

D-4 Wetland Delineation Report

Wetland Delineation Report

Upper Maple River Watershed– Site 2A

Prepared for
Moore Engineering, Inc.

December 2017



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1.0 Introduction

Barr Engineering Co. (Barr) was retained by Moore Engineering, Inc. to complete a wetland delineation in preparation for evaluation of potential impacts associated with features of a temporary floodwater storage impoundment for flood risk reduction in the Upper Maple River Watershed. The proposed project is located east of County Road 32 in Barnes County near the town of Pilsbury. The evaluation area is within Sections 4, 8, 9, 16, 17, 20, and 21 of Township 142 North, Range 56 West. See **Figure 1** for a project location map.

On September 18 and 19, 2017, Barr conducted a wetland delineation within the evaluation area to assist with the planning activities. This Wetland Delineation Report has been prepared in accordance with the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual ("1987 Manual", USACE, 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE, 2010).

This report includes general environmental information (Section 2.0), descriptions of the delineated wetland area (Section 3.0), and a discussion of regulations and the administering authorities (Section 4.0). The **Tables** section includes the precipitation data. The **Figures** section includes the Site Location Map, Site Topography Map, Water Resources Map (NWI and NHD) Maps, Soil Survey Map, Wetland Delineation Maps, and Hydrologic Connections Map. **Appendix A** includes Wetland Data Forms, site photographs are included in **Appendix B**, and an aerial imagery review is provided in **Appendix C**.

2.0 General Environmental Setting

2.1 Site Description

The wetland evaluation area includes the area below the 1251 foot contour line. The project area is located along a tributary to the Maple River and its adjacent floodplain. A majority of the evaluation area consists of active agriculture land and grasslands (**Figure 1**).

2.2 Site Topography

The topography within the evaluation area and the surrounding area is relatively flat. The evaluation area slopes toward the tributary and drains to the south. Elevations within the evaluation area ranges from 1220 to 1251 feet (**Figure 2**).

2.3 Precipitation

Recent precipitation data were compared to historic data for evaluating annual and monthly deviations from normal conditions. Precipitation data were obtained from the Natural Resources Conservation Service, Agricultural Applied Climate Information Service (<http://agacis.rcc-acis.org/?fips=38093>) for wetlands in Barnes County, Township 142 North, Range 56 West, Section 16.

Antecedent (preceding) moisture conditions were within the normal range based on precipitation during the three months prior to the September 18 and 19, 2017 site visit (**Table 1**). The annual precipitation for 2015 and 2016 were wetter than normal range. (**Table 2**).

2.4 National Wetland Inventory and Water Resources

The NWI Map identifies numerous wetlands within the evaluation area (**Figure 3**). Wetland communities mapped within the evaluation area include freshwater pond, freshwater emergent, freshwater shrub, freshwater forested, and riverine. These communities had varying water regimes from temporarily flooded to semi permanently flooded. In addition, some wetlands are listed with the Cowardin "x" modifier suggesting these wetlands have been formed by excavation and some wetlands mapped with a Cowardin "d" modifier suggesting these wetlands have been ditched or drained. The USGS maps two tributaries to the Maple River as intermittent streams.

2.5 Soil Resources

Soil information for the project site was obtained from the Natural Resources Conservation Service SSURGO Database. The soil map unit ID is labeled on **Figure 4**. The following table summarizes the associated map unit name, hydric classification presence, and hydric classification rating.

Map Unit ID	Map Unit Name	Hydric Classification Presence (%)	Hydric Classification Rating
G100A	Hamerly-Tonka complex, 0 to 3 percent slopes	40	partially hydric
G101A	Hamerly-Wyard loams, 0 to 3 percent slopes	12	predominantly non hydric
G118A	Vallers loam, saline, 0 to 1 percent slopes	79	predominantly hydric
G12A	Vallers, saline-Parnell complex, 0 to 1 percent slopes	86	predominantly hydric
G143B	Barnes-Svea loams, 3 to 6 percent slopes	6	predominantly non hydric
G143C	Barnes-Buse-Langhei loams, 6 to 9 percent slopes	6	predominantly non hydric
G143F	Buse-Barnes loams, 15 to 35 percent slopes	6	predominantly non hydric
G144B	Barnes-Buse loams, 3 to 6 percent slopes	8	predominantly non hydric
G167B	Balaton-Wyard loams, 0 to 6 percent slopes	14	predominantly non hydric
G250A	Divide loam, 0 to 2 percent slopes	14	predominantly non hydric
G25A	Marysland loam, 0 to 1 percent slopes	86	predominantly hydric
G272E	Sioux-Arvilla-Renshaw complex, 9 to 25 percent slopes	0	not hydric
G275A	Renshaw loam, 0 to 2 percent slopes	0	not hydric
G276B	Renshaw-Sioux complex, 2 to 6 percent slopes	3	predominantly non hydric
G521A	Lowe loam, 0 to 1 percent slopes, occasionally flooded	94	predominantly hydric
G523A	Lowe-Fluvaquents, channeled complex, 0 to 2 percent slopes, frequently flooded	93	predominantly hydric
G651E	Udarents loamy, abandoned gravel pits, 0 to 25 percent slopes	0	not hydric

3.0 Wetland Delineation

3.1 Wetland Delineation and Classification Methods

Wetlands within the evaluation area were delineated and classified during a site visit on September 18 and 19, 2017. The wetland delineation was established according to the Routine On-Site Determination Method specified in the U.S. Army Corps of Engineers Wetlands Delineation Manual (1987 Edition) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (USACE, 2010).

The delineated wetland boundaries and sample points were surveyed using a Global Positioning System (GPS) with sub-meter accuracy (**Figures 5.1, 5.2, and 5.3 provide the location of each wetland in relation to the evaluation area**).

Wetlands were classified using the U.S. Fish and Wildlife Service (USFWS) Cowardin System (Cowardin et al., 1979), the USFWS Circular 39 system (Shaw and Fredine, 1956), and the Eggers and Reed Wetland Classification System (Eggers and Reed, 1977).

Soil borings were conducted in and around wetland areas, to a depth of at least 24 inches below the ground surface where possible. Representative soil samples from each boring were examined for the presence of hydric soil indicators using the Natural Resources Conservation Service (NRCS) hydric soil indicators (Version 8.1). Soil colors (e.g., 7.5YR 4/2, etc.) were determined using a Munsell® soil color chart and noted on the Wetland Data Forms **Appendix A**.

Hydrologic conditions were evaluated at each soil boring, and this information was also noted on the Wetland Data Forms. The dominant plant species were identified, and the corresponding wetland indicator status of each plant species was determined and noted on the Wetland Data Forms (**Appendix A**). Photographs taken at the time of the site visit are provided in **Appendix B**.

3.2 Wetland Descriptions

Fifty-three wetlands were delineated within the wetland evaluation area. These wetlands consisted of four different community types: shallow marsh, fresh (wet) meadow, seasonally flooded basin, and shrub-carr. A description of each wetland community is provided below, with representative photographs in **Appendix B**. A Wetland Summary Table is provided in **Table 3**. Wetland IDs are labeled on the wetland delineation maps (**Figures 5.1, 5.2, and 5.3**).

3.2.1 Shallow Marsh

The shallow marsh communities within the study area are mainly located along the tributaries to the Maple River and the associated floodplain. Additional shallow marsh communities are located in the ditches along roads and in small enclosed depressions throughout the study area (**Figures 5.1, 5.2, and 5.3**). Dominant vegetation in the shallow marsh communities consists of narrow leaf cattail (*Typha angustifolia*), broad leaf cattail (*Typha latifolia*), reed canary grass (*Phalaris arudinacea*), smartweed (*Persicaria pensylvanica*), softstem bulrush (*Schoenoplectus tabernaemontani*), and common reed (*Phragmites australis*). Soils in the shallow marsh communities typically consisted of a layer of organic material at varying depths over a mucky modified layer. Soils either met the A1 hydric soil criteria for a histosol, A11 depleted below dark surface, or F1 hydric soil criteria for loamy mucky mineral. The hydrology source for the shallow marsh wetlands varied depending on location within the study area. The isolated wetlands receive hydrology from precipitation and overland flow. Other wetlands receive hydrology from the tributaries that run through the study area. Hydrology in the shallow marsh communities varied from saturation at ground surface to inundation of up to 12 inches during the September 18 and 19, 2017 site visit. Sampling points KSW-SP-1, MJS2-SP-1 and MJS2-SP-3 document wetland criteria for Wetlands 14 and 52. These sampling points are characteristic of the other shallow marsh wetlands within the study area including wetlands 8, 9, 18, 29, 57, 58, 61, 64, and 66. Wetland 14 is connected by culverts below roadways and is considered one wetland. Wetland 14 is the only wetland on the site that is hydrologically connected to the Maple River tributary and therefore is likely the only jurisdictional wetland (**Figure 6**). The remaining wetlands on the site are isolated from the Maple River tributary.

In some wetlands, the shallow marsh community transitions to a fresh (wet) meadow community, which is characterized by a change in vegetation from cattail into wetland grasses. The transition to upland is characterized by upward sloping topography with an absence of hydrology indicators and a dominance of smooth brome (*Bromus inermis*), Canadian thistle (*Cirsium arvense*), Canadian goldenrod (*Solidago canadensis*), wild licorice (*Glycyrrhiza lepidota*), and wolfberry (*Symphoricarpos occidentalis*) or the presence of row crops when located in an agricultural field. Sampling point MJS2-SP-2 documents the upland area for an upland grassland adjacent to Wetland 50. The wetland summary table (**Table 3**) shows all of the wetlands and community types.

3.2.2 Fresh (Wet) Meadow

The fresh (wet) meadow communities within the study area are located outside of the shallow marsh community in Wetlands 14 and 9 and in two small depressions (Wetlands 17 and 60) in the southeast corner of the study area (**Figures 5.1, 5.2, and 5.3**). Dominant vegetation in the fresh (wet) meadow community consists of reed canary grass, common reed, an unidentified grass, smartweed, and prairie cordgrass (*Spartina pectinata*). Typical soils consist of a mucky modified cap and met the F1 hydric soil indicator for loamy mucky mineral. The fresh (wet) meadow community in Wetland 14 receives hydrology from the tributary to the Maple River. Wetlands 9, 17 and 60 receive hydrology from precipitation and overland flow. At the time of the site visit on September 18 and 19, 2017, hydrology was observed as saturation within the upper 12 inches of the ground surface or secondary hydrology indicators for geomorphic position (D2) and a positive FAC-neutral test (D5).

The transition to upland is characterized by upward sloping topography with an absence of hydrology indicators and a dominance of smooth brome, Canadian thistle, Canadian goldenrod, wild licorice, sweet clover (*Melilotus officianalis*), common milkweed (*Asclepias syriaca*), dogbane (*Apocynum sp.*), prairie clover (*Dalea leporina*), Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), leafy spurge (*Euphorbia esula*), and wolfberry or the presence of row crops when located in an agricultural field. Sampling point MJS2-SP-2 documents the upland area for an upland grassland adjacent to Wetland 14. The wetland summary table (**Table 3**) shows all of the wetlands and community types.

3.2.3 Seasonally Flooded Basin

The seasonally flooded basin communities within the study area are located in the agricultural fields (**Figures 5.1, 5.2, and 5.3**). Vegetation in the seasonally flooded basin communities consists of stunted corn or soy beans, smartweed, or an absence of vegetation. Typical soils consist of a mucky modified cap at varying depth and met the F1 hydric soil criteria for loamy mucky mineral. The hydrology source for the seasonally flooded basin wetlands is precipitation and overland flow. The seasonally flooded basins usually met the wetland hydrology indicators for inundation visible on aerial imagery (B7), sparsely vegetated concave surface (B8), saturation visible on aerial imagery (C9), and geomorphic position (D2). Areas of the site that were not accessible due to corn crop relied on an aerial imagery review for wetland determination (**Appendix C**). In situations where the aerial imagery review results require field verification, which was not completed within inaccessible corn crop, the wetland was kept in the map. These questionable wetlands are all isolated and would not be jurisdictional (**Figure 6**).

The transition to upland within the seasonally flooded basin wetlands is characterized by upward sloping topography with an absence of hydrology indicators and healthy agriculture crops. The wetland summary table (**Table 3**) shows all of the wetlands and community types.

3.2.4 Shrub-carr

The shrub-carr community within the study area is located in the northern part of the study area (**Figure 5.1**). Dominant vegetation in the shrub-carr community consists of sandbar willow (*Salix interior*) and an unidentified grass. Soils consist of a mucky modified cap and met the F1 hydric soil indicator for loamy mucky mineral. Hydrology for the shrub-carr communities is precipitation and overland flow. At the time of the site visit on September 20, 2017, hydrology was observed as the secondary hydrology indicators for geomorphic position (D2) and a positive FAC-neutral test (D5).

The transition to upland is characterized by upward sloping topography with an absence of hydrology indicators and a dominance of smooth brome (*Bromus inermis*). The wetland summary table (**Table 3**) shows all of the wetlands and community types.

4.0 Regulatory Overview

The USACE regulates the placement of dredge or fill materials into wetlands that are located adjacent to or are hydrologically connected to interstate or navigable waters under the authority of Section 404 of the Clean Water Act. If the USACE has jurisdiction over any portion of a project, they may also review impacts to wetlands under the authority of the National Environmental Policy Act. The USACE should be contacted before altering any wetlands.

This report requests wetland boundary and type concurrence from the USACE. This submittal also is requesting a jurisdictional determination from the USACE with respect to administration of Section 404 of the Clean Water Act.

5.0 References

- Cowardin, L.M., V. Carter, F.C. Golet, and R.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, FWS/OBS079/31, 103 pp.
- 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. 1956. *Wetlands of the United States*. U.S. Fish and Wildlife Service, Circular 39. 67pp.
- U.S. Department of Agriculture, Natural Resources Conservation Service. 2017. Soil Survey Geographic (SSURGO) Database, Version 1.1.
- U. S. Department of Agriculture, Natural Resources Conservation Service. 2017. *Field Indicators of Hydric Soils in the United States, Version 8.1*. G.W. Hurt and L.M. Vasilas (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- U.S. Army Corps of Engineers. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region*. March 2010. Wetlands Regulatory Assistance Program.
- U.S. Army Corps of Engineers. 1987. *1987 U.S. Army Corps of Engineers Wetland Delineation Manual*. Wetlands Research Program Technical Report Y-87-1 (on-line edition). Waterways Experiment Station, Vicksburg, Mississippi.
- U.S. Fish and Wildlife Service. 1956. *Wetlands of the United States Circular 39*. U.S. Government Printing Office, Washington, D.C.
- U.S. Army Corps of Engineers and Minnesota Board of Water & Soil Resources. July 1, 2016. *Guidance for Offsite Hydrology/Wetland Determinations*.

Tables

Table 1

Antecedent Moisture Conditions Prior to September 18, 2017

Precipitation Worksheet Using NRCS**Precipitation data for target wetland location:**county: **Barnes**nearest community: **Pilsbury**township number: **142N**range number: **56W**section number: **16**

Aerial photograph or site visit date:

18-Sep-17

Score using 1971-2000 normal period

values are in inches	first prior month: Aug-17	second prior month: Jul-17	third prior month: Jun-17
estimated precipitation total for this location:	2.66	1.2	2.63
there is a 30% chance this location will have less than:	1.59	1.73	2.14
there is a 30% chance this location will have more than:	3.00	3.76	4.03
type of month: dry normal wet	normal	dry	normal
monthly score	3 * 2 = 6	2 * 1 = 2	1 * 2 = 2
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	10 (Normal)		

Table 2
Precipitation in Comparison to WETS Data

1971-2000 Summary Statistics													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
30%	0.3	0.22	0.45	0.54	1.49	2.14	1.73	1.59	0.93	0.59	0.32	0.24	16.61
70%	0.72	0.52	0.95	1.5	2.82	4.03	3.67	3	2.29	1.77	0.84	0.48	20.89
Average	0.61	0.44	0.78	1.29	2.34	3.35	3.01	2.49	1.87	1.54	0.72	0.4	18.84

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1995	0.3	0.2	1.49	1.01	2.68	1.05	6.74	3.16	0.78	1.74	0.61	M	19.76
1996	0.93	0.42	0.25	T	2.29	1.79	6.84	2.3	1.71	1.47	0.81	M	18.81
1997	2.13	T	M	1.93	0.45	2.54	3.89	0.45	3.53	1.52	0.11	T	16.55
1998	T	0.95	0.31	1.36	3.35	2.37	1.09	3.27	0.88	4.31	1.51	0.1	19.5
1999	0.83	0.34	0.12	1.45	5	4.18	2.07	3.73	2.9	0.23	0	T	20.85
2001	T	0.36	0.2	1.21	2.13	2.54	5.32	M	0.8	2.07	0.05	0.08	14.76
2002	0.14	0.07	0.19	1.29	1.17	1.58	5.7	0.67	1.73	0.98	T	0.42	13.94
2003	T	0.43	0.42	0.7	5.74	5.12	1.86	0.67	0.75	0.45	0.25	0.63	17.02
2004	0.47	0.15	3.36	0.39	6.6	2.83	3.09	2.65	3.99	1.73	T	0.52	25.78
2005	0.3	0.25	T	0.8	2.12	5.66	3.27	1.67	0.82	1.53	0.94	0.59	17.95
2006	0.34	0.25	0.55	2.4	1.95	3.33	0.86	4.05	2.6	1.78	T	0.89	19
2007	T	0.81	2.62	0.7	3.24	3.82	2.93	0.53	3.04	0.65	T	0.28	18.62
2008	M	0.57	0.35	0.22	0.5	5.13	2.43	2.13	2.86	2.5	1.78	1.41	19.88
2009	1.07	1.18	2.14	1	1.83	1.08	1.93	2.49	3.22	3.58	T	0.75	20.27
2010	0.92	1.02	M	0.29	5.35	1.76	4	2.14	5.9	1.91	0.46	1.51	25.26
2011	M	M	M	M	M	M	M	M	M	M	M	M	M
2012	M	M	0.42	M	1.92	2.34	1.15	0.83	0.25	1.4	0.64	0.25	9.2
2013	M	0.47	M	0.95	M	1.11	M	M	M	4.18	M	0.61	7.32
2014	0.4	0.15	0.1	M	M	6.68	1.03	2.98	1.17	0.48	0.41	T	13.4
2015	0.43	0.21	M	0.56	8.15	3.21	3.07	2.16	0.78	1	0.82	0.72	21.11
2016	0	0.54	0.4	2.93	3.45	1.88	5.71	2.86	3.33	1.09	1.06	2.12	25.37
2017	0.78	0.3	0.15	1.88	1.46	3.09	1.29	2.94	2.3	T	M	M	14.19
Mean	0.36	0.5	0.8	1.18	3.14	3.35	2.96	2.07	2.18	1.65	0.55	0.7	20.19

Precipitation data from the Courtenay 1 NW station located west of the project area.

"M" values refer to missing precipitation data. "T" values indicate trace precipitation amounts.

Above normal

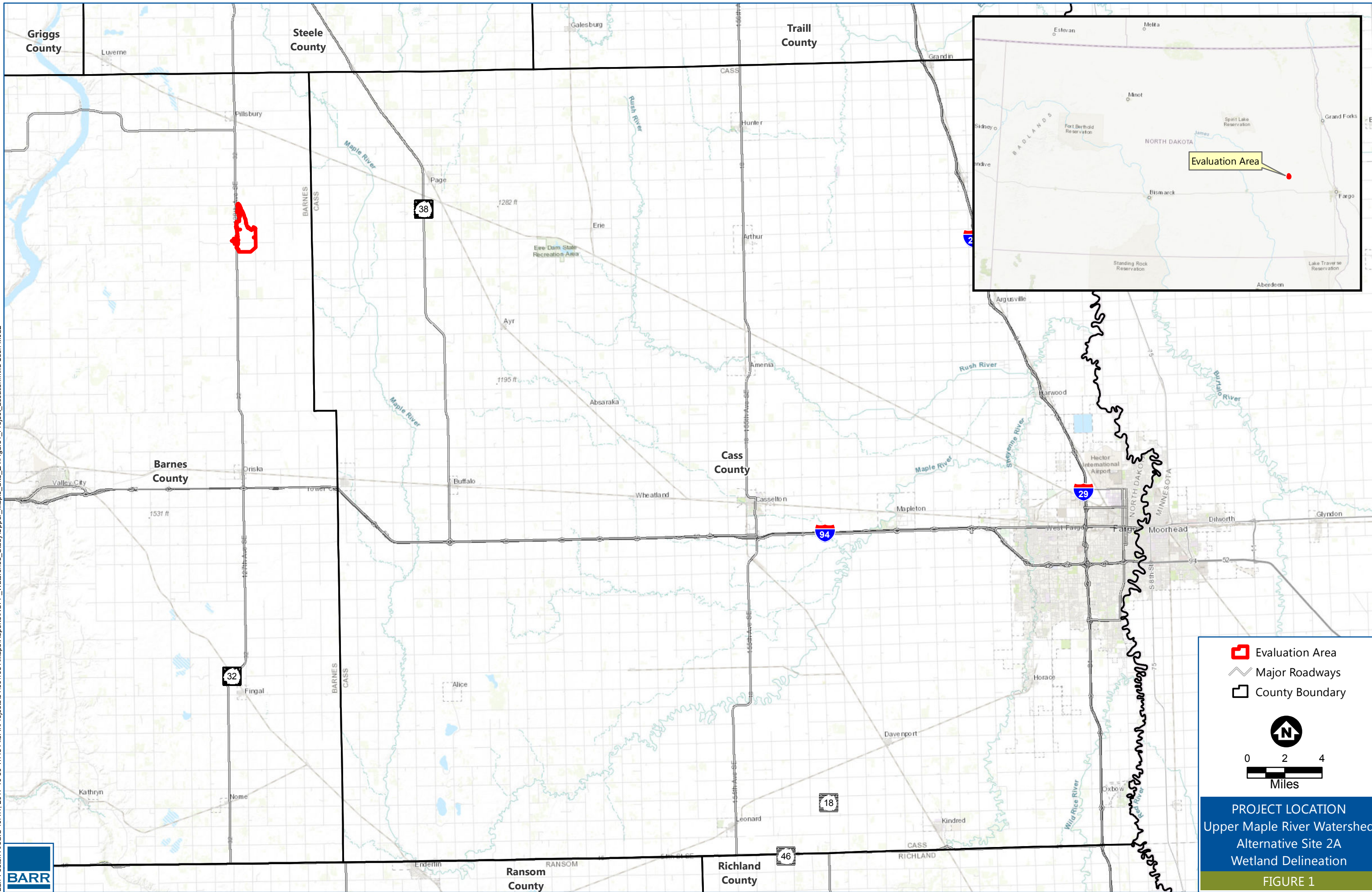
Below normal

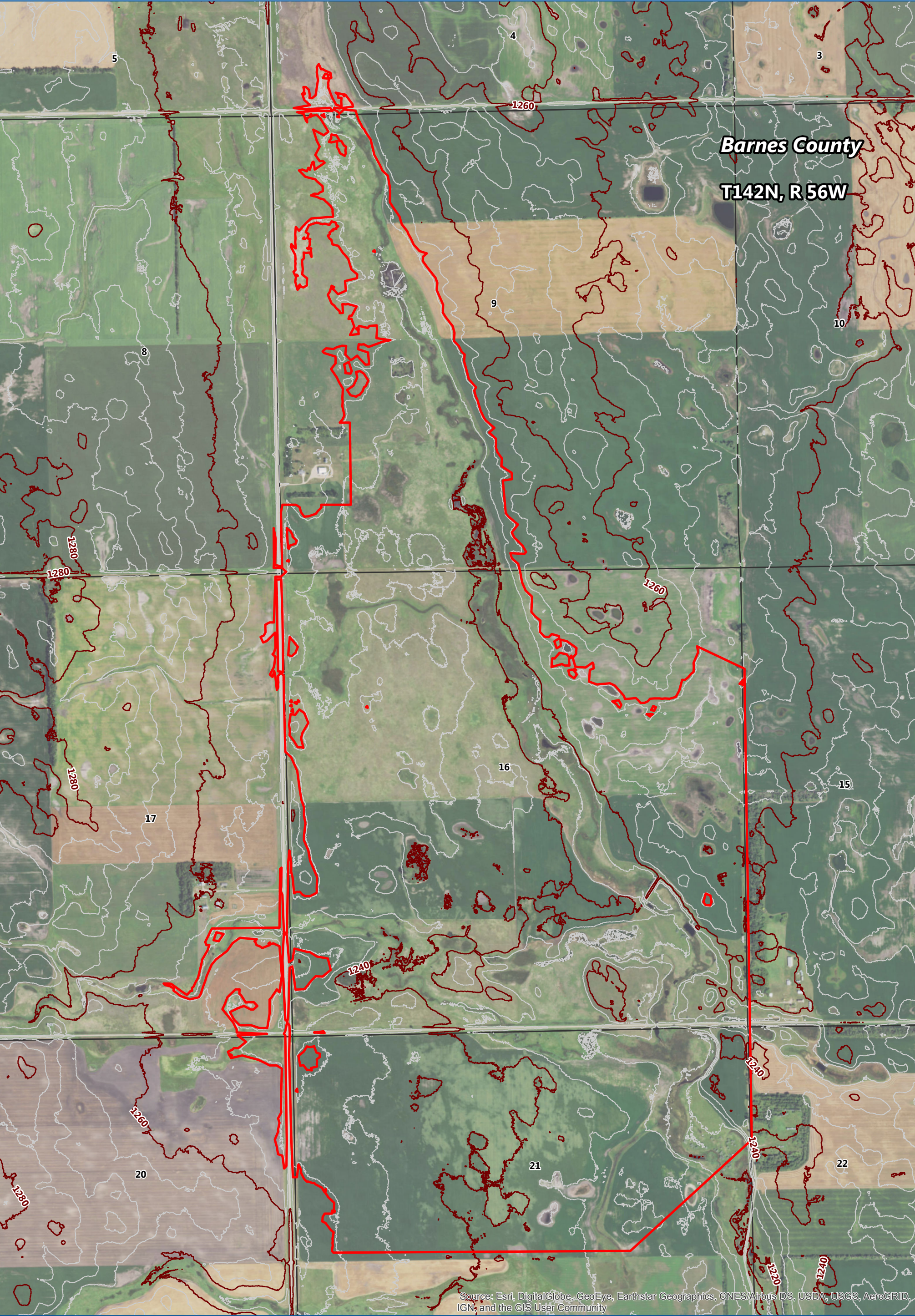
Normal

Table 3
Wetland Summary Table

Wetland ID	Cowardin	Circular 39	Eggers and Reed	Acres
0	PEMA	Type 1	Seasonally Flooded Basin	0.06
5	PEMA	Type 1	Seasonally Flooded Basin	0.32
6	PEMA	Type 1	Seasonally Flooded Basin	0.22
7	PEMA	Type 1	Seasonally Flooded Basin	0.92
8	PEM1C/A	Type 3/1	Shallow Marsh/ Fresh (Wet) Meadow	1.76
9	PEM1C/A	Type 3/1	Shallow Marsh/ Fresh (Wet) Meadow	0.41
10	PEMA	Type 1	Seasonally Flooded Basin	4.49
11	PEMA	Type 1	Seasonally Flooded Basin	0.21
12	PEMA	Type 1	Seasonally Flooded Basin	0.33
13	PEMA	Type 1	Seasonally Flooded Basin	0.08
14	PEM1C/A	Type 3/1	Shallow Marsh/ Fresh (Wet) Meadow	195.63
17	PEM1A	Type 2	Fresh (Wet) Meadow	0.29
18	PEM1C	Type 3	Shallow Marsh	0.43
19	PEMA	Type 1	Seasonally Flooded Basin	1.21
20	PEMA	Type 1	Seasonally Flooded Basin	0.93
21	PEMA	Type 1	Seasonally Flooded Basin	0.72
22	PEMA	Type 1	Seasonally Flooded Basin	5.10
23	PEMA	Type 1	Seasonally Flooded Basin	0.32
24	PEMA	Type 1	Seasonally Flooded Basin	1.08
25	PEMA	Type 1	Seasonally Flooded Basin	0.24
27	PEMA	Type 1	Seasonally Flooded Basin	0.25
28	PEMA	Type 1	Seasonally Flooded Basin	0.17
29	PEM1C	Type 3	Shallow Marsh	7.34
30	PEMA	Type 1	Seasonally Flooded Basin	0.32
31	PEMA	Type 1	Seasonally Flooded Basin	0.86
32	PEMA	Type 1	Seasonally Flooded Basin	0.53
33	PEMA	Type 1	Seasonally Flooded Basin	0.57
34	PEMA	Type 1	Seasonally Flooded Basin	0.08
35	PEMA	Type 1	Seasonally Flooded Basin	0.11
36	PEMA	Type 1	Seasonally Flooded Basin	0.21
37	PEMA	Type 1	Seasonally Flooded Basin	0.02
38	PEMA	Type 1	Seasonally Flooded Basin	0.28
39	PEMA	Type 1	Seasonally Flooded Basin	0.16
40	PEMA	Type 1	Seasonally Flooded Basin	0.24
41	PEMA	Type 1	Seasonally Flooded Basin	0.38
43	PEMA	Type 1	Seasonally Flooded Basin	0.47
44	PEMA	Type 1	Seasonally Flooded Basin	0.46
46	PEMA	Type 1	Seasonally Flooded Basin	0.36
47	PEMA	Type 1	Seasonally Flooded Basin	0.17
49	PEMA	Type 1	Seasonally Flooded Basin	0.64
51	PEMA	Type 1	Seasonally Flooded Basin	1.05
52	PEM1Cx/FO1B	Type 3/7	Shallow Marsh/ Hardwood Swamp	1.14
53	PSS1B	Type 6	Shrub-carr	0.73
56	PEMA	Type 1	Seasonally Flooded Basin	0.85
57	PEM1C	Type 3	Shallow Marsh	0.10
58	PEM1Cx	Type 3	Shallow Marsh	0.01
59	PEMA	Type 1	Seasonally Flooded Basin	3.37
60	PEM1A	Type 2	Fresh (Wet) Meadow	0.15
61	PEM1C	Type 3	Shallow Marsh	0.23
62	PEMA	Type 1	Seasonally Flooded Basin	0.79
64	PEM1C	Type 3	Shallow Marsh	0.54
65	PEM1A	Type 2	Seasonally Flooded Basin	0.04
66	PEM1C	Type 3	Shallow Marsh	0.22
Total				237.59

Figures





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Evaluation Area

20-foot Contour

5-foot Contour

0

500

1,000

1,500

2,000

Feet

N

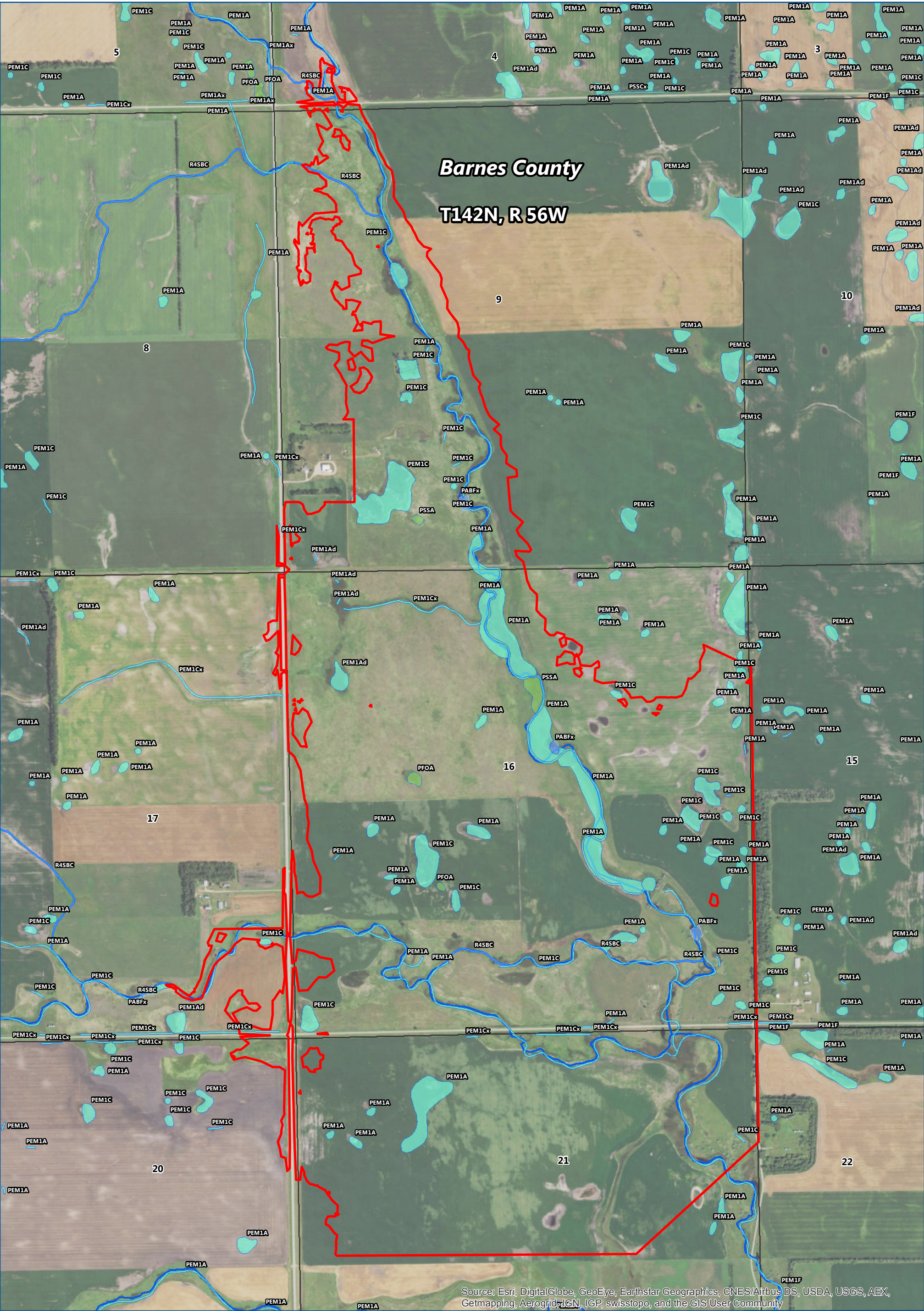
TOPOGRAPHY MAP

Upper Maple River Watershed

Alternative Site 2A

Wetland Delineation

FIGURE 2



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Evaluation Area



NHDFlowline



Wetland (National Wetlands Inventory)



Freshwater Emergent Wetland



Freshwater Forested/Shrub Wetland



Freshwater Pond



Riverine



0

500

1,000

1,500

2,000

Feet

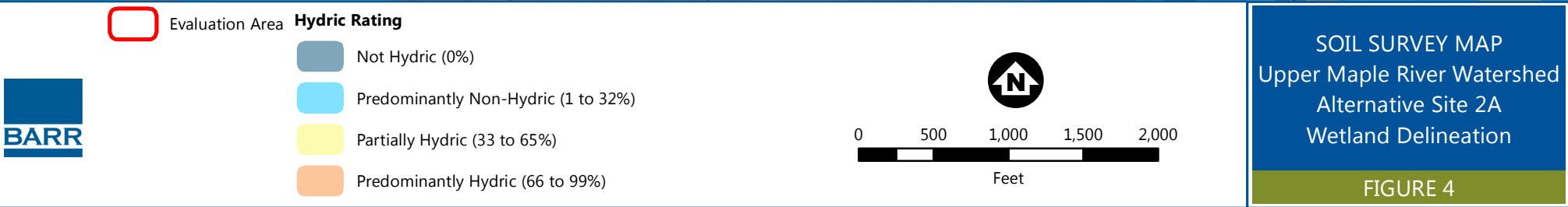
WATER RESOURCES

Upper Maple Watershed

Alternative Site 2A

Wetland Delineation

FIGURE 3







Evaluation Area

Data Plots

Culverts

Fresh (Wet) Meadow

Seasonally Flooded Basin

Shallow Marsh

Shrub-carr

0

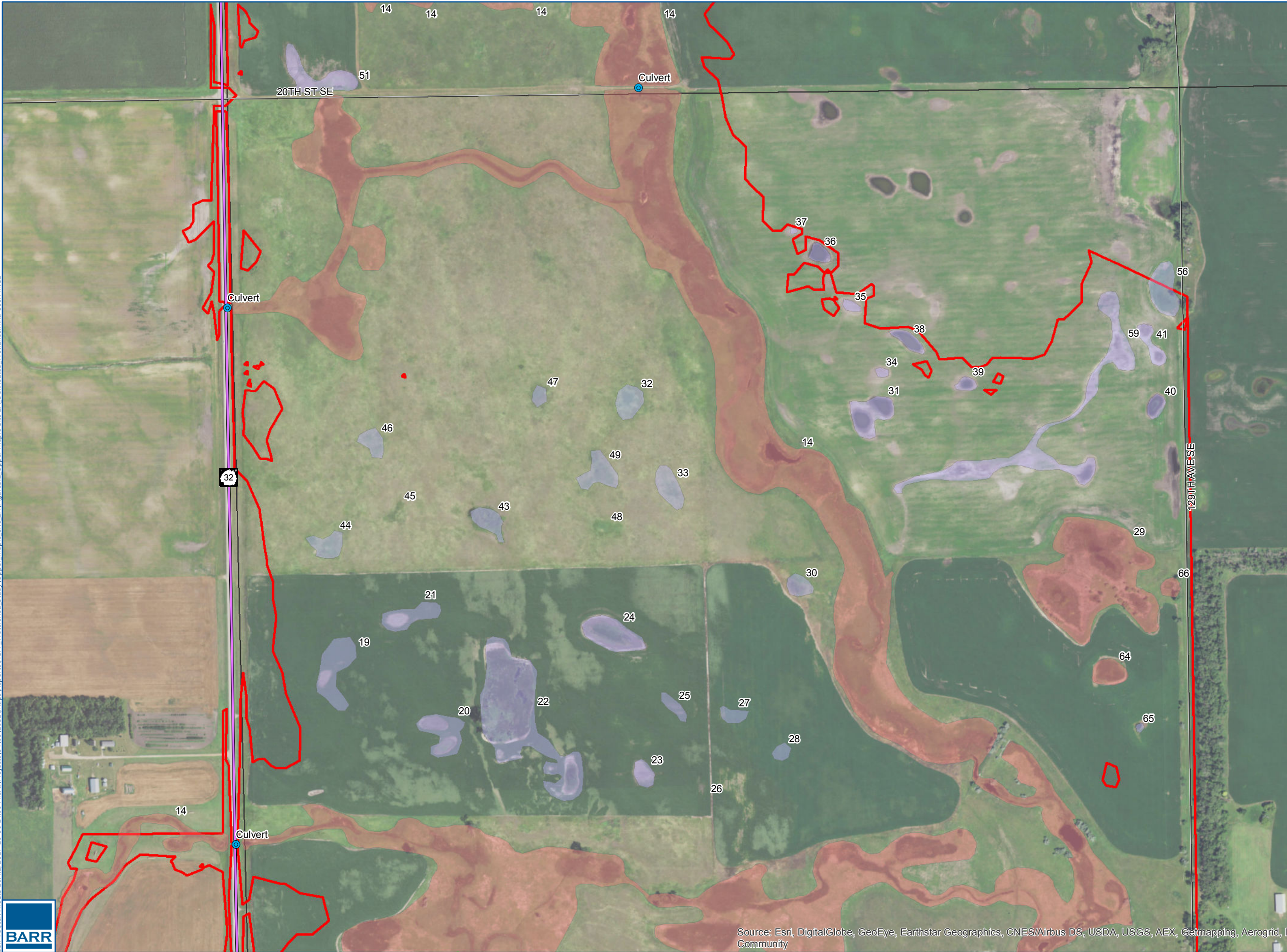
500

1,000

Feet

DELINEATED WETLANDS
Upper Maple Watershed
Alternative Site 2A
Wetland Delineation

FIGURE 5.1



Evaluation Area

Culverts

Delineated Wetlands

Fresh (Wet) Meadow

Seasonally Flooded Basin

Shallow Marsh

Shrub-carr

0

500

Feet

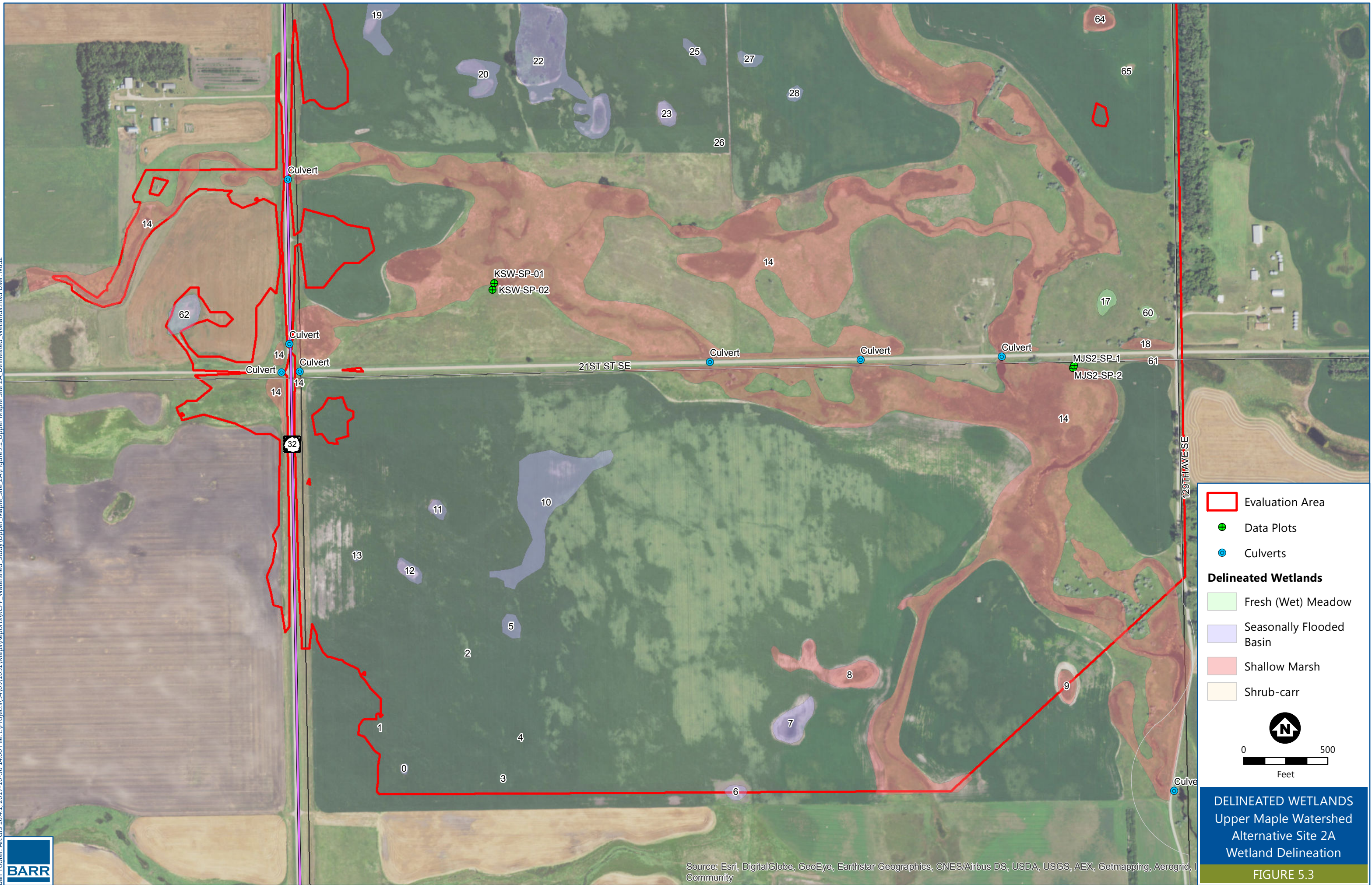
DELINEATED WETLANDS

Upper Maple Watershed

Alternative Site 2A

Wetland Delineation

FIGURE 5.2



Evaluation Area

- Data Plots
- Culverts

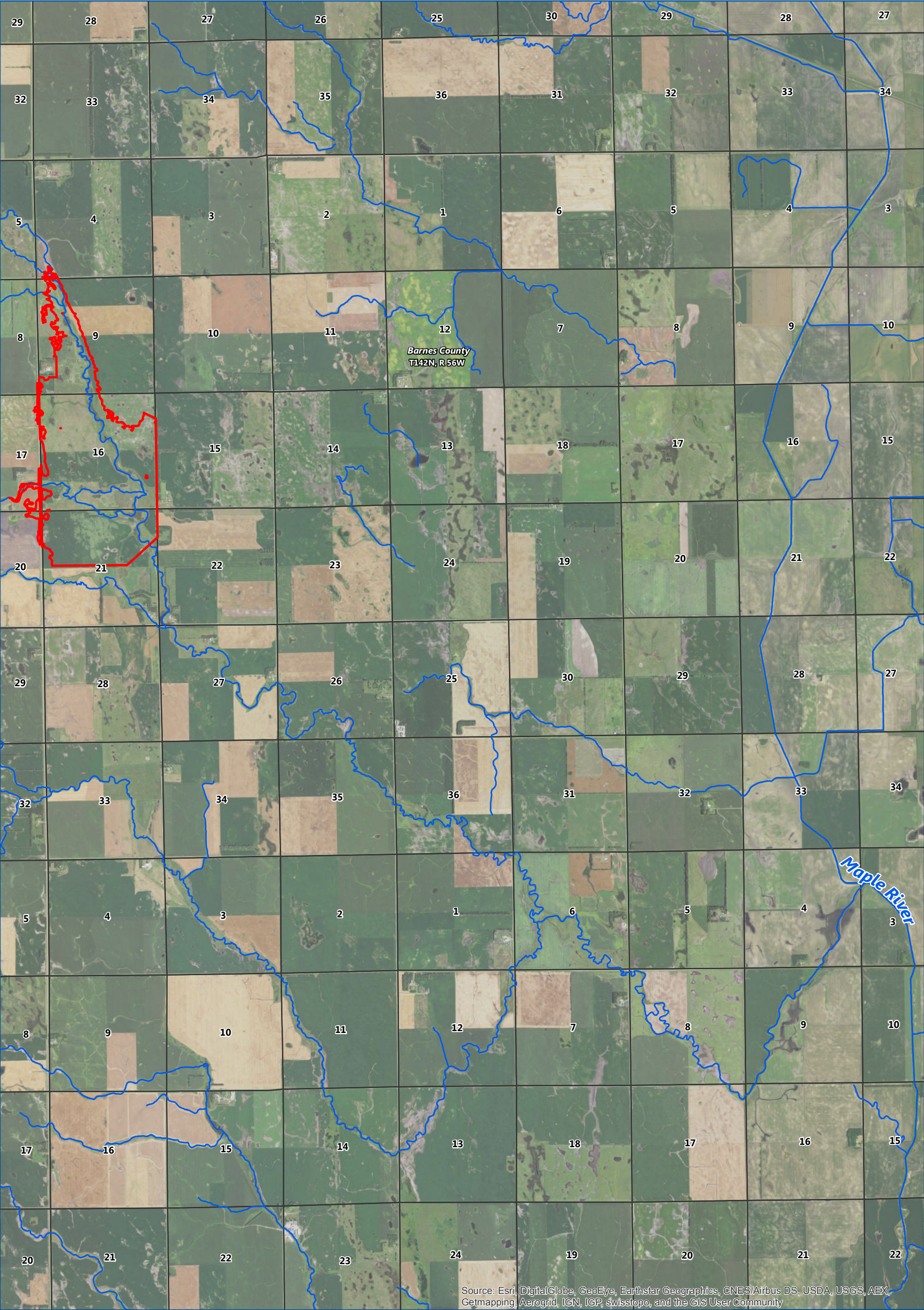
Delineated Wetlands

- Fresh (Wet) Meadow
- Seasonally Flooded Basin
- Shallow Marsh
- Shrub-carr

0 500
Feet

DELINEATED WETLANDS
Upper Maple Watershed
Alternative Site 2A
Wetland Delineation

FIGURE 5.3





 Evaluation Area
 NHDFlowline



00.51
Miles

HYDROLOGIC CONNECTIONS
Upper Maple Watershed
Alternative Site 2A
Wetland Delineation

FIGURE 6

Appendices

Appendix A

Wetland Delineation Data Forms

Available Upon Request

Appendix B

Site Photographs

Available Upon Request

Appendix C

**Aerial Image Review
Available Upon Request**

Addendum to Wetland Delineation Report

Upper Maple River Watershed – Site 2A

Prepared by NRCS

June 16, 2026

Rationale for Addendum

While reviewing the Draft Plan EIS in January of 2024, it was observed that a design change had extended the project footprint into an area unevaluated for wetlands. The Plan, including this addendum, was considered draft and still subject to review. The final addendum (2026) has modifications so that wetland losses at W67 are included in Appendix D-5 (Environmental Quality Report).

Methods

A field delineation was not feasible at this time of year due to frozen soils and winter precipitation. Offsite procedures were used to determine a wetland boundary. The same Normal-year precipitation aerial photography was used as that for all other wetlands in the original determination: was used (2003 – 2006, 2014 – 2016) to observe wet signatures. Soil Maps, LiDAR imagery and USFWS National Wetlands Inventory maps were also utilized.

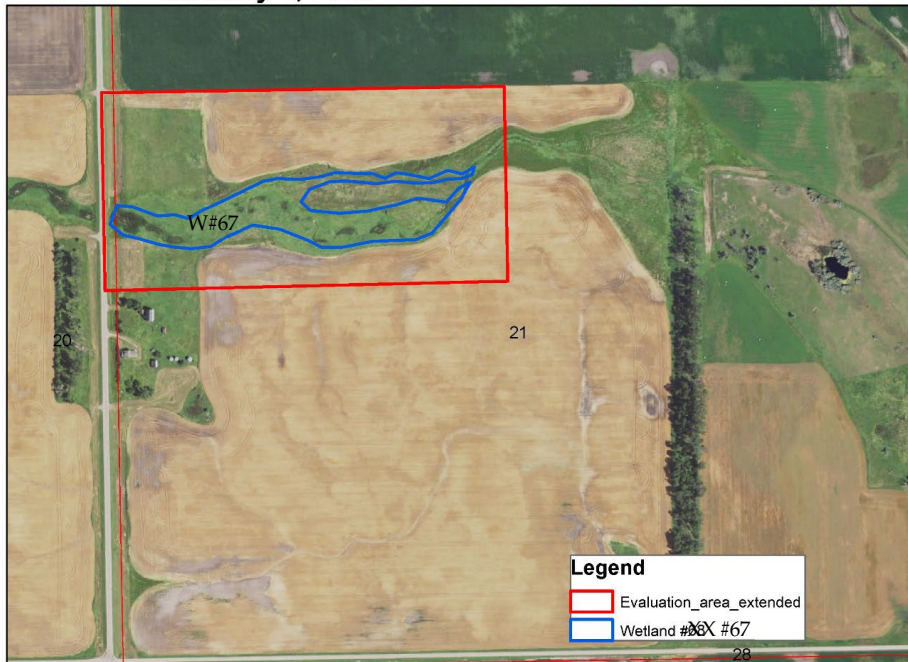
Wetland ID	Acres			
67	6.7			
SOILS	Map Unit	Name	Hydric Classification Presence (%)	Hydric Classification Rating
	G12A	Vallers-saline-Parnell complex, 0-1 % Slope	86	predominantly hydric
	G25A	Marysland loam, 0-1% slope	86	predominantly hydric
	G250A	Divide loam, 0-2% slope	14	predominantly non-hydric
USFWS National Wetlands Inventory				
NWI (2005)	Definition			
NA	Non-Wetland			
NWI (2023)				

Imagery Date	Imagery Source	Climate conditions	Wetland 67
8/6/2016	NDGISHUB_WMS	Normal	WS
9/26/2015	NDGISHUB_WMS	Normal	WS
8/12/2014	NDGISHUB_WMS	Normal	WS
7/8/2006	NDGISHUB_WMS	Normal	WS
6/20/2005	NDGISHUB_WMS	Normal	WS
8/19/2004	NDGISHUB_WMS	Normal	WS
6/29/2003	NDGISHUB_WMS	Normal	WS
WS = Wetland Signature NSS = No wetness signature			

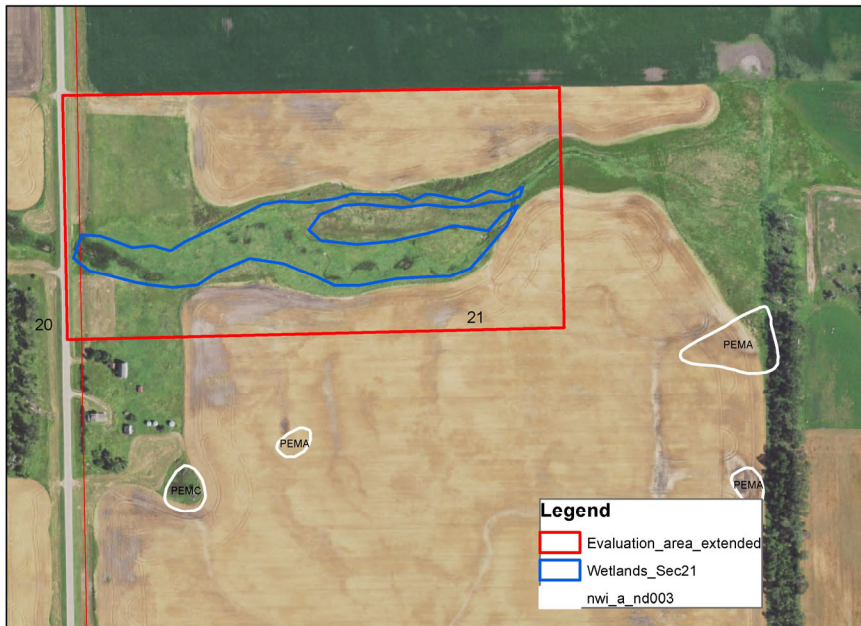
Results

The plan design includes an embankment to be constructed through and perpendicular to Wetland 67, which is a new wetland with continued numbering from Appendix D-4 (Wetland Delineation Report, 2017). A culvert will be installed through the embankment to maintain major hydrologic inputs to the wetland; flood flows beyond the culvert capacity will be diverted to the impoundment. The only impacts to the wetland will be the narrow construction footprint of the embankment which will impact 0.08 acres.

Wetland Map, SW1/4 21-142-56
Addendum to Appendix D-4 Wetland Delineation
January 4, 2023



NWI 2005
Wetland Map, SW1/4 21-142-56





umr 2023 NWI



January 5, 2024

Wetlands

- | | |
|-----------------------------------|-----------------|
| Freshwater Emergent Wetland | Lake |
| Freshwater Forested/Shrub Wetland | Other |
| Estuarine and Marine Deepwater | Riverine |
| Estuarine and Marine Wetland | Freshwater Pond |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

