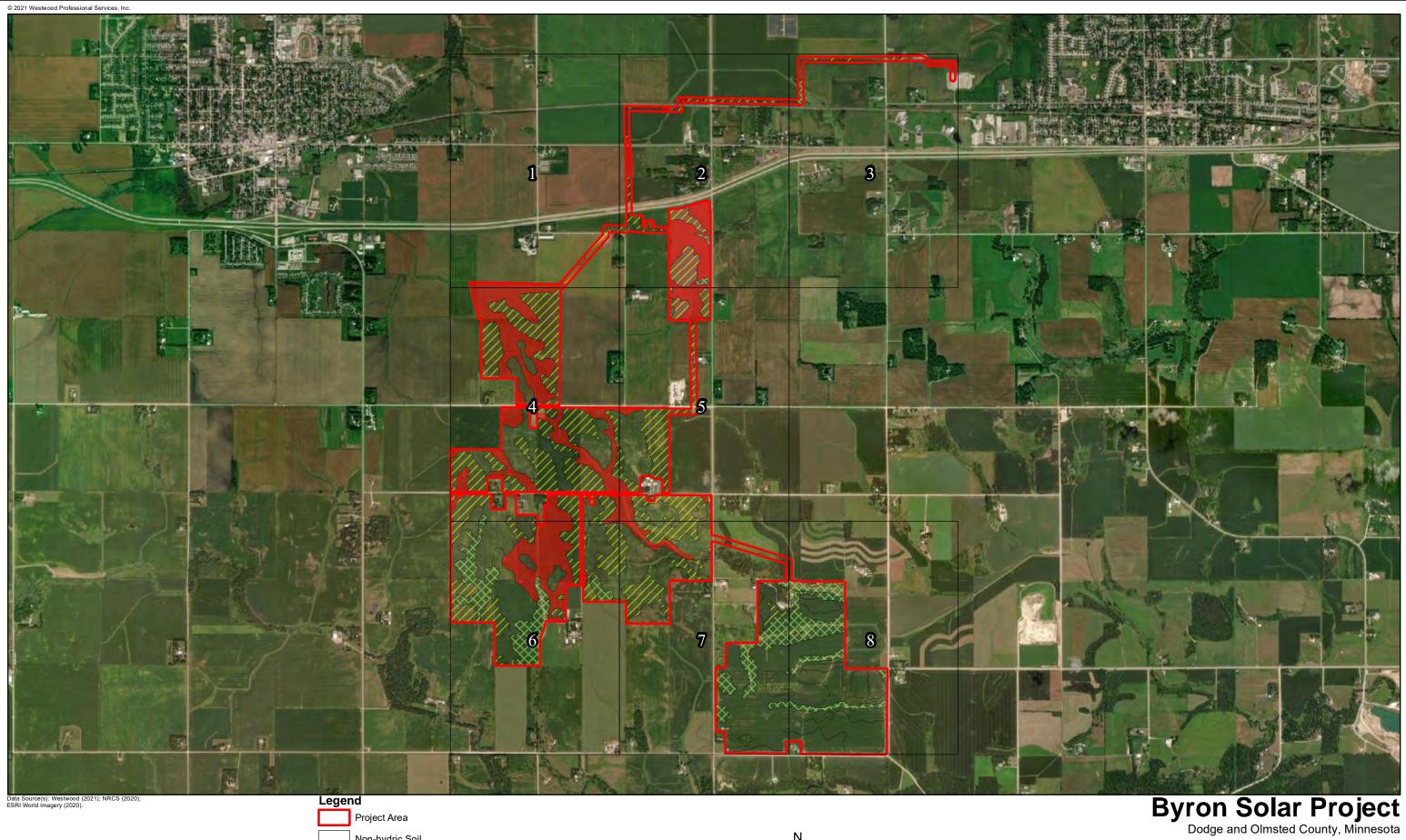












Westwood

Non-hydric Soil

Predominantly Non-hydric Soil

Partially Hydric Soil

Predominantly Hydric Soil

NRCS Soils Overview

EXHIBIT 3

Predominantly Hydric Soil

EXHIBIT 3-1

© 2021 Westwood Professional Services, Inc.

