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 syracia*), 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:	second prior month:	third prior month:
	Aug-17	Jul-17	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 * <mark>2</mark> = 6	2 * <mark>1</mark> = 2	1 * <mark>2</mark> = 2
	_		
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)		10 (Normal)

	1971-2000 Summary Statistics														
	Jan	Feb	Mar	Apr	May		Jul		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	М	19.76		
1996	0.93	0.42	0.25	Т	2.29	1.79	6.84	2.3	1.71	1.47	0.81	М	18.81		
1997	2.13	Т	М	1.93	0.45	2.54	3.89	0.45	3.53	1.52	0.11	Т	16.55		
1998	Т	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	Т	20.85		
2001	Т	0.36	0.2	1.21	2.13	2.54	5.32	М	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	Т	0.42	13.94		
2003	Т	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	Т	0.52	25.78		
2005	0.3	0.25	Т	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	Т	0.89	19		
2007	Т	0.81	2.62	0.7	3.24	3.82	2.93	0.53	3.04	0.65	Т	0.28	18.62		
2008	Μ	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	Т	0.75	20.27		
2010	0.92	1.02	Μ	0.29	5.35	1.76	4	2.14	5.9	1.91	0.46	1.51	25.26		
2011	Μ	М	Μ	М	М	М	М	М	М	Μ	М	М	Μ		
2012	М	М	0.42	М	1.92	2.34	1.15	0.83	0.25	1.4	0.64	0.25	9.2		
2013	М	0.47	М	0.95	М	1.11	М	М	М	4.18	М	0.61	7.32		
2014	0.4	0.15	0.1	М	М	6.68	1.03	2.98	1.17	0.48	0.41	Т	13.4		
2015	0.43	0.21	Μ	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	Т	М	М	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		

Table 2Precipitation in Comparison to WETS Data

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

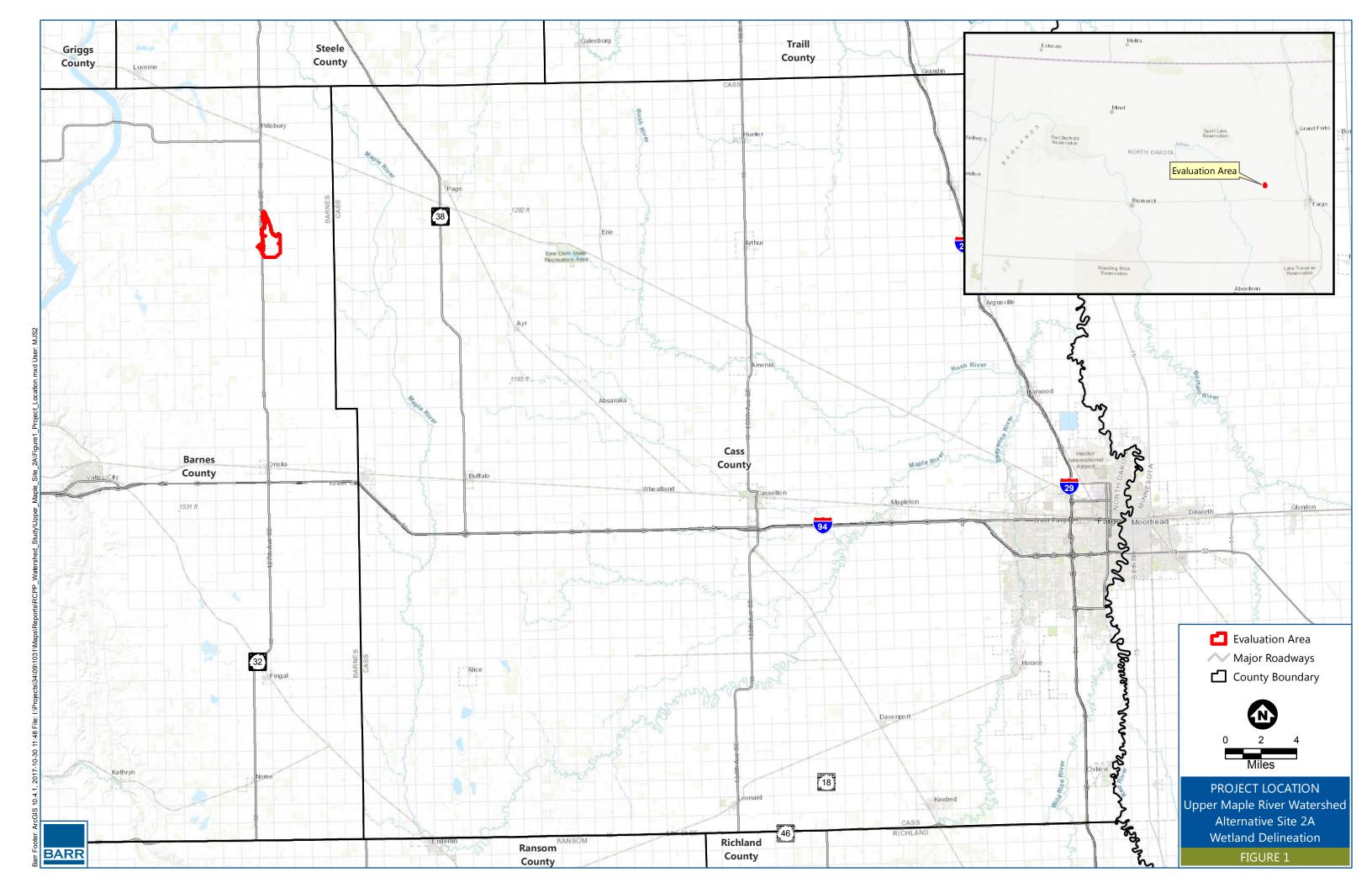
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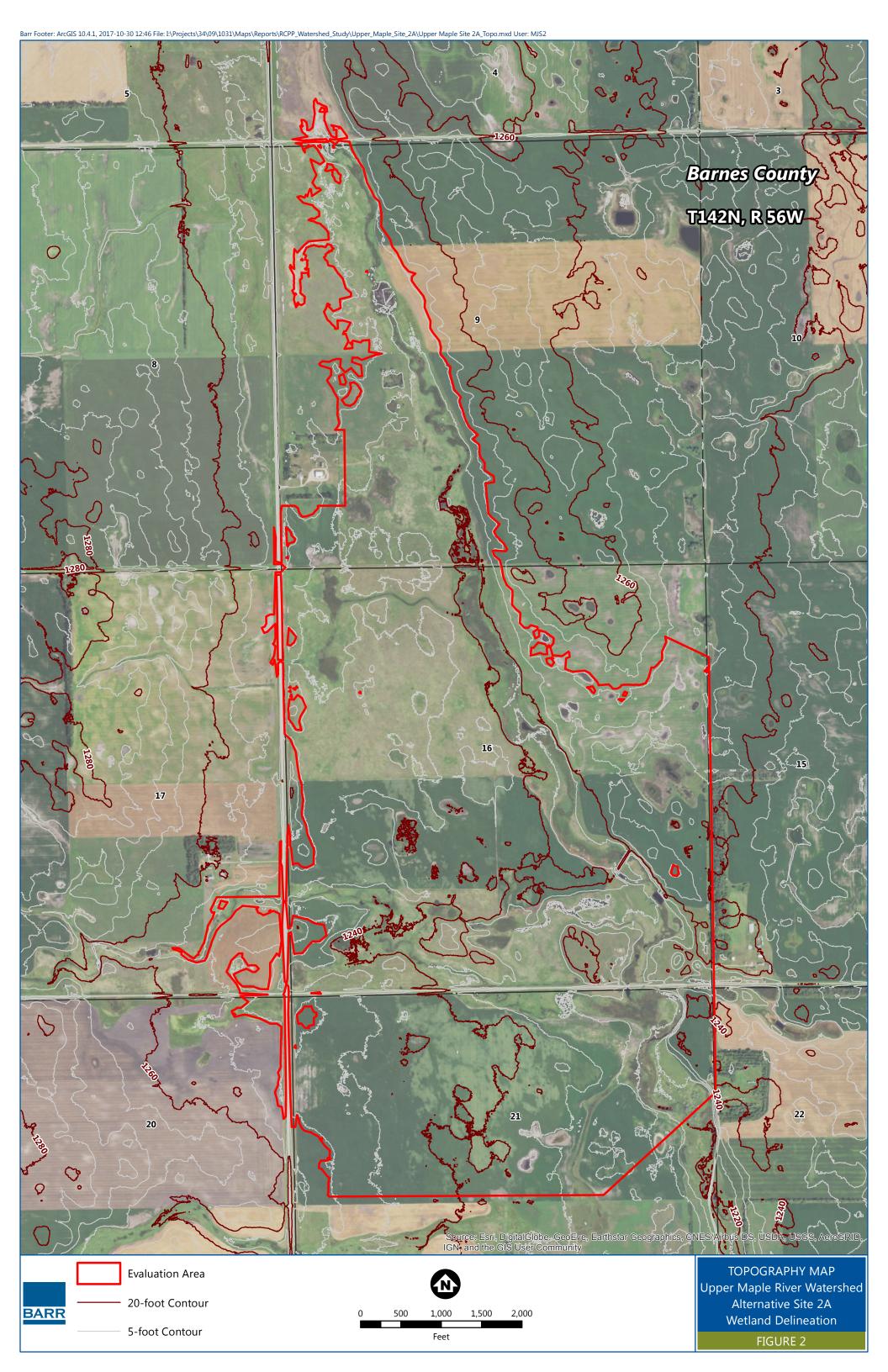
Normal

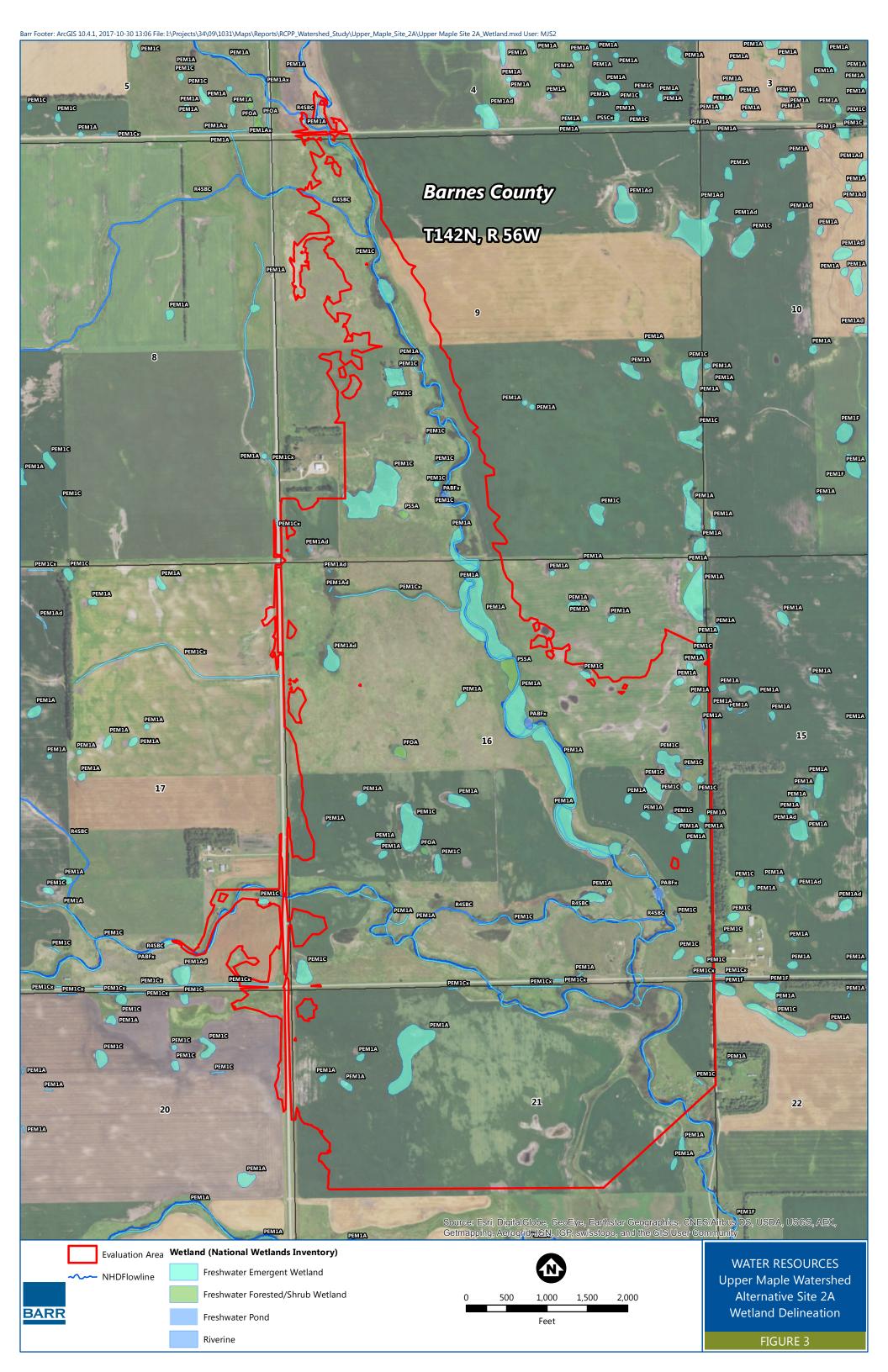
Table 3 Wetland Summary Table

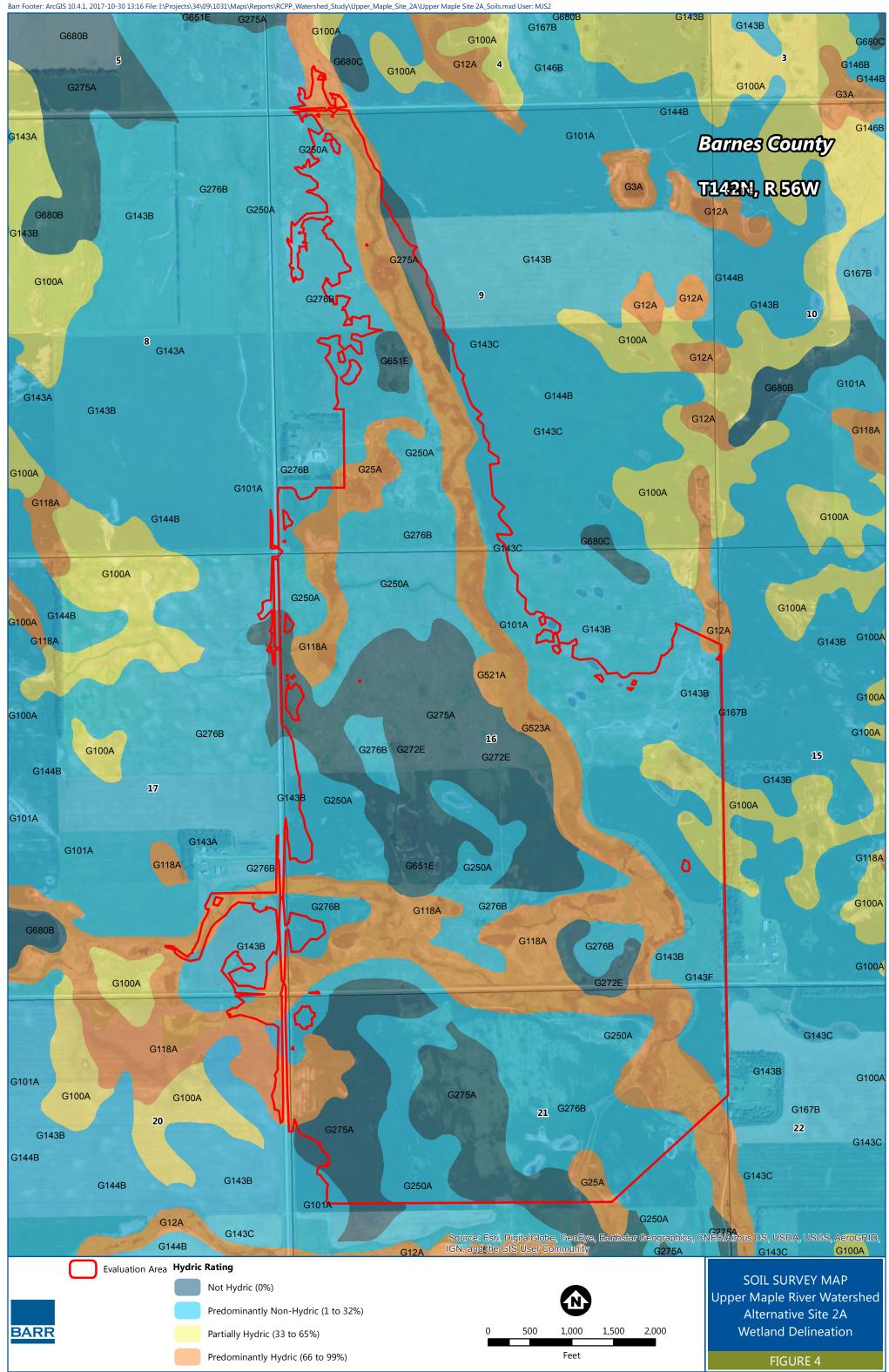
Wetland ID	Cowardin	Circular 39	Eggers and Reed	Acres
0	PEMA	Type 1	Seasonally Flooded Basin	0.06
5	PEMA	Type 1	Seasonally Flooded Basin	0.32
6	PEMA	Type 1	Seasonally Flooded Basin	0.22
7	PEMA	Type 1	Seasonally Flooded Basin	0.92
8	PEM1C/A	Type 3/1	Shallow Marsh/ Fresh (Wet) Meadow	1.76
9	PEM1C/A	Type 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
-		75-0	Total	237.59

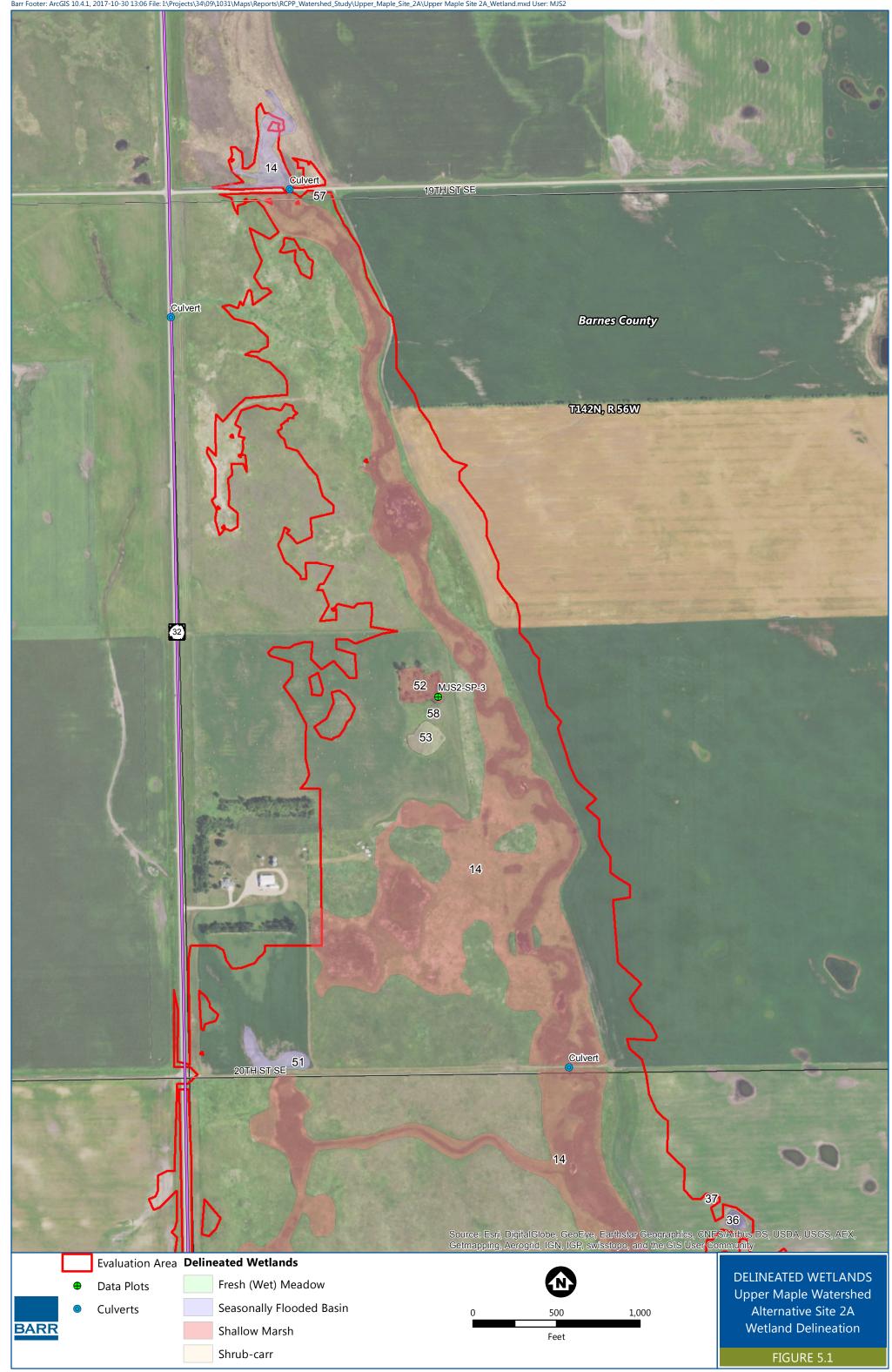
Figures

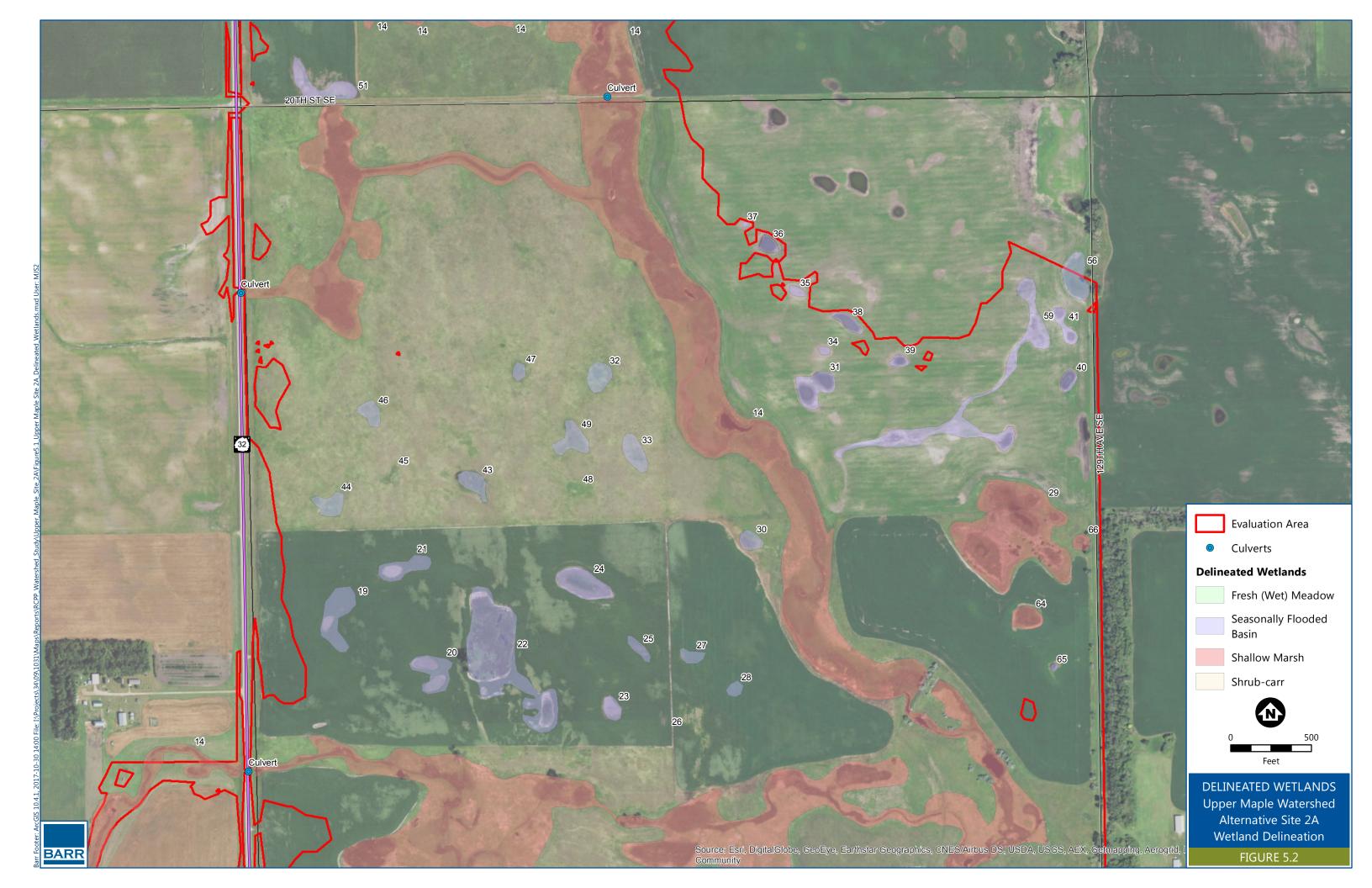


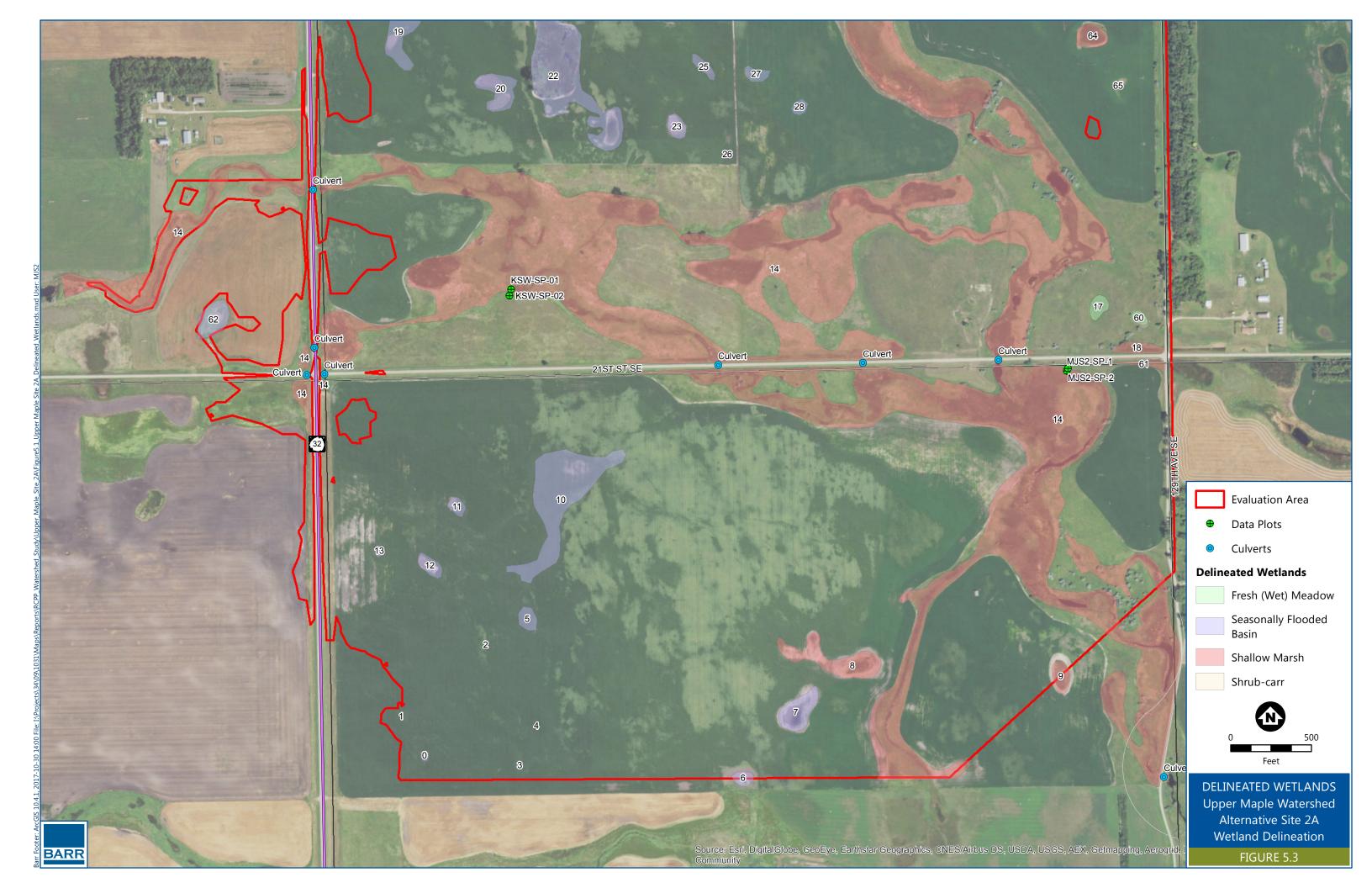




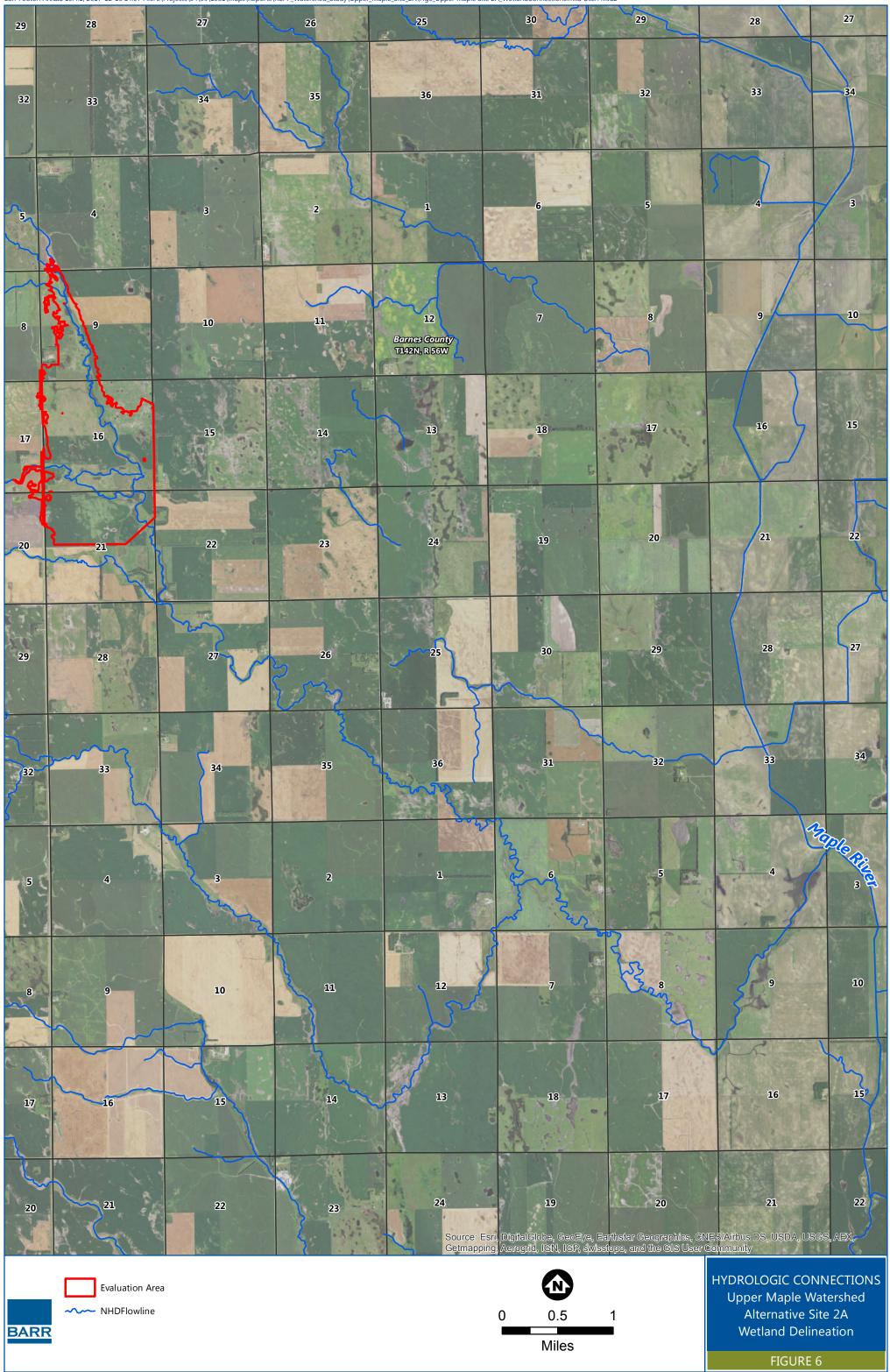








Barr Footer: ArcGIS 10.4.1, 2017-12-15 14:07 File: I\Projects\34\09\1031\Maps\Reports\RCPP_Watershed_Study\Upper_Maple_Site_2A\Fig6_Upper Maple Site 2A_WetlandConnections.mxd User: MJS2



Appendices

Appendix A

Wetland Delineation Data Forms

Project/Site:	Upper Maple Sit	<u>te 2A</u>		Applicant/Ow	mer: <u>Moore E</u>	Engineering C	City/County: <u>Pil</u>	Isbury/ Barnes St	tate: <u>ND</u>	Sampling Date:	<u>09/19/17</u>	
Investigator(s):	KSW			Section:	16	-	Township: 142	N R	ange: <u>56W</u>	Sampling Point:	KSW-SP-01	<u> </u>
Land Form:	Footslope			Local Relief:			Slope %: 2-5	Soil Map Uni		A, Lowe-Fluvaqu	ents	
Subregion (LRR):				Latitude:	5218170 mN		ongitude: 592	1	atum: UTM, NA	AD83 meters		
Cowardin Classifi		EMB/C		Circular 39 C		2/3	<u></u>		WI Classification.			
Are climatic/hydro			nical for thi			(If no, explain	in romarks)		Reed (primary):	Shallow Ma	reh	
		in the site typ					Are "normal		Reed (primary). Reed (secondary			
Are vegetation	Yes Soil	<u>No</u>	Hydrolog	y <u>No</u> si	gnificantly dist	urbed? c	ircumstances"		Reed (tertiary):). <u> </u>	moduom	
Are vegetation	<u>No</u> Soil	<u>No</u>	Hydrolog	y <u>No</u> na	turally problen	natic?	oresent?		Reed (quaternary	/):		
SUMMARY C	OF FINDING	SS - Atta	ch site	e map sho	wing sar	npling po	oint locatio	ons, transect	ts, importa	nt features	s, etc.	
Hydrophytic veget	ation present?		Yes Ge	eneral Remark	S							
Hydric soil presen	t?			xplain any ans needed):	wers							
Indicators of wetla			Yes	,								
Is the sampled are	a within a wetlan	d?	Yes li	f yes, optional	Wetland Site	ID: KSW	-A = MJS2-A = '	<u>W14</u>				
VEGETATIC)N											
					Absolute	Dominant	Indicator	50/20 Thresho	olds:		20%	<u>50%</u>
Tree Stratur	m	(Plot Size:	30 ff	1	<u>% Cover</u>	<u>Dominant</u> Species?	<u>Status</u>	Tree Stratum			0	0
		(, , , , , , , , , , , , , , , , , , ,	<u>00 m</u>	,				Sapling/Shrub	Stratum		0	0
1.					0			Herb Stratum			20	50
2. 3.					0			Woody Vine S	tratum		0	0
3. 4.					0			Dominance Te	est Worksheet:			
7.				Total Cover:	<u>0</u>				minant Species			
Sapling/Shr	uh Stratum	(Plot Size:			ž				FACW or FAC:		3 (A)	
1.		(1 101 0120.	<u>10 II</u>	,	0			Total Number			3 <i>(B)</i>	
2.					0			Species Acros	ss All Strata:		3 <i>(B)</i>	
3.					0				minant Species , FACW or FAC:		0% (A/B)
4.					0				FACW OF FAC.			,
5.					0			Prevalence Inc	lex Worksheet:			
				Total Cover:	<u>0</u>			Total %	6 Cover of:		Multiply by:	
Herb Stratu	<u>m</u>	(Plot Size:	<u>5 ft</u>	1	1			OBL Species		50 X 1		50
1. Typha angu	ıstifolia			,	40	Yes	OBL	FACW Species	s	50 <mark>X 2</mark>	1	00
2. Persicaria p	ensylvanica				10	No	FACW	FAC Species		0 X 3		0
3. Phalaris aru	Indinacea				20	Yes	FACW	FACU Species	5	0 X 4		0
4. Spartina pe	ctinata				20	Yes	FACW	UPL Species		0 X 5		0
<u> </u>	ectus tabernaemo	ontani			10	No	OBL	Column Totals	. 1	00 (A)	1	50 (B)
6.					0				Prevalence Ind	ex = B/A =	1.	.50
7.					0			Hydrophytic Ve				
8.				Total Cover:					oid Test for Hyd		tion	
Mana da Mina	04	(Plot Size:		Total Cover.	<u>100</u>			· · · ·	ninance Test is		luon	
Woody Vine	Stratum	(Piùt Size.	<u>30 II</u>)					valence Index ≤			
1.					0				rphological Ada			orting data
2.				Total Cover:	0 0				regetation remaindent		· · ·	in)
				i otar Cover:	<u>v</u>				blematic Hydro			
% Bare Ground i	n Herb Stratum:			% Sphagnum	Moss Cover:	_		[1] Indicators of h disturbed or prob	nydric soil & wetlan Nematic.	na nyarology mus	t de present, u	niess
Vegetation Rema	arks: (include ph	oto numbe	rs here or	on a separate	sheet)		-	Hydrophytic ve	getation present	? <u>Yes</u>		
								11				

ile Description: (Describe to the depth n	eeaea to				of indicators,).	
Depth Matrix (inches) Color (moist)	%	Color (moist)	dox Featu %	res Type [1]	Loc [2]	Texture	Remarks
0 - 6 10YR 2/1	100			1990[1]		mucky peat	
6 - 24 10YR 4/1	87	10YR 6/1	10	D		clay loam	·
6 - 24		10YR 5/6	3	С			
							·
Type: C=Concentration, D=Depletion, RM	Reduced	d Matrix, CS=Covered or Co	oated San	d Grains	[2] Location:	PL=Pore Lining, M=Ma	
tric Soil Indicators: (applicable to all LRR	s, unless	otherwise noted)			Ind	licators for Problematic	Hydric Soils [3]:
Histosol (A1)		Sandy Gl	eyed Matr	ix (S4)		1 cm Muck (A9) (LRR I,	J)
Histic Epipedon (A2)		Sandy Re	edox (S5)			Coast Prairie Redox (A1	6) (LRR F, G, H)
Black Histic (A3)		Stripped	Matrix (S6)		Dark Surface (S7) (LRR	G)
Hydrogen Sulfide (A4)		📃 Loamy M	ucky Mine	ral (F1)		High Plains Depressions	(F16) (LRR H outside MLRA 72 & 7
Stratified Layers (A5) (LRR F)		🗌 Loamy G	leyed Mat	rix (F2)		Reduced Vertic (F18)	
1 cm Muck (A9) (LRR F, G, H)		Depleted	Matrix (F3	3)		Red Parent Material (F2	1)
Depleted Below Dark Surface (A11)		Redox Da	ark Surfac	e (F6)		Very Shallow Dark Surfa	ice (TF12)
Thick Dark Surface (A12)		Depleted	Dark Surf	ace (F7)		Other (explain in soil ren	narks)
Sandy Mucky Mineral (S1)		Redox De	epressions	s (F8)		I. P. J. Strategie I.	
2.5 cm Mucky Peat or Peat (S2) (LRR G, H)		🔄 High Plai	ns Depres	sions (F16)			tic vegetation and wetland hydrol isturbed or problematic.
5 cm Mucky Peat or Peat (S3) (LRR F)		(MLRA 7)	2 & 73 of L	.RR H)			
5 cm Mucky Peat or Peat (S3) (LRR F) <pre>strictive Layer (if present): Type:</pre>		(MLRA 7:	2 & 73 of L	.RR H)	Depth (inches):	Hydric soil present?
		(MLRA 7:	2 & 73 of L	.RR H)	Depth (inches):	Hydric soil present?
strictive Layer (if present): Type:		(MLRA 7.	2 & 73 of L	.RR H)	Depth (inches):	Hydric soil present?
atrictive Layer (if present): Type:		(MLRA 7:	2 & 73 of L	.RR H)	Depth (inches):	Hydric soil present?
atrictive Layer (if present): Type: I Remarks: DROLOGY	l; check a		2 & 73 of L	.RR H)		inches):	
strictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators:	l; check a			.RR H)			imum of two required)
atrictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required	l; check a	II that apply)				condary Indicators (min	imum of two required)
strictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1)	l; check al	II that apply)	t (B11)	es (B13)		condary Indicators (min Surface Soil Cracks (B6)	imum of two required) cave Surface (B8)
atrictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2)	l; check a	II that apply)	t (B11) nvertebrat n Sulfide C	es (B13)		condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10)	imum of two required) cave Surface (B8)
strictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3)	l; check a	I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized	t (B11) nvertebrat n Sulfide C son Water Rhizosph	es (B13) Ddor (C1) Table (C2) eres on Livin	Sea	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10)	imum of two required) cave Surface (B8)
atrictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	l; check a	I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized	t (B11) nvertebrat n Sulfide C son Water	es (B13) Ddor (C1) Table (C2) eres on Livin	Sea	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10) Oxidized Rhizospheres o	imum of two required) cave Surface (B8) on Living Roots (where tilled) (C3)
strictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	l; check a	II that apply) I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized Roots (w	t (B11) nvertebrat n Sulfide C son Water Rhizosph here not ti	es (B13) Ddor (C1) Table (C2) eres on Livin	Sea	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10) Oxidized Rhizospheres (Crayfish Burrows (C8)	imum of two required) cave Surface (B8) on Living Roots (where tilled) (C3) rial Imagery (C9)
strictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	l; check a	I that apply) I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized Roots (wi Presence	t (B11) nvertebrat n Sulfide C son Water Rhizosph here not ti	es (B13) Ddor (C1) Table (C2) eres on Livin Iled) (C3) red Iron (C4)	g	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Ae	imum of two required) cave Surface (B8) on Living Roots (where tilled) (C3) rial Imagery (C9)
strictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5)	l; check a	II that apply) I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized Roots (wi Presence Thin Muc	t (B11) nvertebrat n Sulfide C son Water Rhizosph here not ti e of Reduc	es (B13) Ddor (C1) Table (C2) eres on Livin lled) (C3) red Iron (C4) (C7)	g	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Com Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Ae Geomorphic Position (D	imum of two required) cave Surface (B8) on Living Roots (where tilled) (C3) rial Imagery (C9) 2)
atrictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	l; check a	II that apply) I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized Roots (wi Presence Thin Muc	t (B11) nvertebrat n Sulfide C son Water Rhizosphi here not ti e of Reduc sk Surface	es (B13) Ddor (C1) Table (C2) eres on Livin lled) (C3) red Iron (C4) (C7)	g	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Ae Geomorphic Position (D FAC-Neutral Test (D5)	imum of two required) cave Surface (B8) on Living Roots (where tilled) (C3) rial Imagery (C9) 2)
atrictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7)	l; check al	II that apply) I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized Roots (wi Presence Thin Muc	t (B11) nvertebrat n Sulfide C son Water Rhizosphi here not ti e of Reduc sk Surface	es (B13) Ddor (C1) Table (C2) eres on Livin lled) (C3) red Iron (C4) (C7)	g	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Ae Geomorphic Position (D: FAC-Neutral Test (D5) Frost-Heave Hummocks	imum of two required) cave Surface (B8) on Living Roots (where tilled) (C3) rial Imagery (C9) 2)
strictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	l; check a	II that apply) I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized Roots (wi Presence Thin Muc	t (B11) nvertebrat n Sulfide C son Water Rhizosph here not ti e of Reduc k Surface cplain in re	es (B13) Ddor (C1) Table (C2) eres on Livin lled) (C3) red Iron (C4) (C7)	g	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Con Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Ae Geomorphic Position (D: FAC-Neutral Test (D5) Frost-Heave Hummocks	imum of two required) cave Surface (B8) on Living Roots (where tilled) (C3) rial Imagery (C9) 2) (D7) (LRR F) d hydrology present? Yes
strictive Layer (if present): Type: I Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	l; check al	I that apply) I that apply) Salt Crus Aquatic I Hydrogei Dry-Seas Oxidized Roots (wi Presence Thin Muc Other (ex	t (B11) nvertebrat n Sulfide C son Water Rhizosph here not ti e of Reduc k Surface plain in re plain in re	es (B13) Ddor (C1) Table (C2) eres on Livin lled) (C3) red Iron (C4) (C7)	g	condary Indicators (min Surface Soil Cracks (B6) Sparsely Vegetated Com Drainage Patterns (B10) Oxidized Rhizospheres of Crayfish Burrows (C8) Saturation Visible on Ae Geomorphic Position (D FAC-Neutral Test (D5) Frost-Heave Hummocks	imum of two required) cave Surface (B8) on Living Roots (where tilled) (C3) rial Imagery (C9) 2) (D7) (LRR F) d hydrology present? Yes

Project/Site:	Upper M	aple Sit	te 2A		Applicant/Ow	wner: Moore Engineering	City/County:	Pilsbury/ Barne	<u>s State: ND</u>	Sampling Date: 09/19/17
Land Form:	KSW Backslop	<u>pe</u>			Section: Local Relief:		Slope %: 2			Sampling Point: <u>KSW-SP-02</u> 3A, Lowe-Fluvaquents
Subregion (LRR). Cowardin Classifi		U	<u>pland</u>		Latitude: Circular 39 C	<u>5218158 mN</u> Classification: <u>Upland</u>	Longitude: 5		Datum: <u>UTM, N</u> oped NWI Classificatior	
Are climatic/hydro	ologic cond <u>Yes</u>	itions o Soil	n the site ty No	pical for this Hydrology		<u> </u>	in in remarks) Are "normal	<u>Yes</u> Egg	gers & Reed (primary): gers & Reed (secondar	Upland y):
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology		aturally problematic?	circumstance present?	Lyy	gers & Reed (tertiary): gers & Reed (quaternar	y):

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Hydric soil present? Indicators of wetland hydrology present?	<u>No</u> No No	General Remarks upland point for KSW-A= MJS2-A = W14 (explain any answers if needed):
Is the sampled area within a wetland?	<u>No</u>	If yes, optional Wetland Site ID:
VEGETATION		

	Tree Stratum	(Plot Size:	30 ft)	<u>Absolute</u> <u>% Cover</u>	<u>Dominant</u> Species?	<u>Indicator</u> <u>Status</u>	<u>50/20 Thresholds:</u> Tree Stratum		<u>20</u> 0		<u>50%</u> 0
		(<u>,</u> ,			1	Sapling/Shrub Stratum				0
1.				0			Herb Stratum		20		52
2.				0			Woody Vine Stratum		0) — —	0
3.				0							
4.				0			Dominance Test Worksheet:				
	Sapling/Shrub Stratum	(Plot Size:	Total Cover:	<u>0</u>			Number of Dominant Species That Are OBL, FACW or FAC:		0	(A)	
		(1 101 0120.	<u>1011</u> /				Total Number of Dominant				
1.				0			Species Across All Strata:		1	(B)	
2.				0			Percent of Dominant Species	0.0	00%	(A/B)	
3.				0			That Are OBL, FACW or FAC:		00 /8	(,,,,,)	
4. 5.				0			Prevalence Index Worksheet:				
			Total Cover:	0			Total % Cover of:		Multi	iply by:	
	<u>Herb Stratum</u>	(Plot Size:	<u>5 ft</u>	-			OBL Species	0 X 1		0)
1.	Bromus inermis		,	100	Yes	UPL	FACW Species	0 X 2		0)
2.	Symphoricarpos occider	talis		1	No	UPL	FAC Species	0 <mark>X 3</mark>		0)
3.	Glycyrrhiza lepidota			1	No	FACU	FACU Species	2 X 4		8	3
4.	Cirsium arvense			1	No	FACU	UPL Species 10	2 X 5		510)
5.	Asclepias syriaca			1	No	UPL	Column Totals: 10	4 (A)		518	– 3 (B)
6.				0			Prevalence Inde	_ `´		4.98	- ` `
7.				0			Hydrophytic Vegetation Indicat			4.00	
8.				0							
			Total Cover:	<u>104</u>			No Rapid Test for Hydr		tation		
	Woody Vine Stratum	(Plot Size:	<u>30 ft</u>)				No Prevalence Index ≤				
1.				0			No Morphological Adap		orovide	sunnorti	ina dat:
2.				0			in vegetation remark				ng uuu
			Total Cover:	<u>0</u>			No Problematic Hydrop	hytic Vegeta	tion [1]	(Explain)	ł.
% B	are Ground in Herb Strat	um:	0 % Sphagnum I	loss Cover:			[1] Indicators of hydric soil & wetland disturbed or problematic.	d hydrology mu	ist be pr	esent, unle	ISS
Veg	etation Remarks: (includ	e photo number	s here or on a separate	sheet)			Hydrophytic vegetation present?	No			

OIL				_			Si	ampling Point:	KSW-
	on: (Describe to the depth	needed to doc				e of indicators).		
Depth (inches)	Matrix Color (moist)	%	Color (moist)	dox Featu %	Type [1]	Loc [2]	Texture	Rema	rks
0 - 8	10YR 3/1	100					loam		
8 - 25	10YR 5/3	90			-,	·	loam		
8 - 25	10YR 3/2	10							
						- <u> </u>			
						·			
Type: C=Con	centration, D=Depletion, F	RM=Reduced Ma	trix, CS=Covered or Co	oated Sar	nd Grains	[2] Location:	PL=Pore Lining, M=Matr	rix.	
dric Soil Indic	ators: (applicable to all LI	RRs, unless oth	erwise noted)			Ind	icators for Problematic H	Hydric Soils [3]:	
Histosol (A1)			Sandy Gl	leyed Mati	rix (S4)		1 cm Muck (A9) (LRR I, J))	
] Histic Epipedo	on (A2)		Sandy Re	edox (S5)			Coast Prairie Redox (A16	i) (LRR F, G, H)	
] Black Histic (A	3)		Stripped	Matrix (S6	<i>5)</i>		Dark Surface (S7) (LRR G	G)	
] Hydrogen Suli	fide (A4)		📃 Loamy M	lucky Mine	eral (F1)		High Plains Depressions ((F16) (LRR H outside MLRA	72 & 7 3,
Stratified Laye	ers (A5) (LRR F)		📃 Loamy G	leyed Mat	rix (F2)		Reduced Vertic (F18)		
] 1 cm Muck (A	9) (LRR F, G, H)		Depleted	Matrix (F	3)		Red Parent Material (F21))	
] Depleted Belo	w Dark Surface (A11)		Redox Da	ark Surfac	e (F6)		Very Shallow Dark Surfac	ce (TF12)	
] Thick Dark Su	rface (A12)		Depleted	Dark Sur	face (F7)		Other (explain in soil rema	arks)	
] Sandy Mucky	()		Redox De	epression	s (F8)	[3]	Indicators of hydrophyti	c vegetation and wetland I	hvdrolog
-	Peat or Peat (S2) (LRR G,	H)			sions (F16)		st be present, unless dis		.,
5 cm Mucky P	eat or Peat (S3) (LRR F)		(MLRA 7.	2 & 73 of I	LRR H)				
estrictive Layer oil Remarks:	r (if present): Type:					Depth (inches):	Hydric soil present?	N
YDROLOG	γ								
etland Hydrolo	gy Indicators:								
rimary Indicato	rs (minimum of one requir	ed; check all the	at apply)			Sec	condary Indicators (minii	mum of two required)	-
Surface Water	r (A1)		Salt Crus	st (B11)			Surface Soil Cracks (B6)		
] High Water Ta	able (A2)		Aquatic I	nvertebrat	tes (B13)		Sparsely Vegetated Conc	ave Surface (B8)	
] Saturation (A3	3)		Hydroge	n Sulfide (Odor (C1)		Drainage Patterns (B10)		
] Water Marks (B1)		Dry-Seas	son Water	Table (C2)		Oxidized Rhizospheres or	n Living Roots (where tilled)	(C3)
] Sediment Dep	oosits (B2)				eres on Livir	ng 🗌	Crayfish Burrows (C8)		
] Drift Deposits	(B3)		Roots (w	here not ti	illed) (C3)		Saturation Visible on Aeria	al Imagery (C9)	
] Algal Mat or C	crust (B4)		Presence	e of Reduc	ced Iron (C4)		Geomorphic Position (D2))	
] Iron Deposits	(B5)		Thin Muc	ck Surface	(C7)		FAC-Neutral Test (D5)		
Inundation Vis	ible on Aerial Imagery (B7)		Other (e)	kplain in re	emarks)		Frost-Heave Hummocks ((D7) (LRR F)	
] Water-Stained	l Leaves (B9)								
eld Observatio							Indicators of wetland	hydrology present?	<u>No</u>
urface water pr			Surface Water Depth (i				Describe Recorded D	Data:	
later table pres			Water Table Depth (inc						
aturation prese	nt? (includes capillary frin	nge)	Saturation Depth (inch	es):					
ecorded Data:	Aerial Photo	Monitoring V	Vell 🔄 Stream Gau	ge 🔄 I	Previous In:	spections			
ydrology Rema	rks:								

								Giouri	iunio negi	v		
Project/Site:	Upper Maple	Site 2A		Applicant/Ow	ner:	(City/County: <u>Pil</u>	Isbury/ Barnes S	State: <u>ND</u> Sam	pling Date: 09/1	<u>8/17</u>	
Investigator(s):	KSW, MJS2			Section:	21		Township: 142	N	Range: <u>56W</u> Sam	npling Point: MJS	32-SP-01	
Land Form:	Floodplain			Local Relief:	Concave		Slope %: 0-1	 Soil Map Ur	nit Name: G523A, Lo	we-Fluvaguents		
Subregion (LRR				Latitude:	5218016 mN		Longitude: 593	1	Datum: UTM, NAD83			
	· -						20119/2000. 000					
Cowardin Class		PEM1C		Circular 39 C		Type 3			IWI Classification:	<u>Upland</u>		
Are climatic/hydi	rologic condition	s on the site typ	pical for th	his time of year?	Yes	(If no, explai	n in remarks) Are "normal		Reed (primary): Reed (secondary):	Shallow Marsh		
Are vegetation	<u>No</u> So	il <u>No</u>	Hydrolog	gy <u>No</u> si	gnificantly dist	urbed?	circumstances"		Reed (tertiary):			
Are vegetation	<u>No</u> So	il <u>No</u>	Hydrolog	gy <u>No</u> na	turally problem	natic?	present?		Reed (quaternary):			
SUMMARY	OF FINDIN	IGS - Atta	ch sit	e map sho	wing san	npling p	oint locati	ons, transec	ts, important i	features, et	c.	
Hydrophytic veg	etation present?		Yes (General Remarks	-							
Hydric soil prese			Yes (explain any ansv								
Indicators of wet	land hydrology p	resent?	Yes	fneeded):								
Is the sampled a	rea within a wetl	and?	Yes	lf yes, optional	Wetland Site	ID: MJS	<u>2-A = W14</u>					
VEGETATI	ON											
								50/20 Thresh	olds:	2(0%	50%
				,	<u>Absolute</u> % Cover	Dominant Species?	<u>Indicator</u> Status					
Tree Strat	<u>um</u>	(Plot Size:	<u>30 ft</u>)	<u>/// 00/01</u>	opecies:	otatus	Tree Stratum			0	0
1.					0			Sapling/Shru Herb Stratum			2.8	57
2.					0			Woody Vine			0	
3.					0							
4.					0			Dominance 1	<u>est Worksheet:</u>			
				Total Cover:	<u>0</u>				ominant Species	1	(A)	
Sapling/Sh	hrub Stratum	(Plot Size:	<u>15 ft</u>)					., FACW or FAC:	<u> </u>	(**	
1.					0				r of Dominant oss All Strata:	1	(B)	
2.					0			7 11 ·			. ,	
3.					0				ominant Species ., FACW or FAC:	100.00%	(A/B)	
4.					0			-	,			
5.					0			Prevalence In	dex Worksheet:			
				Total Cover:	<u>0</u>			Total	% Cover of:	Mult	tiply by:	
Herb Strat	<u>um</u>	(Plot Size:	<u>5 ft</u>)				OBL Species	102	X 1	1(02
1. Typha ang	nustifolia	· · · · · · · · · · · · · · · · · · ·		,	100	Yes	OBL	FACW Specie	10	X 2	2	24
	irundinacea				10	No	FACW	FAC Species		Х 3		0
3. Mentha ar					2	No	FACW		0	X 4		0
	americanus				2	No	OBL	FACU Specie		X 5		0
5.					0			UPL Species				-
6.					0			Column Tota		(A)		26 (B)
7.					0			-	Prevalence Index =	B/A =	1.1	11
8.					0			Hydrophytic V	egetation Indicators	<u>:</u>		
				Total Cover:	114			Yes Ra	pid Test for Hydroph	ytic Vegetation		
Woody Vir	ne Stratum	(Plot Size:	<u>30 ft</u>)				Yes Do	minance Test is >50	%		
1.					0				evalence Index ≤ 3.0			
2.					0				orphological Adaptat			rting data
				Total Cover:	0		L		vegetation remarks o oblematic Hydrophyt			n)
% Bare Ground	l in Herb Stratu	n:	0	% Sphagnum	-		0		hydric soil & wetland hy			
Vegetation Ren									egetation present?	Yes		
• og sta ton i ten			5 11010 0	. on a separate	Shooy				Soution prosent:	100		

6 - 22 10YR 3/1 10 - - - - - - - - - - - - - - - - - - - - - - -	Texture Remarks				
Color (moist) % Color (moist) % Type [1] Loc [2] 0 - 6 10YR 3/1 100 Peat Mucky peet 6 - 22 2.57 6/1 90 Mucky peet 10YR 3/1 10 Mucky peet Mucky peet 1 10YR 3/1 10 Mucky peet - 10YR 3/1 10 Mucky peet - 10YR 3/1 10 Mucky peet - - - - 1 10 - - - - - - - - - - 1 10 - - - - - - - - - - - 1 10 - - - 1 10 - - - 1 10 - - - - 1 10 - - - - - 1 10 - - - -	Texture Remarks				
0 - 6 10YR 3/1 100 Peat 6 - 22 25Y 6/1 90 Mucky peat 6 - 22 10YR 3/1 10 Mucky peat - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -					
6 - 22 2.5Y 6/1 90 Mucky peet 6 - 22 10YR 3/1 10 Mucky peet - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <td< th=""><th>Saturated: no redox</th></td<>	Saturated: no redox				
6 - 22 10 YR 3/1 10	eat with sand Saturated				
dric Soil Indicators: (applicable to all LRRs, unless otherwise noted) Indicators for F Histosol (A1) Sandy Gleyed Matrix (S4) 1 cm Muck (Histic Epipedon (A2) Sandy Redox (S5) Coast Prairi Black Histic (A3) Stripped Matrix (S6) Dark Surface Hydrogen Sulfide (A4) Loarny Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F) Loarny Mucky Mineral (F1) High Plains 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Trick Dark Surface (A12) Depleted Dark Surface (F7) Other (exple Sandy Mucky Mineral (S1) Redox Depressions (F8) [3] Indicators of must be pressions (F16) 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) must be pressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) Vone observed Depth (inches): of must be pressions (F16) 5 strictive Layer (if present): Type: None observed Depth (inches): of must be pressions (F16) 9 strictive Layer (if present): Type: None observed Depth (inches): of must be pressions (F16) 9 strictive Layer (if present): Type:					
dric Soil Indicators: (applicable to all LRRs, unless otherwise noted) Indicators for F Histosol (A1) Sandy Gleyed Matrix (S4) 1 cm Muck (Histosol (A2) Sandy Redox (S5) Coast Prairi Black Histic (A3) Stripped Matrix (S6) Dark Surface Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F) Loamy Mucky Mineral (F1) High Plains 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Trinck Dark Surface (A12) Depleted Dark Surface (F7) Other (expleted Dark Surface (F7) Sandy Mucky Mineral (S1) Redox Depressions (F8) [3] Indicators of must be pressions (F16) 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) must be pression (MLRA 72 & 73 of LRR H) setrictive Layer (if present): Type: None observed Depth (inches): observed oil Remarks: Salt Crust (B11) Surface Soi Surface Soi Jardace Water (A1) Salt Crust (B11) Surface Soi Sparsely Ve Is aturation (A3) Hydrogen Sulfide Odor (C1) Drainage Pi Secondary Ind<					
ydric Soil Indicators: (applicable to all LRRs, unless otherwise noted) Indicators for F Histosol (A1) Sandy Gleyed Matrix (S4) 1 cm Muck (Histosol (A2) Sandy Redox (S5) Coast Prairi Black Histic (A3) Stripped Matrix (S6) Dark Surface Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F) Loamy Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F, G, H) Depleted Matrix (F3) Red Parent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Thrick Dark Surface (A12) Depleted Dark Surface (F7) Other (expleted Below Dark Surface (S1) Standy Mucky Mineral (S1) Redox Depressions (F8) [3] Indicators of must be pressions (F16) Standy Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) Image Pression (MLRA 72 & 73 of LRR H) Secondary Ind strictive Layer (if present): Type: None observed Depth (inches): observed Secondary Ind Surface Water (A1) Salt Crust (B11) Surface Soi Secondary Ind Sparsely Ve Secondary Ind Sparsely Ve Secondary Ind Sparsely Ve Salturation (A3) Hydrogen Sulfide Odor (C1) </td <td></td>					
dric Soil Indicators: (applicable to all LRRs, unless otherwise noted) Indicators for F Histosol (A1) Sandy Gleyed Matrix (S4) 1 cm Muck (Histic Epipedon (A2) Sandy Redox (S5) Coast Prairi Black Histic (A3) Stripped Matrix (S6) Dark Surface Hydrogen Sulfide (A4) Loarny Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F) Loarny Mucky Mineral (F1) High Plains 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Trick Dark Surface (A12) Depleted Dark Surface (F7) Other (exple Sandy Mucky Mineral (S1) Redox Depressions (F8) [3] Indicators of must be pressions (F16) 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) must be pressions (F16) 5 cm Mucky Peat or Peat (S2) (LRR F) Vone observed Depth (inches): of must be pressions (F16) 5 strictive Layer (if present): Type: None observed Depth (inches): of must be pressions (F16) 9 strictive Layer (if present): Type: None observed Depth (inches): of must be pressions (F16) 9 strictive Layer (if present): Type:					
Histosol (A1) Sandy Gleyed Matrix (S4) 1 cm Muck (Histoc Epipedon (A2) Sandy Redox (S5) Coast Prairi Black Histic (A3) Stripped Matrix (S6) Dark Surface Hydrogen Sulfide (A4) Loarny Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F) Loarny Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F, G, H) Depleted Matrix (F3) Red arent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Trick Dark Surface (A12) Depleted Dark Surface (F7) Other (expleted Dark Surface (F1)) Other (expleted Dark Surface (A12) Sandy Mucky Mineral (S1) Redox Depressions (F8) [3] Indicators of must be pressed [3] Indicators of must be pressed 5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) Sandy Mucky Peat or Peat (S2) (LRR F) strictive Layer (if present): Type: None observed Depth (inches): [3] strictive Layer (if present): Type: None observed Depth (inches): [3] Surface Water (A1) Salt Crust (B11) Surface Soi [3] Surface Water (A1) Salt Crust (B11) Sarface Soi High Wa	Problematic Hydric Soils [3]:				
Histic Epipedon (A2) Sandy Redox (S5) Coast Prairi Black Histic (A3) Stripped Matrix (S6) Dark Surface Hydrogen Sulfide (A4) Loarny Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F) Loarny Gleyed Matrix (F2) Reduced Ve 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Thick Dark Surface (A12) Depleted Dark Surface (F7) Other (explet) Sandy Mucky Mineral (S1) Redox Depressions (F8) [3] Indicators of must be present 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) Must present 5 cm Mucky Peat or Peat (S3) (LRR F) Mone observed Depth (inches): pil Remarks: ////////////////////////////////////					
Black Histic (A3) Stripped Matrix (S6) Dark Surface Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) Reduced Ve 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Thrick Dark Surface (A12) Depleted Dark Surface (F7) Other (explation of the composition of the compositis (the composition of the composition of the compositi	rie Redox (A16) (LRR F, G, H)				
Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) High Plains Stratified Layers (A5) (LRR F) Loamy Gleyed Matrix (F2) Reduced Velocity 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Thick Dark Surface (A12) Depleted Dark Surface (F7) Other (expleted Sandy Mucky Mineral (S1) Sandy Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) (MLRA 72 & 73 of LRR H) Sorm Mucky Peat or Peat (S3) (LRR F) Mone observed Depth (inches): estrictive Layer (if present): Type: None observed Depth (inches): finanzy Indicators: rimary Indicators: Secondary Indicators: gramary Indicators: (minimum of one required; check all that apply) Secondary Indicators Surface Water (A1) Salt Crust (B11) Surface Soil High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Velocity Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Pa Water Marks (B1) Dry-Season Water Table (C2) Oxidized Rt					
Stratified Layers (A5) (LRR F, Loamy Gleyed Matrix (F2) Reduced Ve 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Thick Dark Surface (A12) Depleted Dark Surface (F7) Other (explation of the composition of the					
1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent 1 cm Muck (A9) (LRR F, G, H) Depleted Matrix (F3) Red Parent 2 Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo 1 thick Dark Surface (A12) Depleted Dark Surface (F7) Other (explation of the composition of the c	s Depressions (F16) (LRR H outside MLRA 72 & 73				
Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Very Shallo Thick Dark Surface (A12) Depleted Dark Surface (F7) Other (explation of the state o					
Thick Dark Surface (A12) Depleted Dark Surface (F7) Other (explation of the context of the cont	Red Parent Material (F21)				
Sandy Mucky Mineral (S1) Redox Depressions (F8) [3] Indicators of must be present 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) must be present 5 cm Mucky Peat or Peat (S3) (LRR F) Depth (inches): Depth (inches): estrictive Layer (if present): Type: None observed Depth (inches): oil Remarks: //DROLOGY Etland Hydrology Indicators: Secondary Indicators (minimum of one required; check all that apply) Secondary Indicators (B11) Surface Water (A1) Salt Crust (B11) Surface Soid High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Ve Saturation (A3) Dry-Season Water Table (C2) Oxidized Rh	low Dark Surface (TF12)				
2.5 cm Mucky Peat or Peat (S2) (LRR G, H) High Plains Depressions (F16) [3] Indicators of must be present 5 cm Mucky Peat or Peat (S3) (LRR F) MLRA 72 & 73 of LRR H) Depth (inches): estrictive Layer (if present): Type: None observed Depth (inches): pil Remarks: Difference Secondary Indicators: rimary Indicators (minimum of one required; check all that apply) Secondary Indicators Surface Water (A1) Salt Crust (B11) Surface Soit High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Ve Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Pa Water Marks (B1) Dry-Season Water Table (C2) Oxidized Rh	lain in soil remarks)				
Image: Secondary Indicators: rimary Indicators (minimum of one required; check all that apply) Surface Water (A1) Surface Water Table (A2) Augustic Invertebrates (B13) Staturation (A3) Water Marks (B1)	[3] Indicators of hydrophytic vegetation and wetland hydrolo				
astrictive Layer (if present): Type: None observed Depth (inches): bil Remarks: Depth (inches): Depth (inches): /DROLOGY VDROLOGY Secondary Indicators: imary Indicators (minimum of one required; check all that apply) Secondary Indicators (B11) Surface Water (A1) Salt Crust (B11) Surface Soit High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Ve Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Pair (C2) Water Marks (B1) Dry-Season Water Table (C2) Oxidized Rh	ent, unless disturbed or problematic.				
oil Remarks: YDROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one required; check all that apply) Surface Water (A1) Surface Water (A1) High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Ve Saturation (A3) Water Marks (B1)					
rimary Indicators (minimum of one required; check all that apply) Secondary Ind Surface Water (A1) Salt Crust (B11) Surface Soit High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Ve Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Pa Water Marks (B1) Dry-Season Water Table (C2) Oxidized Rh					
Surface Water (A1) Salt Crust (B11) Surface Soit High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Ve Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Pa Water Marks (B1) Dry-Season Water Table (C2) Oxidized Rh					
High Water Table (A2) Aquatic Invertebrates (B13) Sparsely Ve Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Pa Water Marks (B1) Dry-Season Water Table (C2) Oxidized Rh	dicators (minimum of two required)				
Saturation (A3) Hydrogen Sulfide Odor (C1) Drainage Particular Water Marks (B1) Dry-Season Water Table (C2) Oxidized Rh	oil Cracks (B6)				
Water Marks (B1) Dry-Season Water Table (C2) Oxidized Rh	/egetated Concave Surface (B8)				
	Patterns (B10)				
] Sediment Deposits (B2)	Rhizospheres on Living Roots (where tilled) (C3)				
	urrows (C8)				
] Drift Deposits (B3)	Visible on Aerial Imagery (C9)				
] Algal Mat or Crust (B4) Presence of Reduced Iron (C4)	ic Position (D2)				
] Iron Deposits (B5) Thin Muck Surface (C7) 🖌 FAC-Neutra	FAC-Neutral Test (D5)				
Inundation Visible on Aerial Imagery (B7)	ve Hummocks (D7) (LRR F)				
Water-Stained Leaves (B9)					
	fors of wetland hydrology present? <u>Yes</u>				
	be Recorded Data:				
/ater table present? Water Table Depth (inches): 9					
aturation present? (includes capillary fringe) V Saturation Depth (inches): 0					

Project/Site:	Upper M	aple Si	<u>te 2A</u>		Applicant/C	Owner:	City/County:	Pilsbury/ B	arnes	State:	<u>ND</u>	Sampling Date:	<u>09/18/17</u>
Land Form: Subregion (LRR).		_	- la - d		Latitude:	21 <i>ief:</i> <u>Convex</u> <u>5218021 mN</u>	Township: Slope %: Longitude:	<u>2-5</u> S 593180 mE	Soil Map U	Datum:	e: <u>G523</u> <u>UTM, N/</u>	Sampling Point: A, Lowe-Fluvaqu AD83, meters	
Cowardin Classifi Are climatic/hydro			<u>pland</u> on the site	typical for this		9 Classification: <u>Upland</u> ar? Yes (If no, expl	ain in remarks)				ssification primary):	<i>:</i> <u>Upland</u> Upland	
Are vegetation Are vegetation	<u>Yes</u> <u>No</u>	Soil Soil	<u>No</u> <u>No</u>	Hydrology Hydrology	<u>No</u>	significantly disturbed? naturally problematic?	Are "normal circumstance present?	Yes	Eggers & Eggers &	& Reed (& Reed (secondary	/):	

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Hydric soil present?	<u>No</u> No	General Remarks (explain any answers	upland point for MJS2-A = W14
Indicators of wetland hydrology present?	No	if needed):	
Is the sampled area within a wetland?	<u>No</u>	lf yes, optional Wetla	and Site ID:

VEGETATION

	<u>Tree Stratum</u>	(Plot Size:	<u>30 ft</u>)	<u>Absolute</u> <u>% Cover</u>	<u>Dominant</u> Species?	<u>Indicator</u> <u>Status</u>	50/20 Thresholds: Tree Stratum Sapling/Shrub Stra	tum		<u>20%</u> 0 0	<u>50%</u> 0 0
1.					0			Herb Stratum	um		27.4	68.5
2.					0			Woody Vine Stratu	m		0	0
3. 4.					0			Dominance Test W	orksheet:			
4.				Total Cover:	0			Number of Domina				
	Sapling/Shrub Stratum	(Plot Size:	15#		<u>v</u>			That Are OBL, FAC			0 (A)	
1.	Saping/Sinus Stratum	(FIOT 5126.	<u>15 II</u>	,	0			Total Number of Do			2 (B)	
1. 2.					0			Species Across All	Strata:		2 (D)	
3.					0			Percent of Dominal That Are OBL, FAC		0.0	0% (A/E)
4.					0							-
5.					0			Prevalence Index W	orksheet:			
				Total Cover:	<u>0</u>			Total % Cov	er of:		Multiply by	:
	Herb Stratum	(Plot Size:	<u>5 ft</u>)				OBL Species	0	X 1		0
1.	Bromus arvensis				60	Yes	FACU	FACW Species	5	X 2		10
2.	Solidago canadensis				30	Yes	FACU	FAC Species	2	Х З		6
3.	Bromus inermis				10	No	UPL	FACU Species	110	X 4	4	40
4.	Cirsium arvense				10	No	FACU	UPL Species	20	X 5	-	00
5.	Glycyrrhiza lepidota				10	No	FACU	Column Totals:	137	(A)	į	556 (B)
6.	Symphoricarpos occidental	is			10	No	UPL		alence Index =	B/A =	4	.06
7. 8.	Spartina pectinata Sonchus arvensis				5	No No	FACW FAC	Hydrophytic Vegeta	tion Indicators:			
0.	Solicitus alverisis			Total Cover:		NU	FAC		st for Hydroph		ntion	
	Woody Vine Stratum	(Plot Size:	30 ff	10101 00101.	<u>137</u>			II ·	nce Test is >509			
	Woody Ville Stratum	(1 101 0120.	<u>00 n</u>	/				No Prevalen	ce Index ≤ 3.0	[1]		
1. 2.					0				ogical Adaptati			orting data
۷.				Total Cover:	0				ation remarks o atic Hydrophyt			(in)
% •	are Ground in Herb Stratum		0		-		0	[1] Indicators of hydric	soil & wetland hy	-		
Veg	etation Remarks: (include p	hoto number	s here c	or on a separate s	heet)			Hydrophytic vegetati	on present?	<u>No</u>		

Depth Matrix		document the indicator or o	confirm th lox Featu		of indicators)				
(inches) Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks		
0 - 10 10YR 3/2	100					Loam	Dry; no redox		
10 - 14 10YR 3/2	14 10YR 3/2 98 10YR 4/2				М	Loam	Dry		
14 - 20 10YR 4/2					Loam	Dry; no redox			
20 - 24 2.5Y 6/3				Loam	Dry; no redox				
ype: C=Concentration, D=Depletion, F	M=Reduce	d Matrix, CS=Covered or Co	oated San	d Grains	[2] Location:	PL=Pore Lining, M=Matr	ix.		
ic Soil Indicators: (applicable to all LF	Rs, unless	otherwise noted)			Ind	icators for Problematic H	lydric Soils [3]:		
listosol (A1)			eyed Matr	ix (S4)		1 cm Muck (A9) (LRR I, J)			
listic Epipedon (A2)		Sandy Re	·	()	_	Coast Prairie Redox (A16)			
Black Histic (A3)			Matrix (S6)		Dark Surface (S7) (LRR G	. ,		
Hydrogen Sulfide (A4)		_	ucky Mine				'' F16) (LRR H outside MLRA 72 & 7		
Stratified Layers (A5) (LRR F)			leved Mati			Reduced Vertic (F18)			
			·	()	_				
1 cm Muck (A9) (LRR F, G, H)			Matrix (F3	,		Red Parent Material (F21)			
Depleted Below Dark Surface (A11)			ark Surfac			Very Shallow Dark Surfac			
Thick Dark Surface (A12)			Dark Surf			Other (explain in soil rema	arks)		
Sandy Mucky Mineral (S1)	())		epressions		[3]	Indicators of hydrophytic	c vegetation and wetland hydrold		
			and the second						
2.5 cm Mucky Peat or Peat (S2) (LRR G, I	(1)	High Plain			mu	st be present, unless dis	turbed or problematic.		
2.5 cm Mucky Peat or Peat (S2) (LRR G, I 5 cm Mucky Peat or Peat (S3) (LRR F)		High Plain (MLRA 72			mu	st be present, unless dis	turbed or problematic.		
5 cm Mucky Peat or Peat (S3) (LRR F)	None observe	(MLRA 72			mus Depth (i	•	turbed or problematic. Hydric soil present?		
5 cm Mucky Peat or Peat (S3) (LRR F)	·	(MLRA 72				•			
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type:	·	(MLRA 72				•			
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: N Remarks:	·	(MLRA 72				•			
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: No. 10 Remarks: DROLOGY	None observe	(MLRA 72			Depth (i	•	Hydric soil present?		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: nary Indicators (minimum of one require	None observe	(MLRA 72 ed Il that apply)	2 & 73 of L		Depth (i	inches):	Hydric soil present?		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: nary Indicators (minimum of one require Surface Water (A1)	None observe	(MLRA 72 ed Il that apply)	2 & 73 of L	.RR H)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6)	Hydric soil present?		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: nary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2)	None observe	(MLRA 72 ed Il that apply)	2 & 73 of L t (B11) nvertebrat	RR H)	Depth (a	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conce	Hydric soil present?		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: nary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3)	None observe	(MLRA 72 ed Il that apply) Salt Crus Aquatic li Hydrogei	t (B11) nvertebrat	.RR H) es (B13) Odor (C1)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conca Drainage Patterns (B10)	Hydric soil present?		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: nary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	None observe	(MLRA 72 ed Il that apply) Salt Crus Aquatic li Hydrogei Dry-Seas	t (B11) nvertebrat n Sulfide C con Water	.RR H) es (B13) Ddor (C1) Table (C2)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conce Drainage Patterns (B10) Oxidized Rhizospheres on	Hydric soil present?		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: nary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3)	None observe	(MLRA 72 ed Il that apply) Salt Crus Aquatic li Hydrogei Dry-Seas Oxidized	t (B11) nvertebration soulfide Communications Rhizospho	.RR H) es (B13) Ddor (C1) Table (C2) eres on Livin,	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conca Drainage Patterns (B10)	Hydric soil present?		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: nary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	None observe	(MLRA 72 ed Il that apply) Salt Crus Aquatic li Aquatic li Hydrogei Dry-Seas Oxidized Roots (wi	t (B11) nvertebrat n Sulfide C con Water Rhizosphi here not ti	.RR H) es (B13) Odor (C1) Table (C2) eres on Livin lled) (C3)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conce Drainage Patterns (B10) Oxidized Rhizospheres on Crayfish Burrows (C8) Saturation Visible on Aeria	Hydric soil present? num of two required) ave Surface (B8) Living Roots (where tilled) (C3) al Imagery (C9)		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY Hand Hydrology Indicators: mary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	None observe	(MLRA 72 ed Il that apply) Salt Crus Aquatic li Aquatic li Hydroger Dry-Seas Oxidized Roots (wi Presence	t (B11) nvertebrat n Sulfide C con Water Rhizospho here not til	.RR H) es (B13) Ddor (C1) Table (C2) eres on Livin, led) (C3) ed Iron (C4)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conce Drainage Patterns (B10) Oxidized Rhizospheres on Crayfish Burrows (C8)	Hydric soil present? num of two required) ave Surface (B8) Living Roots (where tilled) (C3) al Imagery (C9)		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	None observe	(MLRA 72 ed II that apply) Salt Crus Aquatic li Hydroger Dry-Seas Oxidized Roots (wi Presence Thin Muc	2 & 73 of L 2 & 73 of L t (B11) nvertebrat n Sulfide C con Water Rhizosphi here not tii o of Reduc k Surface	RR H) es (B13) Odor (C1) Table (C2) eres on Livin, lled) (C3) ed Iron (C4) (C7)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conce Drainage Patterns (B10) Oxidized Rhizospheres on Crayfish Burrows (C8) Saturation Visible on Aeria	Hydric soil present? num of two required) ave Surface (B8) Living Roots (where tilled) (C3) al Imagery (C9)		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY Hand Hydrology Indicators: mary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	None observe	(MLRA 72 ed II that apply) Salt Crus Aquatic li Hydroger Dry-Seas Oxidized Roots (wi Presence Thin Muc	t (B11) nvertebrat n Sulfide C con Water Rhizospho here not til	RR H) es (B13) Odor (C1) Table (C2) eres on Livin, lled) (C3) ed Iron (C4) (C7)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conca Drainage Patterns (B10) Oxidized Rhizospheres on Crayfish Burrows (C8) Saturation Visible on Aeria Geomorphic Position (D2)	Hydric soil present? num of two required) ave Surface (B8) Living Roots (where tilled) (C3) al Imagery (C9)		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY land Hydrology Indicators: mary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7)	None observe	(MLRA 72 ed II that apply) Salt Crus Aquatic li Hydroger Dry-Seas Oxidized Roots (wi Presence Thin Muc	2 & 73 of L 2 & 73 of L t (B11) nvertebrat n Sulfide C con Water Rhizosphi here not tii o of Reduc k Surface	RR H) es (B13) Odor (C1) Table (C2) eres on Livin, lled) (C3) ed Iron (C4) (C7)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conce Drainage Patterns (B10) Oxidized Rhizospheres on Crayfish Burrows (C8) Saturation Visible on Aeria Geomorphic Position (D2) FAC-Neutral Test (D5)	Hydric soil present? num of two required) ave Surface (B8) Living Roots (where tilled) (C3) al Imagery (C9)		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: nary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5)	None observe	(MLRA 72 ed II that apply) Salt Crus Aquatic li Hydroger Dry-Seas Oxidized Roots (wi Presence Thin Muc	2 & 73 of L 2 & 73 of L t (B11) nvertebrat n Sulfide C con Water Rhizosphi here not tii o of Reduc k Surface	RR H) es (B13) Odor (C1) Table (C2) eres on Livin, lled) (C3) ed Iron (C4) (C7)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conce Drainage Patterns (B10) Oxidized Rhizospheres on Crayfish Burrows (C8) Saturation Visible on Aeria Geomorphic Position (D2) FAC-Neutral Test (D5)	Hydric soil present? num of two required) ave Surface (B8) a Living Roots (where tilled) (C3) al Imagery (C9) D7) (LRR F)		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	None observe	(MLRA 72 ed II that apply) Salt Crus Aquatic li Hydroger Dry-Seas Oxidized Roots (wi Presence Thin Muc	2 & 73 of L 2 & 73 of L t (B11) nvertebrat n Sulfide C son Water Rhizosph here not til e of Reduc k Surface plain in re	RR H) es (B13) Odor (C1) Table (C2) eres on Livin, lled) (C3) ed Iron (C4) (C7)	Depth (i	inches):	Hydric soil present? hum of two required) ave Surface (B8) Living Roots (where tilled) (C3) al Imagery (C9) D7) (LRR F) hydrology present?		
5 cm Mucky Peat or Peat (S3) (LRR F) trictive Layer (if present): Type: M Remarks: DROLOGY tland Hydrology Indicators: mary Indicators (minimum of one requir Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) d Observations:	None observe	(MLRA 72 ed Il that apply) Salt Crus Aquatic li Hydroger Dry-Seas Oxidized Roots (wi Presence Thin Muc Other (ex	2 & 73 of L 2 & 73 of L t (B11) nvertebrat n Sulfide C con Water Rhizosphi here not til e of Reduc k Surface plain in re plain in re	RR H) es (B13) Odor (C1) Table (C2) eres on Livin, lled) (C3) ed Iron (C4) (C7)	Depth (i	inches): condary Indicators (minin Surface Soil Cracks (B6) Sparsely Vegetated Conca Drainage Patterns (B10) Oxidized Rhizospheres on Crayfish Burrows (C8) Saturation Visible on Aeria Geomorphic Position (D2) FAC-Neutral Test (D5) Frost-Heave Hummocks (in Indicators of wetland	Hydric soil present? hum of two required) ave Surface (B8) Living Roots (where tilled) (C3) al Imagery (C9) D7) (LRR F) hydrology present?		

Project/Site: Upper Maple Site 2A	Applicant/Owner:	City/County: <u>Pilsbury/ Barnes</u> State: <u>ND</u> Sampling Date: <u>09/19/17</u>
Investigator(s): <u>MJS2</u>	Section: <u>9</u>	Township: 142N Range: 56W Sampling Point: MJS2-SP-03
Land Form: Depression	Local Relief: Concave	Slope %: 1-2 Soil Map Unit Name: G651E, Udarents loamy, abonded gravel pits
Subregion (LRR): <u>F</u>	Latitude: 5220307 mN	Longitude: <u>592194 mE</u> Datum: UTM, NAD83, meters
Cowardin Classification: <u>PEM1C</u>	Circular 39 Classification: Type	
Are climatic/hydrologic conditions on the site ty		p, explain in remarks) Eggers & Reed (primary): Shallow Marsh
		Are "normal <u>Yes</u> Eggers & Reed (secondary):
Are vegetation Yes Soil No	Hydrology <u>No</u> significantly disturbed	? circumstances" Eggers & Reed (tertiary):
Are vegetation <u>No</u> Soil <u>No</u>	Hydrology <u>No</u> naturally problematic?	present? Eggers & Reed (quaternary):
SUMMARY OF FINDINGS - Atta	hch site map showing sampli	ing point locations, transects, important features, etc.
Hydrophytic vegetation present?	Yes General Remarks	
Hydric soil present?	Yes (explain any answers	
Indicators of wetland hydrology present?	Yes if needed):	
Is the sampled area within a wetland?	Yes If yes, optional Wetland Site ID:	<u>MJS2-O = W52</u>
VEGETATION		
		minant Indicator 50/20 Thresholds: 20% 50%
Tree Stratum (Plot Size:	0/ 0	<u>minant Indicator</u> <u>50/20 Thresholds:</u> <u>20%</u> <u>50%</u> <u>acies? Status</u> Tree Stratum 0 0
<u>Tree Stratum</u> (Fist Size.		Sapling/Shrub Stratum 0 0
1.	0	Herb Stratum 18 45
2.	0	Woody Vine Stratum 0 0
3.	0	Dominance Test Worksheet:
4.		
Sapling/Shrub Stratum (Plot Size:	Total Cover: <u>0</u> 15 ft)	Number of Dominant Species That Are OBL, FACW or FAC:3(A)
1.		Total Number of Dominant Species Across All Strata: 3 (B)
2.		
3.		Percent of Dominant Species That Are OBL, FACW or FAC: 100.00% (A/B)
4.		
5.	0	Prevalence Index Worksheet:
	Total Cover: 0	Total % Cover of: Multiply by:
Herb Stratum (Plot Size:	<u>5 ft</u>)	OBL Species 90 X 1 90
1. Typha latifolia		Yes OBL FACW Species 0 X 2 0
2. Typha angustifolia		Yes OBL FAC Species 0 X 3 0
3. Sparganium emersum		Yes OBL FACU Species 0 X 4 0
4.	0	UPL Species X 5
5.	0	
6.	0	Column Totals: 90 (A) 90 (B) Prevalence Index = B/A = 1.00
7.	0	
8.	0	Hydrophytic Vegetation Indicators:
	Total Cover: <u>90</u>	Yes Rapid Test for Hydrophytic Vegetation
<u>Woody Vine Stratum</u> (Plot Size:	<u>30 ft</u>)	Yes Dominance Test is >50% Yes Prevalence Index ≤ 3.0 [1]
1.	0	No Morphological Adaptations [1] (provide supporting data
2.	0	in vegetation remarks or on a separate sheet)
	Total Cover: 0	No Problematic Hydrophytic Vegetation [1] (Explain)
% Bare Ground in Herb Stratum:	10 % Sphagnum Moss Cover:	0 [1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.
Vegetation Remarks: (include photo numbe	rs here or on a separate sheet)	Hydrophytic vegetation present? Yes
Salix tree - 30%.		

WETLAND DETERMINATION DATA FORM - Great Plains Region

SOIL		S	ampling Point: <u>MJS2-SP-</u>
Profile Description: (Describe to the depth need	ed to document the indicator or confirm the abscence (of indicators).	
Depth Matrix	Redox Features		
(inches) Color (moist)	% Color (moist) % Type [1]	Loc [2] Texture	Remarks
1			
2			
3			
4			
5			
6			
[1] Type: C=Concentration, D=Depletion, RM=Re	educed Matrix, CS=Covered or Coated Sand Grains [[2] Location: PL=Pore Lining, M=Mat	rix.
Hydric Soil Indicators: (applicable to all LRRs, u	nless otherwise noted)	Indicators for Problematic	Hydric Soils [3]:
Histosol (A1)	Sandy Gleyed Matrix (S4)	1 cm Muck (A9) (LRR I, J)
Histic Epipedon (A2)	Sandy Redox (S5)	Coast Prairie Redox (A10) (IRREGH)
Black Histic (A3)	Stripped Matrix (S6)	Dark Surface (S7) (LRR	
Hydrogen Sulfide (A4)	Loamy Mucky Mineral (F1)		(F16) (LRR H outside MLRA 72 & 73)
Stratified Layers (A5) (LRR F)	Loamy Gleyed Matrix (F2)	Reduced Vertic (F18)	
1 cm Muck (A9) (LRR F, G, H)	Depleted Matrix (F3)	Red Parent Material (F21)
Depleted Below Dark Surface (A11)	Redox Dark Surface (F6)	Very Shallow Dark Surfa	ce (TF12)
Thick Dark Surface (A12)	Depleted Dark Surface (F7)	✓ Other (explain in soil rem	arks)
Sandy Mucky Mineral (S1)	Redox Depressions (F8)		
2.5 cm Mucky Peat or Peat (S2) (LRR G, H)			c vegetation and wetland hydrology
5 cm Mucky Peat or Peat (S3) (LRR F)	High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	must be present, unless di	sturbed or problematic.
Restrictive Layer (if present): Type:		Depth (inches):	Hydric soil present? <u>Yes</u>
Soil Remarks: Hydric soils assumed due to domi	inance of OBL vegetation and primary hydrology indicators.		
Wetland Hydrology Indicators:	eck all that apply)	Secondary Indicators (mini	mum of two required)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch	_		mum of two required)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch 	Salt Crust (B11)	Surface Soil Cracks (B6)	
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) I High Water Table (A2)	Salt Crust (B11) Aquatic Invertebrates (B13)	Surface Soil Cracks (B6)	
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2)	 Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) 	Surface Soil Cracks (B6) Sparsely Vegetated Cond Drainage Patterns (B10)	cave Surface (B8)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) I High Water Table (A2)	Salt Crust (B11) Aquatic Invertebrates (B13)	Surface Soil Cracks (B6) Sparsely Vegetated Cond Drainage Patterns (B10)	
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living	Surface Soil Cracks (B6) Sparsely Vegetated Com Drainage Patterns (B10)	cave Surface (B8)
 Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) 	Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2)	Surface Soil Cracks (B6) Sparsely Vegetated Com Drainage Patterns (B10)	cave Surface (B8) n Living Roots (where tilled) (C3)
 Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) 	Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living	Surface Soil Cracks (B6) Sparsely Vegetated Com Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Aer	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)
 Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) 	 Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) 	 Surface Soil Cracks (B6) Sparsely Vegetated Cont Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Aer Geomorphic Position (D2) 	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)
 Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) 	 Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Thin Muck Surface (C7) 	 Surface Soil Cracks (B6) Sparsely Vegetated Cond Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Aer Geomorphic Position (D2 FAC-Neutral Test (D5) 	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)
 Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) 	 Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) 	 Surface Soil Cracks (B6) Sparsely Vegetated Cont Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Aer Geomorphic Position (D2) 	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)
 Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) 	 Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Thin Muck Surface (C7) 	 Surface Soil Cracks (B6) Sparsely Vegetated Cond Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Aer Geomorphic Position (D2 FAC-Neutral Test (D5) 	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	 Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Thin Muck Surface (C7) Other (explain in remarks) 	 Surface Soil Cracks (B6) Sparsely Vegetated Cond Drainage Patterns (B10) Oxidized Rhizospheres of Crayfish Burrows (C8) Saturation Visible on Aer Geomorphic Position (D2 FAC-Neutral Test (D5) Frost-Heave Hummocks 	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	 Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Thin Muck Surface (C7) 	 Surface Soil Cracks (B6) Sparsely Vegetated Cond Drainage Patterns (B10) Oxidized Rhizospheres of Crayfish Burrows (C8) Saturation Visible on Aer Geomorphic Position (D2 FAC-Neutral Test (D5) Frost-Heave Hummocks 	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)) (D7) (LRR F) I hydrology present? <u>Yes</u>
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) Isurface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	 Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Thin Muck Surface (C7) Other (explain in remarks) 	Surface Soil Cracks (B6) Sparsely Vegetated Com Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Aer ✓ Geomorphic Position (D2 ✓ FAC-Neutral Test (D5) Frost-Heave Hummocks	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)) (D7) (LRR F) I hydrology present? <u>Yes</u>
 High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) 	Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Thin Muck Surface (C7) Other (explain in remarks)	Surface Soil Cracks (B6) Sparsely Vegetated Com Drainage Patterns (B10) Oxidized Rhizospheres o Crayfish Burrows (C8) Saturation Visible on Aer ✓ Geomorphic Position (D2 ✓ FAC-Neutral Test (D5) Frost-Heave Hummocks	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)) (D7) (LRR F) I hydrology present? <u>Yes</u>
Wetland Hydrology Indicators: Primary Indicators (minimum of one required; ch Surface Water (A1) Image: Surface Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9) Field Observations: Surface water present? Water table present? Saturation present? (includes capillary fringe)	Salt Crust (B11) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Thin Muck Surface (C7) Other (explain in remarks) Surface Water Depth (inches): Water Table Depth (inches): 6	□ Surface Soil Cracks (B6) □ Sparsely Vegetated Com □ Drainage Patterns (B10) □ Oxidized Rhizospheres o □ Crayfish Burrows (C8) □ Saturation Visible on Aer ✔ Geomorphic Position (D2 ✔ FAC-Neutral Test (D5) □ Frost-Heave Hummocks Indicators of wetland Describe Recorded	cave Surface (B8) n Living Roots (where tilled) (C3) ial Imagery (C9)) (D7) (LRR F) I hydrology present? <u>Yes</u>

Appendix B

Site Photographs



Photo 1: Photo of shallow marsh community near sampling point MJS2-SP-1. Taken on September 18, 2017.



Photo 2: Photo of the shallow marsh community in Wetland XX along the Maple River tributary . Taken on September 19, 2017.



Photo 3: Photo of shallow marsh community located in a roadside ditch. Taken on September 18, 2017.



Photo 4: Photo of shallow marsh community located in enclosed depression in an agriculture field. Taken on September 18, 2017.



Photo 5: Photo of fresh (wet) community outside of shallow marsh community located along the tributary to the Maple River. Taken on September 18, 2017.



Photo 6: Photo of an enclosed fresh (wet) meadow community in wetland XX. Taken on September 19, 2017.



Photo 7: Photo of shrub-carr community in wetland XX. Taken on September 19, 2017.



Photo 8: Photo of seasonally flooded basin in a soy bean field. Taken on September 19, 2017.



Photo 9: Photo of typical upland grassland community adjacent to Wetland XX. Taken on September 18, 2017.



Photo 10: Photo of typical upland agriculture field adjacent in the study area. Taken on September 18, 2017.

Appendix C

Aerial Image Review

Upper Maple Site 2A		Image Interpretation															
Imagery Date	Image Source	Climate Condition (wet, dry, normal)	0	1	2	3	4	5	6 (MJS2-G)	7 (MJS2-F)	8 (MJS2-E)	9 (MJS2-D)	10	11	12	13	14 (MJS2-A)
8/5/2016	NDGISHUB_WMS	normal	DO	NV	NV	NV	NV	NV	DO	DO, SS, SW	DO, SS	DO, SS, AP	DO	DO	DO	NV	WS, NC, SS, SW, A
9/26/2015	NDGISHUB_WMS	normal	NV	NV	NV	NV	NV	NV	SS	AP, CS	WS, AP, CS	AP, WS	SS	AP	NV	NV	WS, NC, SS, SW, A
8/12/2014	NDGISHUB_WMS	normal	WS, AP	WS	NV	NV	WS	DO	NC, AP	DO, AP	SS, DO, AP	WS, AP	WS, DO, SS	DO	DO	CS	WS, NC, SS, SW, A
7/27/2012	NDGISHUB_WMS	dry	NV	NV	NV	AP	NV	NV	NC, AP	NC, AP, WS, SS	SS, WS, AP, NC	SS, AP, NC	WS, SS, NC	NC, SS	NC, SS	NV	WS, NC, SS, SW, A
7/8/2010	NDGISHUB_WMS	dry	NV	NV	NV	SS	NV	DO	CS	DO, SS, SW	DO, SS	DO, SS, AP	WS, DO, SS	DO	SS	DO	WS, SS, SW
8/18/2009	NDGISHUB_WMS	normal	NV	NV	NV	NV	NV	NV	NV	SS	SS	SS, AP, NC	WS	NV	WS	NV	WS, SS, SW
7/8/2006	NDGISHUB_WMS	normal	NV	NV	NV	NV	NV	NV	WS	NV	SS	SS, AP, NC	WS	NV	SS	NV	WS, SS, SW
6/20/2005	NDGISHUB_WMS	normal	NV	NV	NV	NV	NV	SS	SS	NV	SS	SS	SS	SS	SS	NV	WS, SS, SW
8/19/2004	NDGISHUB_WMS	normal	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	WS, SS
6/29/2003	NDGISHUB_WMS	normal	SS	SS	NV	WS	NV	SS	WS, SS	WS	WS, SS	WS	WS	WS	WS	WS	WS, SS, SW
9/17/1997	NDGISHUB_WMS	dry	NV	NV	NV	NV	NV	NV	WS	WS	WS	WS	WS	NV	NV	NV	WS, SS, SW
number of images rega	ardless of climate conditi	ons	1	11 11	. 11	. 11	. 11	. 11	. 11	. 11	. 11	. 11	. 11	. 11	11	11	11
number of wet signatu	ires - all imagery regardle	ess of climate conditions		3 2	2 0	3	1		4 9	8	10	10	10) 7	8	3	3 11
percent of wet signatu	ires - all imagery regardle	ss of climate conditions	27	% 18%	0%	27%	9%	36%	82%	73%	91%	91%	91%	64%	73%	27%	5 100%
number of imagers wit	th normal climate conditi	ons		8 8	8 8	8	8 8	8 8	8 8	8	8 8	8	8 8	8 8	8	8	8 8
number of wet signatu	ires under normal climat	e condition		3 2	0	1	. 1	1	6	5 5	5 7	7 7	7	5	6	2	2 8
percent of wet signatu	ires under normal climate	e condition	38	% 25%	0%	13%	13%	38%	5 75%	63%	88%	88%	88%	63%	75%	25%	5 100%
NWI			no	no	no	no	no	no	no	no	no	no	PEM1A	PEM1A	PEM1A	PEM1A	PEM1C/Cx
			predominantly			predominantly	predominantly	predominantly		predominantly	predominantly	predominantly	predominantly non	1	predominantly	predominantly	predominantly
hydric soil			non hydric	not hydric	not hydric	non hydric	non hydric	non hydric	not hydric	non hydric	non hydric	non hydric	hydric	not hydric	hydric	hydric	hydric
													field visit in 2017				
													indicted not				
													wetland at				
field verified			no *	no *	no *	no *	no *	no *	yes	yes	yes	yes	northeast corner	no *	no *	no *	yes
			need field					need field								need field	
wetland ?			verification	no	no	no	no	verification	yes	yes	ves	ves	ves	yes	yes	verification	yes

not accessible through corn field

	KEY									
WS - wetland signature	SS - soil wetness signature	CS - crop stress								
NC - not cropped	AP - altered pattern	NV - normal vegetative cover **								
DO - drowned out	SW - standing water	NSS – no soil wetness signature **								
		** Not a wat signature								

** Not a wet signature

Upper Maple Site 2A		Image Interpretation															
Imagery Date	Image Source	Climate Condition (wet, dry, normal)	61 (MJS2-B)	62	46	47	32	44	45	43	49	33	48	19	21	20	22
8/5/2016	NDGISHUB_WMS	normal	WS, NC	WS	NV	SS	NV	NV	NV	WS	NV	SS	NV	DO	DO	DO, SS	WS, SW
9/26/2015	NDGISHUB_WMS	normal	WS, NC	WS, NC, AP	NV	SS	WS	NV	NV	WS	SS	NV	NV	NV	NV	NV	WS, SW
8/12/2014	NDGISHUB_WMS	normal	WS, NC	WS, DO	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS, DO, SS	DO	WS	WS, SW
7/27/2012	NDGISHUB_WMS	dry	WS, NC	WS, NC, AP	WS	WS	WS	WS	WS	WS	WS	WS	WS	NV	SS	WS, DO	WS
7/8/2010	NDGISHUB_WMS	dry	WS	WS, NC	WS	WS	WS	WS	WS	WS	WS	WS	WS	DO	SS	SS	WS
8/18/2009	NDGISHUB_WMS	normal	WS, SS	WS, NC	SS	SS	WS	SS	NV	WS	WS	SS	WS	CS	SS	CS	WS, SW
7/8/2006	NDGISHUB_WMS	normal	WS, SS	WS, NC	WS	WS	WS	NV	NV	WS	NV	NV	NV	SS	SS	SS	WS, SW, SS
6/20/2005	NDGISHUB_WMS	normal	WS	WS, AP	NV	NV	SS	SS	NV	WS	NV	WS	NV	SS	SS	SS	WS
8/19/2004	NDGISHUB_WMS	normal	WS	ws	NV	NV	NV	NV	NV	WS	NV	NV	NV	NV	SS	NV	WS
6/29/2003	NDGISHUB_WMS	normal	WS	WS, AP	NV	NV	NV	NV	NV	WS	NV	NV	NV	NV	WS	WS	WS
9/17/1997	NDGISHUB_WMS	dry	WS	WS, AP	SS	NV	WS	SS	NV	WS	NV	NV	WS	SS	SS	SS	WS
number of images reg	ardless of climate conditi	ons	11	. 11	. 11	. 11	11	. 11	11	. 11	. 11	11	11	11	11	11	1 1:
number of wet signate	ures - all imagery regardle	ess of climate conditions	11	. 11	. 6	5 7	/ 8	6	3	11	. 5	6	5	7	10	9	9 11
percent of wet signate	ures - all imagery regardle	ess of climate conditions	100%	100%	55%	64%	5 73%	55%	27%	100%	45%	55%	45%	64%	91%	82%	6 100%
number of imagers wi	th normal climate condit	ions	8	8 8	8	8 8	8 8	8	8	8 8	8	8	8	8	8	8	8 8
number of wet signati	ures under normal climat	e condition	8	8 8	3	5 5	5 5	3	1	. 8	3	4	2	5	7	6	6 8
percent of wet signate	ures under normal climat	e condition	100%	100%	38%	63%	63%	38%	13%	100%	38%	50%	25%	63%	88%	75%	6 100%
NWI			no	no	no	no	PEM1A	no	no	PFOA	no	no	no	PEM1A	PEM1A	PEM1A	PEM1C/FOA
hydric soil			predominantly non hydric		not hydric	not hydric	not hydric	not hydric	predominantly non hydric	not hydric	not hydric	not hydric	not hydric	predominantly non hydric	predominantly non hydric	predominantly non hydric	not hydric
field verified			yes	no *	no *	no *	no *	no *	no *	no *	no *	no *	no *	no *	no *	no *	yes
					need field			need field			need field	need field					
wetland ?			ves	ves	verification	ves	ves	verification	no	ves	verification	verification	20	ves	ves	ves	ves

 KEY

 WS - wetland signature
 SS - soil wetness signature
 CS - crop stress

 NC - not cropped
 AP - altered pattern
 NV - normal vegetative cover **

 DO - drowned out
 SW - standing water
 NSS - no soil wetness signature **

** Not a wet signature

Upper Maple Site 2A		Image Interpretation															
Imagery Date	Image Source	Climate Condition (wet, dry, normal)	24	25	23	26	27	28	30	17 (MJS2-H)	60 (MJS2-I)	18 (MJS2-C)	37	36	35	38	34
8/5/2016	NDGISHUB_WMS	normal	WS, SS	DO	DO	NV	DO	NV	SS, NC	WS	WS	SS	DO	SW	DO	SW	DO
9/26/2015	NDGISHUB_WMS	normal	WS	NV	NV	NV	NV	NV	NC	WS	SS	WS	NV	NV	NV	NV	NV
8/12/2014	NDGISHUB_WMS	normal	WS, SW, DO	DO	DO	DO	DO	DO	SS, NC	WS	SS	SS	DO	DO	DO	DO	DO
7/27/2012	NDGISHUB_WMS	dry	WS	NV	SS	NV	NV	NV	NC	WS	WS	WS	NV	NV	NV	NV	NV
7/8/2010	NDGISHUB_WMS	dry	DO	NV	NV	NV	DO	DO	NC	SS	SS	WS, SW	NV	WS, DO	DO	DO	DO
8/18/2009	NDGISHUB_WMS	normal	WS	CS	CS	CS	DO	NV	SS, NC	WS, SS	WS	WS, SW	NV	NV	NV	NV	NV
7/8/2006	NDGISHUB_WMS	normal	SS	CS	CS	NV	CS	SS	SS, NC	WS	WS	SS	NV	SS	SS	SS	SS
6/20/2005	NDGISHUB_WMS	normal	SS	CS	CS	NV	NV	NV	WS, NC	SS	SS	WS	SS	SW	SW	SW	SS
8/19/2004	NDGISHUB_WMS	normal	SS	NV	NV	NV	NV	NV	SS, NC	NV	NV	SS	NV	SS	NV	SS	NV
6/29/2003	NDGISHUB_WMS	normal	WS	DO	NV	NV	DO	DO	NC	SS	NV	SS, SW	NV	SS	SS	SS	SS
9/17/1997	NDGISHUB_WMS	dry	WS	DO	SS	SS	SS	NV	NC, AP	WS	WS	WS	NV	SS	NV	NV	NV
number of images reg	ardless of climate condition	ins	1	1 11	11	11	11	. 11	11	L 11	11	11	11	. 11	. 1	.1	11 1
number of wet signati	ures - all imagery regardles	ss of climate conditions	1	1 7	7 7	3	7	4	1 11	10	g	11	3	8	5	6	7
percent of wet signatu	ures - all imagery regardles	s of climate conditions	100%	64%	64%	27%	64%	36%	5 100%	6 91%	82%	100%	27%	73%	55	% 6	4% 55
number of imagers wi	ith normal climate condition	ons		8 8	3 8	8	8	8 8	3 8	8 8	8	8	8	5	3	8	8
0	ures under normal climate			8 6	5 5	2	5	5 3	3 8	3 7	6	8	3	6	j	5	6
percent of wet signatu	ures under normal climate	condition	100%	% 75%	63%	25%	63%	38%	5 100%	6 88%	75%	100%	38%	75%	63	% 7	5% 63
NWI			PEM1A	no	no	no	no	no	no	PEM1C	PEM1C	PEM1Cx	no	no	no	PEM1C	no
			predominantly	predominantly	predominantly	predominantly	predominantly			predominantly	/ predominantly						
hydric soil			non hydric	not hydric	not hydric	non hydric	non hydric	non hydric	non hydric	non hydric	non hydric	non hydric	non hydric				
field verified			no *	no	no	yes	yes	yes	no	no	no	no	no				
								need field					need field				
wetland ?			yes	yes	yes	no	yes	verification	yes	yes	yes	yes	verification	yes	yes	yes	yes

* not accessible through corn field

	KEY									
WS - wetland signature	SS - soil wetness signature	CS - crop stress								
NC - not cropped	AP - altered pattern	NV - normal vegetative cover **								
DO - drowned out	SW - standing water	NSS – no soil wetness signature **								
		** Not a wet signature								

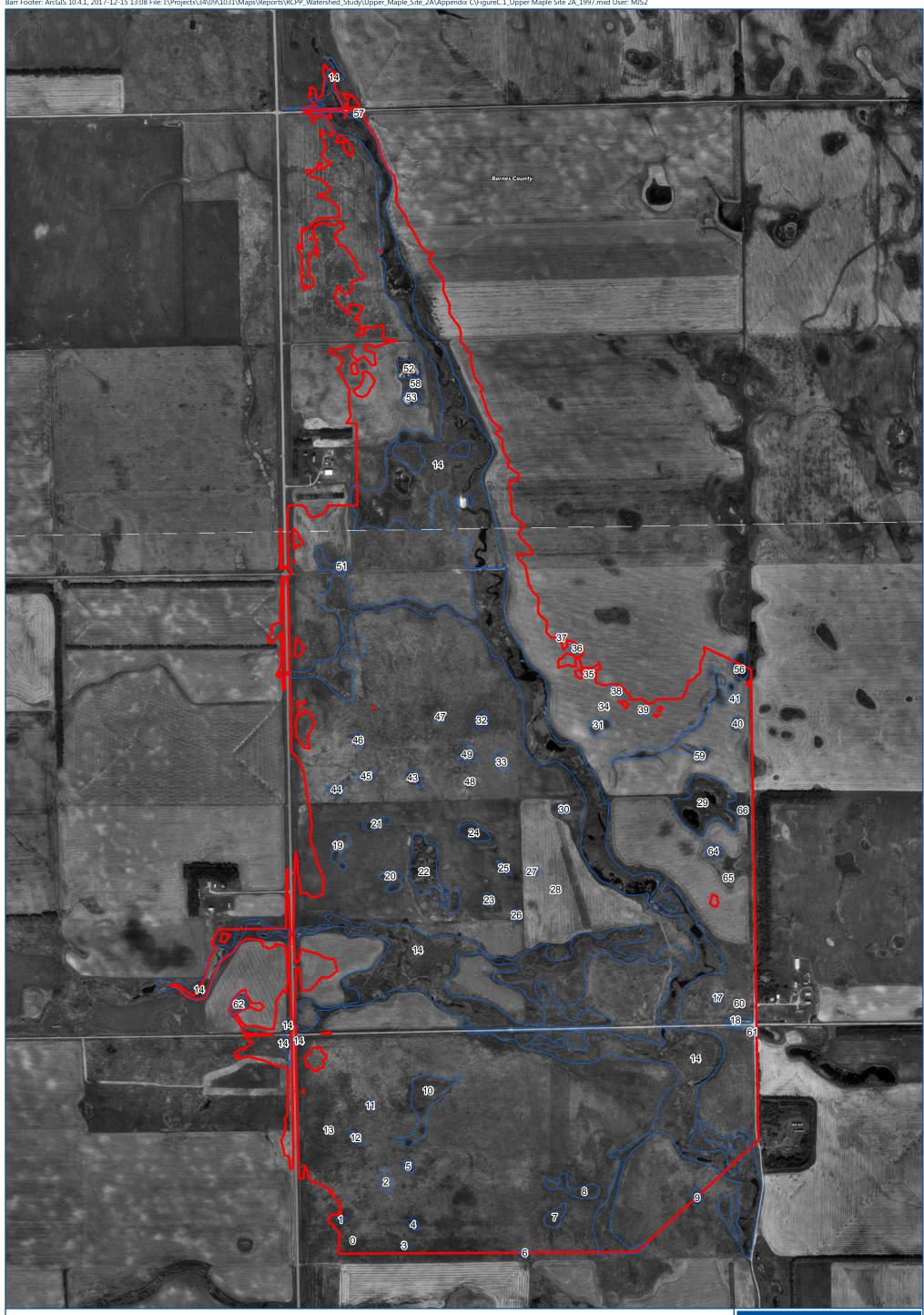
Upper Maple Site 2A		Image Interpretation															
Imagery Date	Image Source	Climate Condition (wet, dry, normal)	39	31	56	41	40	59	29	66	64	65	51 (KSW-B)	52 (MJS2-O)	53 (MJS2-Q)	58 (MJS2-P)	57 (MJS2-N)
8/5/2016	NDGISHUB_WMS	normal	SW	SW	WS, AP, NC, SS	SS, DO	SW	DO, SS	WS, NC, SW, AP	SS	SS	SS	DO	WS	SS, WS	DO	SS
9/26/2015	NDGISHUB_WMS	normal	NV	NV	WS, AP, NC	NV	NV	NV	WS, AP, NC	WS, NC	WS, SS, AP	DO, AP	DO	WS	WS	SS	WS
8/12/2014	NDGISHUB_WMS	normal	DO	DO	WS, AP, NC, SW	DO	DO	DO	WS, AP, NC, SW	WS, NC	WS, NC, AP	NC, AP, SS	DO	WS, SS	WS, SS	WS	SS
7/27/2012	NDGISHUB_WMS	dry	NV	NV	WS, NC	NV	NV	NV	WS, NC, AP, SW	WS, NC	WS, NC, AP	NC, AP	DO	WS	SS	WS	SS
7/8/2010	NDGISHUB_WMS	dry	DO	DO	WS	DO	WS, AP	DO	WS, SW, NC, AP	WS, NC	WS, SS, AP	SS, AP	DO	WS, SS	SS	WS, SS	SS
8/18/2009	NDGISHUB_WMS	normal	NV	DO	WS	DO	DO	DO	WS, SW, NC, AP	WS, NC	WS, NC	WS, NC	DO	WS, SW	WS, SS	SS	WS
7/8/2006	NDGISHUB_WMS	normal	SS	DO	WS	SS	SS	SS, DO	WS, SS	SS	SS	SS	WS	WS	SS	DO	SS
6/20/2005	NDGISHUB_WMS	normal	SS	SS	WS, NC, AP	SS	SS	SS, AP	WS, AP, SS	SS	SS, AP	SS	SS, AP	WS, NC	SS, NC	SS, NC	SS
8/19/2004	NDGISHUB_WMS	normal	SS	SS	NC, AP	SS	SS	SS	WS, AP, SS	NC, SS	NC, AP, SS	NC, AP	DO, AP	WS	SS	DO	NV
6/29/2003	NDGISHUB_WMS	normal	SS	SS	WS, NC	SS	SS	SS	WS, AP, NC, SS	NC	SS, AP	АР	SS	WS, SS, NC, AP	WS, SS, NC, AP	NC, AP	NV
9/17/1997	NDGISHUB_WMS	dry	NV	SS	SS, AP, NC	SS	SS	SS, AP	WS, AP, NC, SW	NC	SS, AP	AP	SS	WS, AP	WS, AP	NC, SS	SS
number of images rega	ardless of climate conditi	ons	1:	1 11	11	. 11	. 11	1 11	1 11	11	11	1	1 11	1	1 11	1 11	11
number of wet signatu	ures - all imagery regardle	ess of climate conditions		7 9	11	. 9	9 9	9 9	9 11	11	11	1	1 11	1	1 11	1 11	9
percent of wet signatu	ures - all imagery regardle	ess of climate conditions	64%	6 82%	100%	82%	82%	6 82%	6 100%	100%	100%	100%	6 100%	5 100%	6 100%	6 100%	82%
number of imagers wit	th normal climate conditi	ons	8	8 8	8	8	8 8	3 8	8 8	8	8		8 8	3 8	8 8	3 8	8 8
number of wet signatu	ures under normal climat	e condition	(6 7	8	3	7 7	7	7 8	8	8		8 8	3 8	8 8	3 8	6 6
percent of wet signatu	ares under normal climate	e condition	75%	6 88%	100%	88%	88%	6 88%	6 100%	100%	100%	100%	6 100%	6 100%	6 100%	6 100%	5 75%
NWI			no	no	PEM1A/C	PEM1A	PEM1A	PEM1A	PEM1C	PEM1C	PEM1C	PEM1A	PEM1Ad	PEM1C	PEM1C	no	no
			predominantly	predominantly	predominantly	predominantly	predominantly	predominantly					predominantly				predominantly
hydric soil			non hydric	non hydric	hydric	non hydric	non hydric	non hydric	partially hydric	partially hydric	partially hydric	partially hydric	hydric	not hydric	not hydric	not hydric	hydric
field verified			no	no		no		no	ves	ves	ves	ves	ves	ves	ves	ves	ves
									,	,	,	,	103	,	,	,	,
			yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
wetland ? * not accessible throug	gh corn field		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	-

* not accessible through corn field

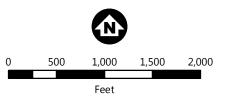
KEY									
WS - wetland signature	SS - soil wetness signature	CS - crop stress							
NC - not cropped	AP - altered pattern	NV - normal vegetative cover **							
DO - drowned out	SW - standing water	NSS – no soil wetness signature **							
		** Not a wat signature							

** Not a wet signature

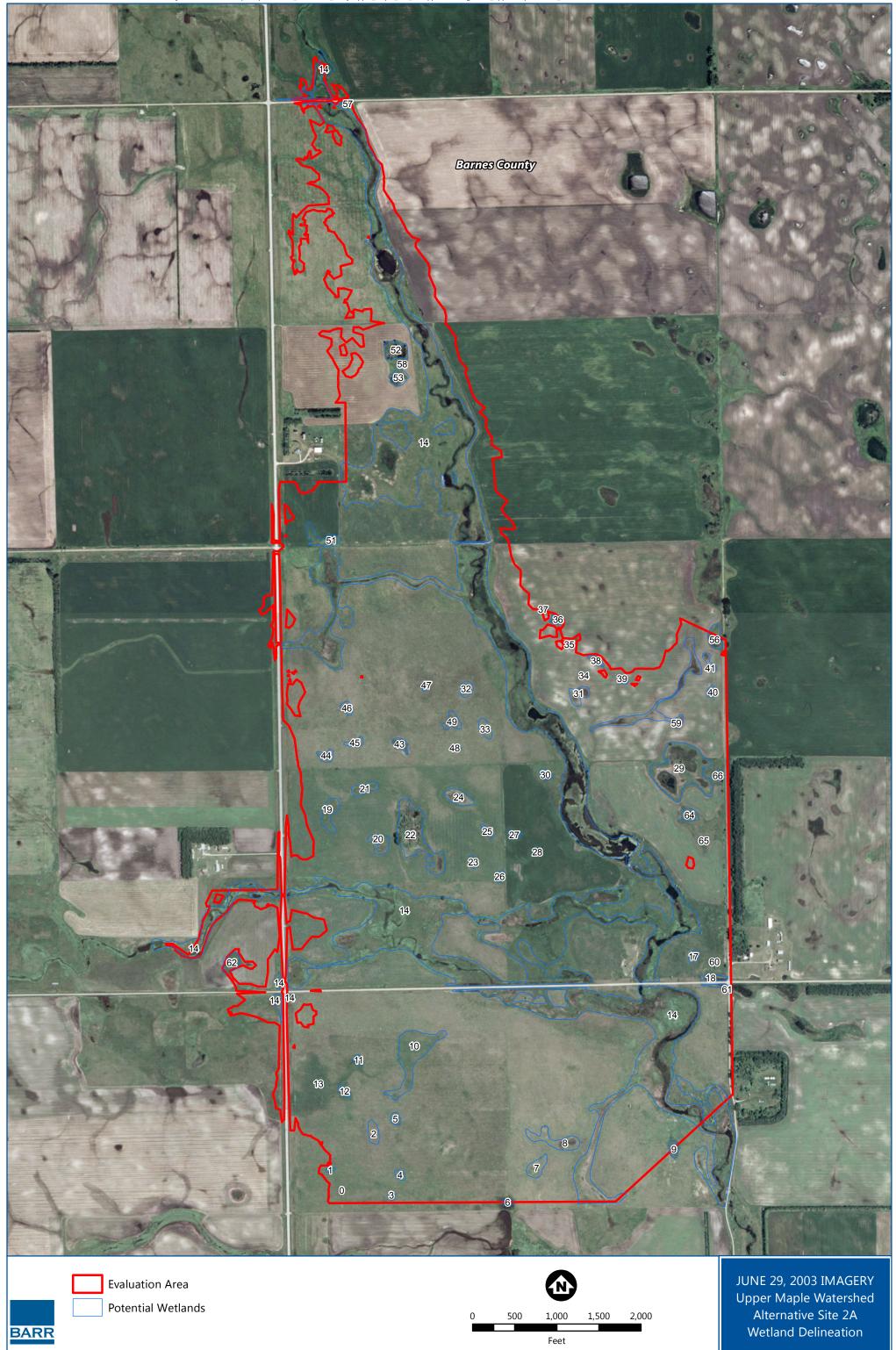




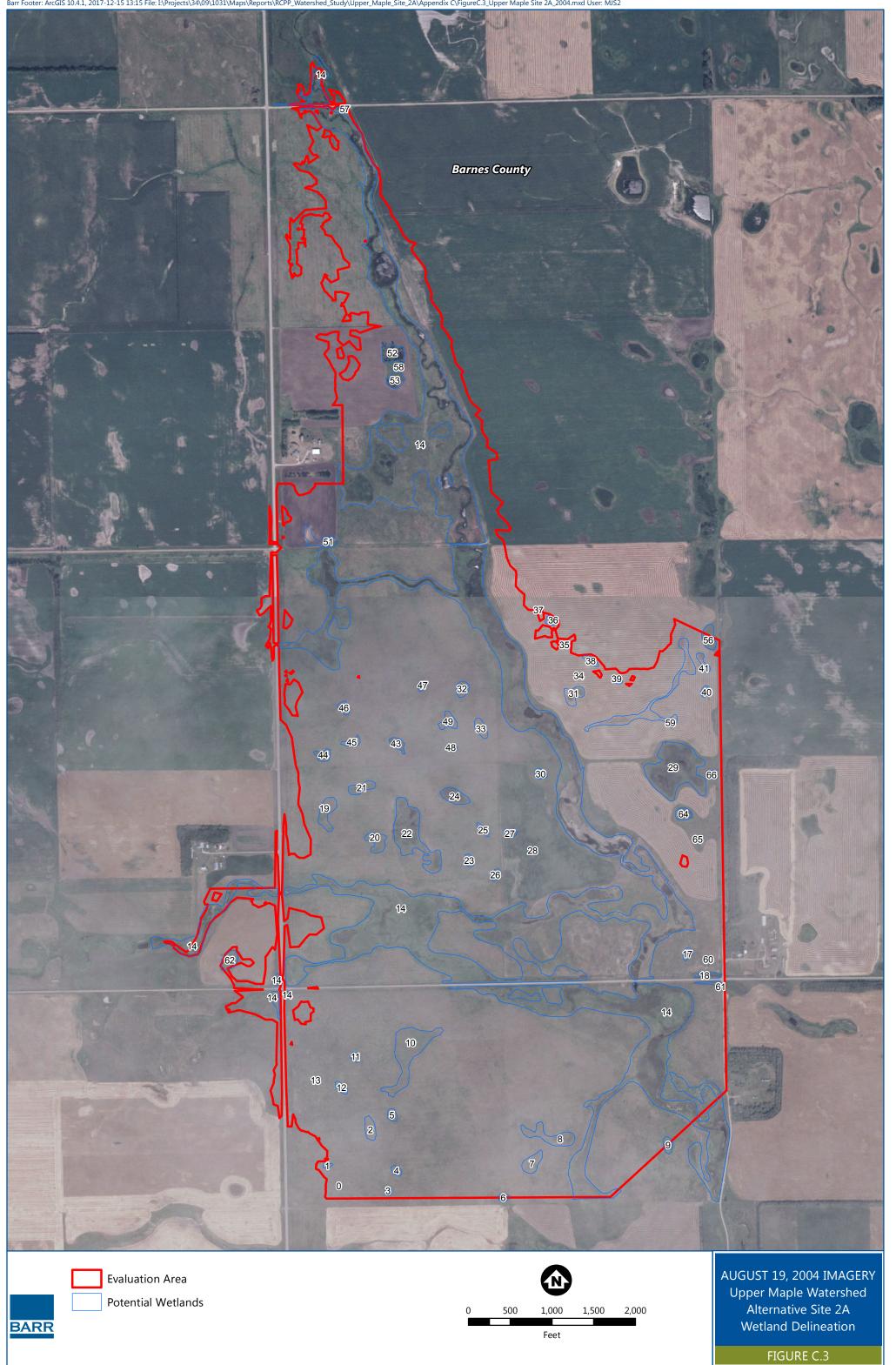




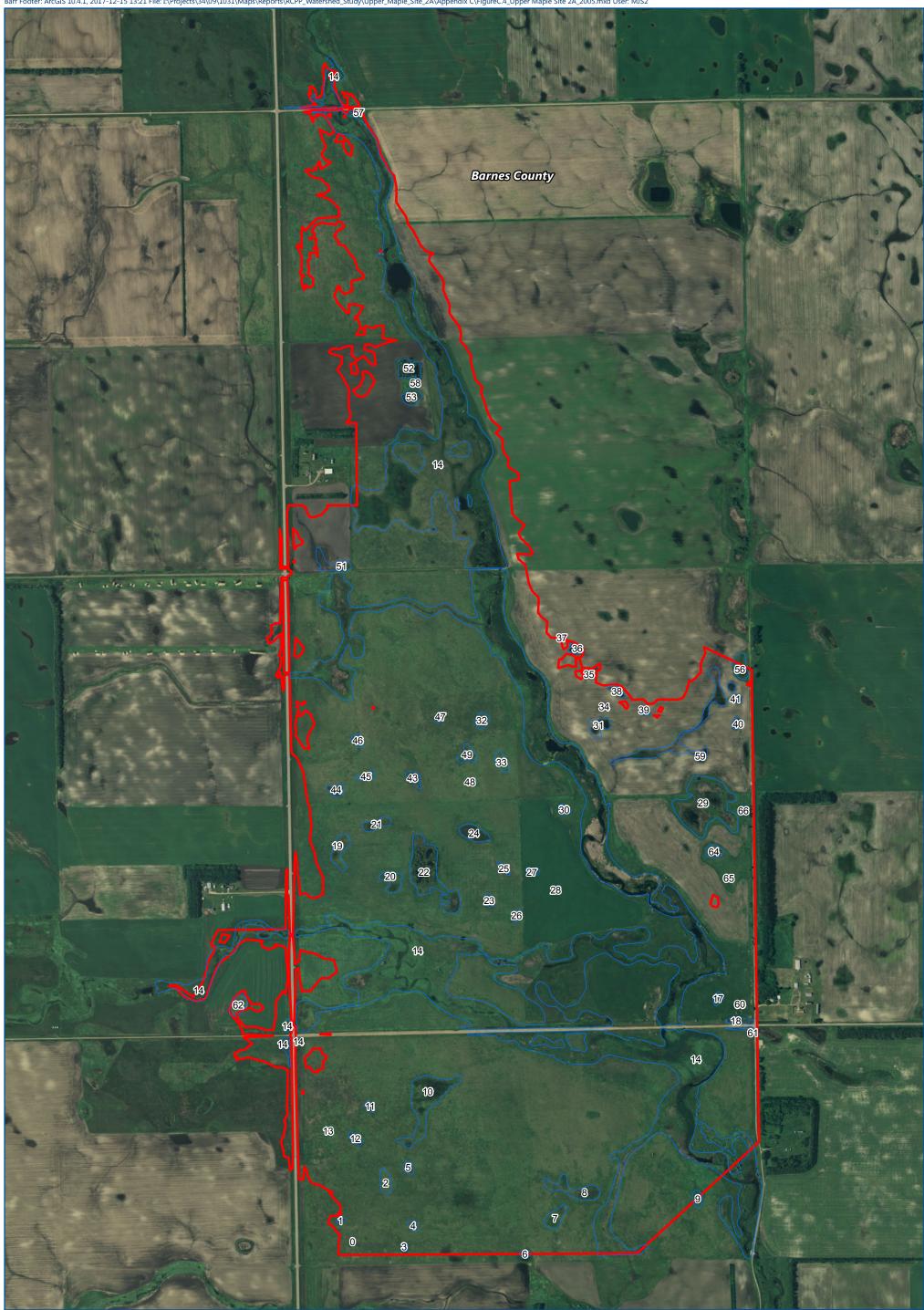
SEPTEMBER 17, 1997 IMAGERY Upper Maple Watershed Alternative Site 2A Wetland Delineation



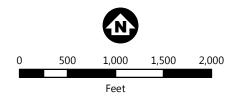




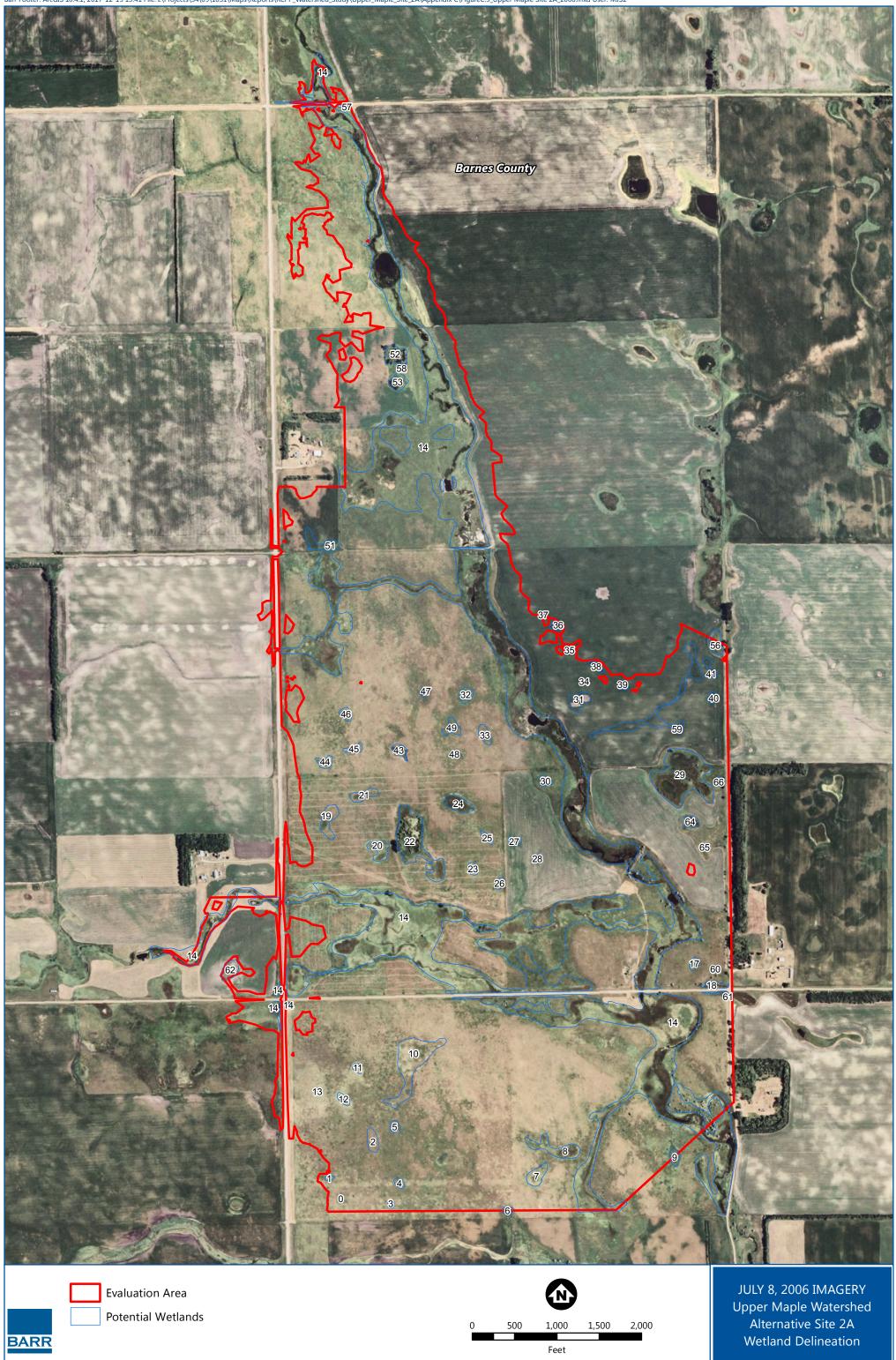
Barr Footer: ArcGIS 10.4.1, 2017-12-15 13:21 File: I:\Projects\34\09\1031\Maps\Reports\RCPP_Watershed_Study\Upper_Maple_Site_2A\Appendix C\FigureC.4_Upper Maple Site 2A_2005.mxd User: MJS2



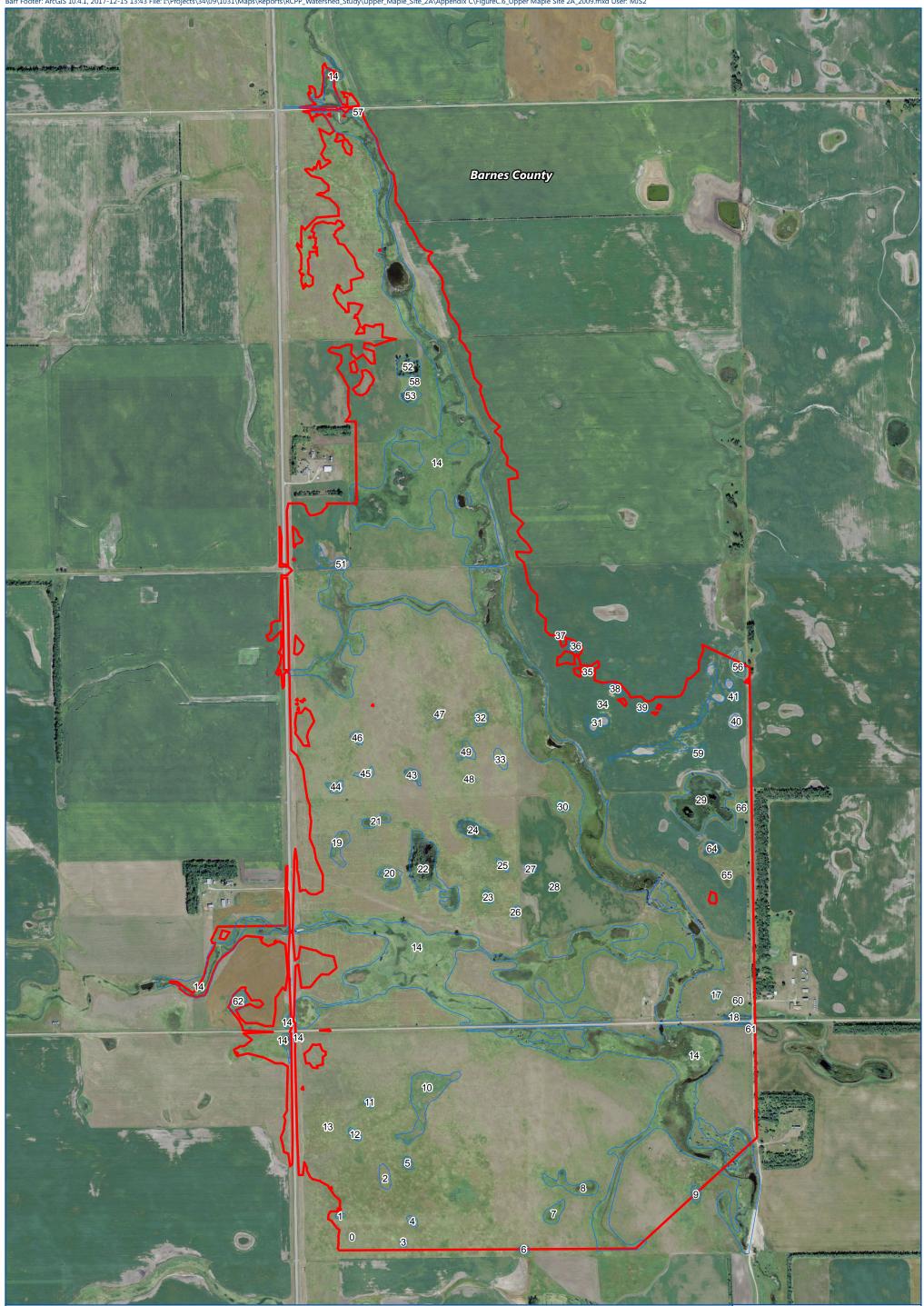




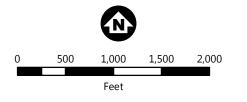
JUNE 20, 2005 IMAGERY Upper Maple Watershed Alternative Site 2A Wetland Delineation





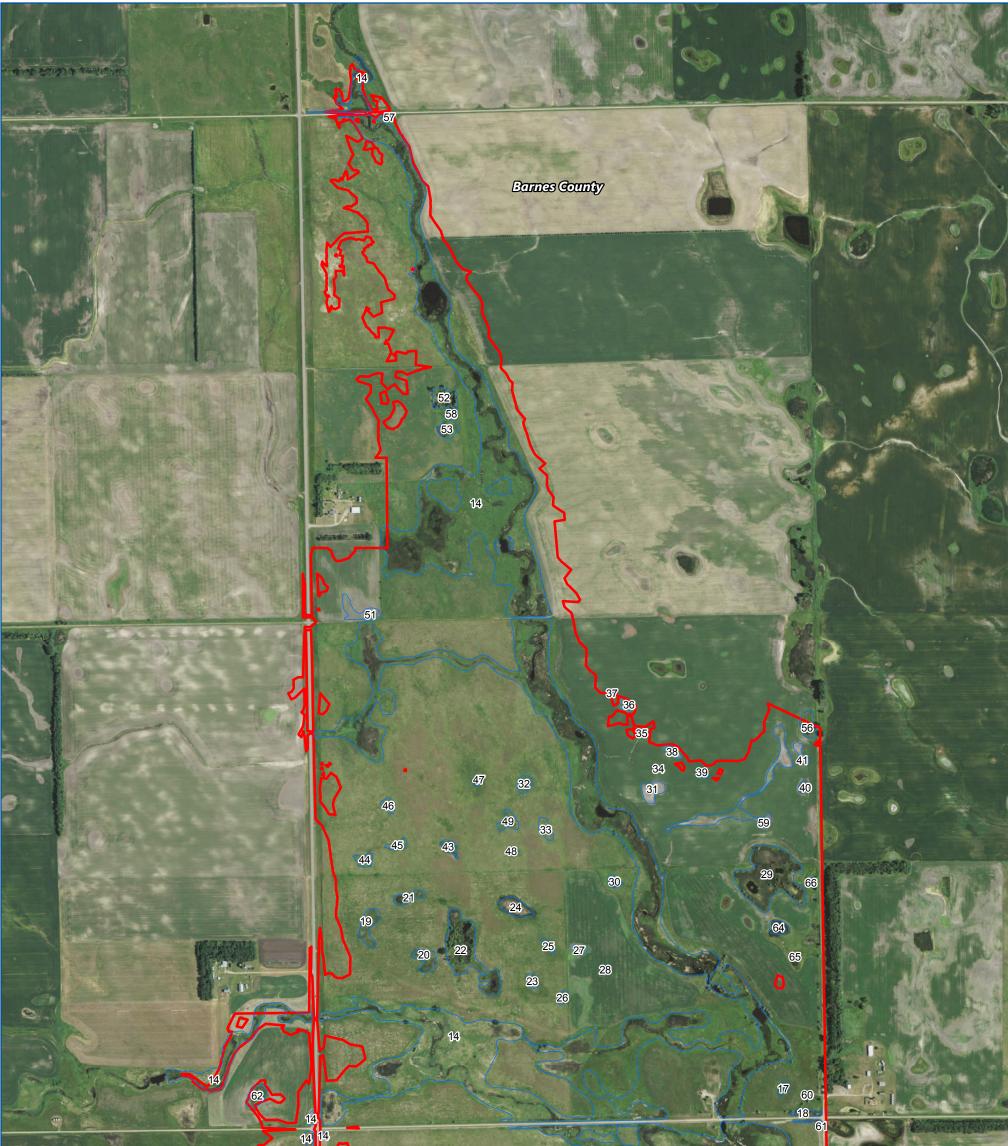


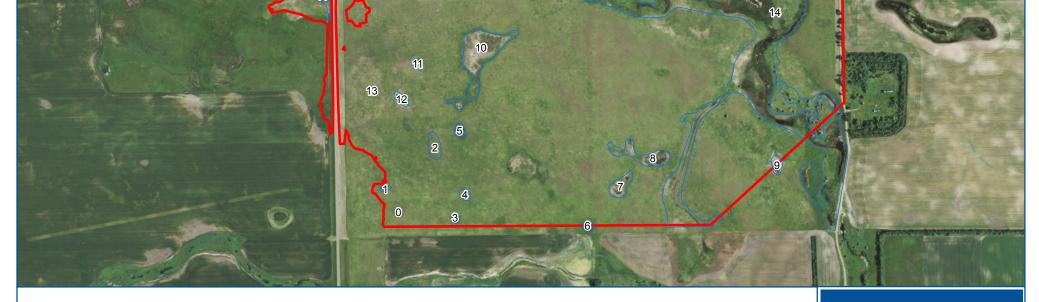




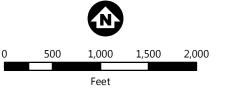
AUGUST 18, 2009 IMAGERY Upper Maple Watershed Alternative Site 2A Wetland Delineation

Barr Footer: ArcGIS 10.4.1, 2017-12-15 13:52 File: I:\Projects\34\09\1031\Maps\Reports\RCPP_Watershed_Study\Upper_Maple_Site_2A\Appendix C\FigureC.7_Upper Maple Site 2A_2010.mxd User: MJS2



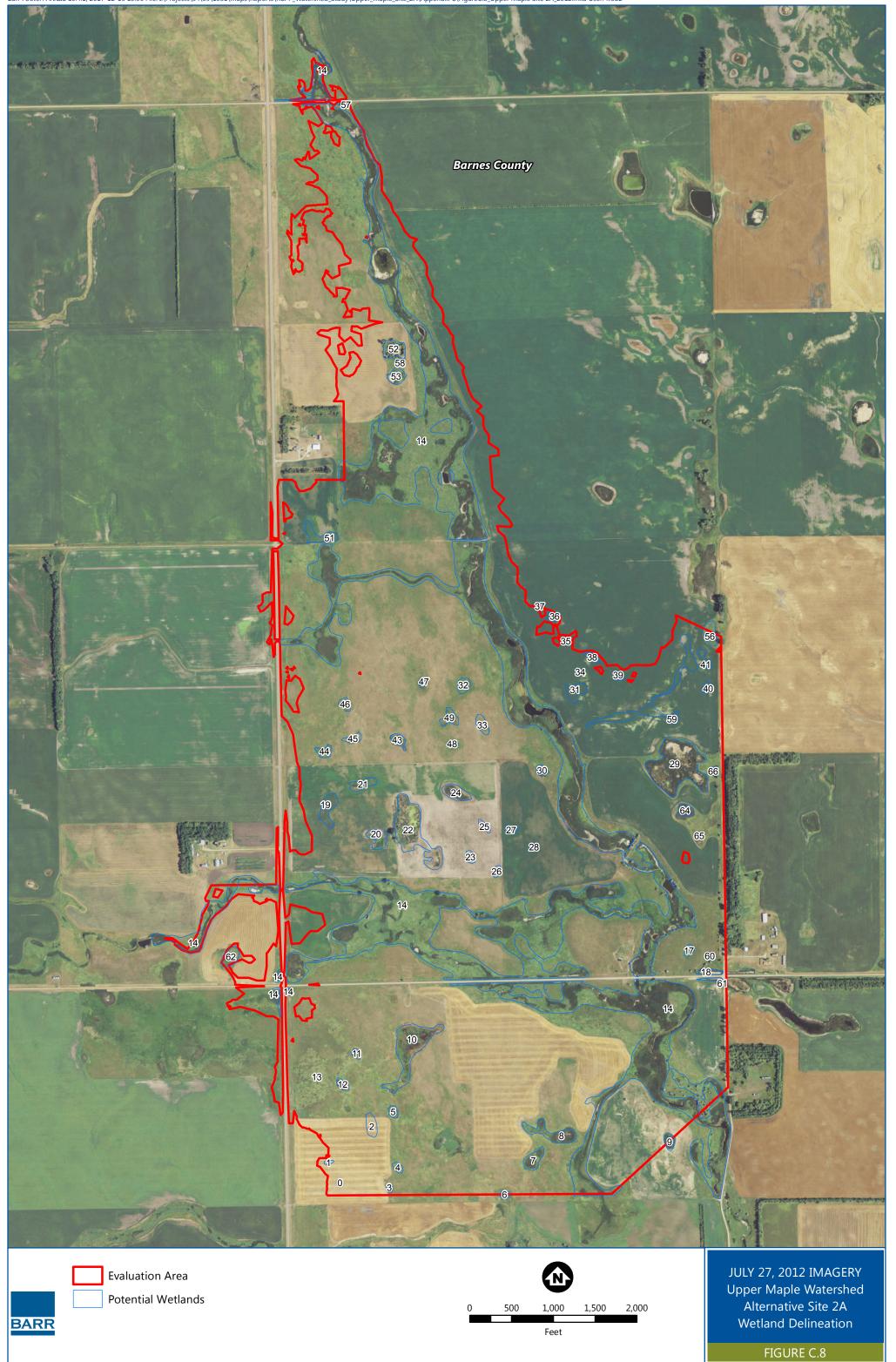


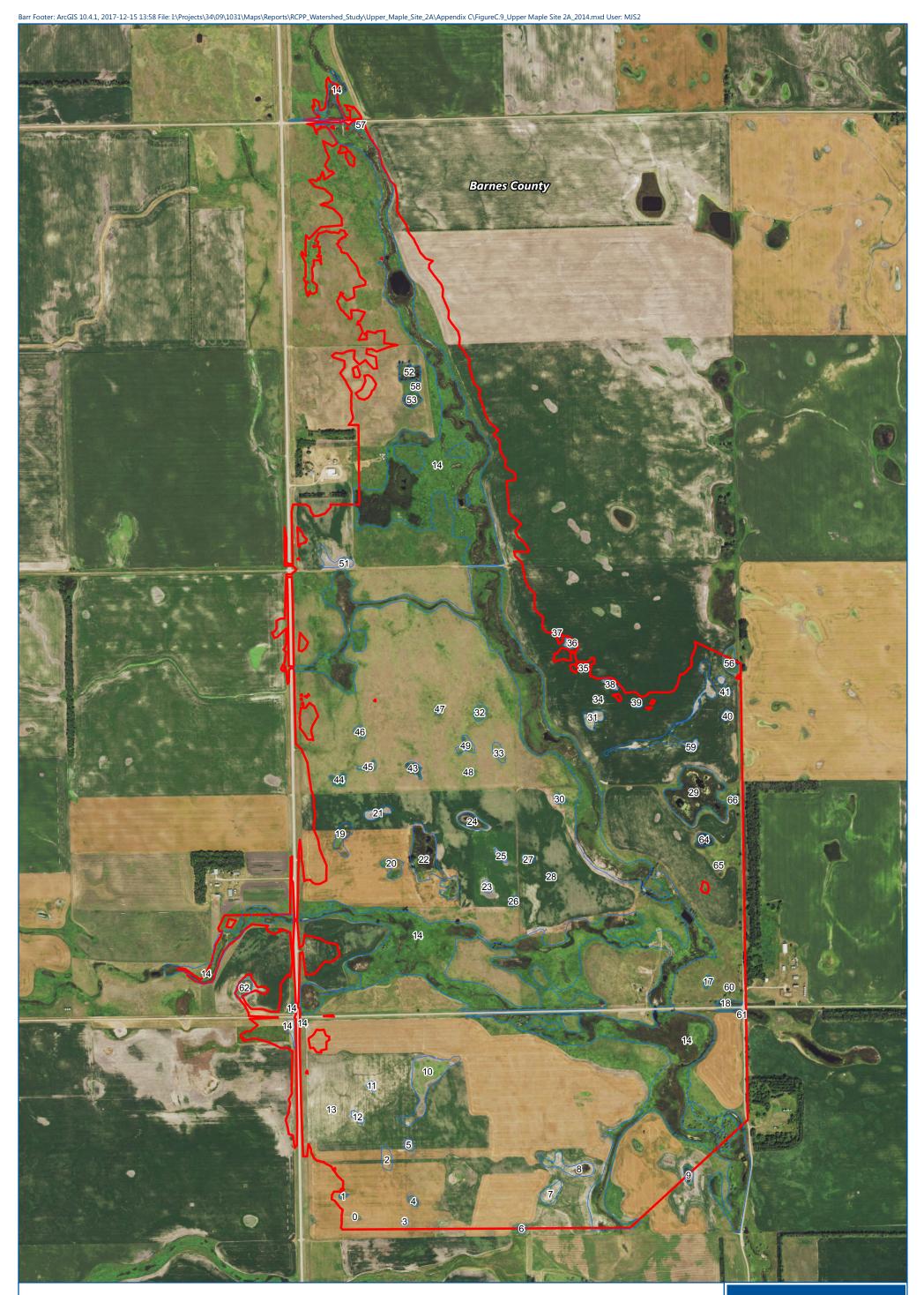


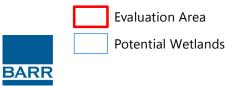


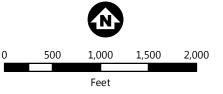
JULY 8, 2010 IMAGERY Upper Maple Watershed Alternative Site 2A Wetland Delineation

Barr Footer: ArcGIS 10.4.1, 2017-12-15 13:56 File: I:\Projects\34\09\1031\Maps\Reports\RCPP_Watershed_Study\Upper_Maple_Site_2A\Appendix C\FigureC.8_Upper Maple Site 2A_2012.mxd User: MJS2

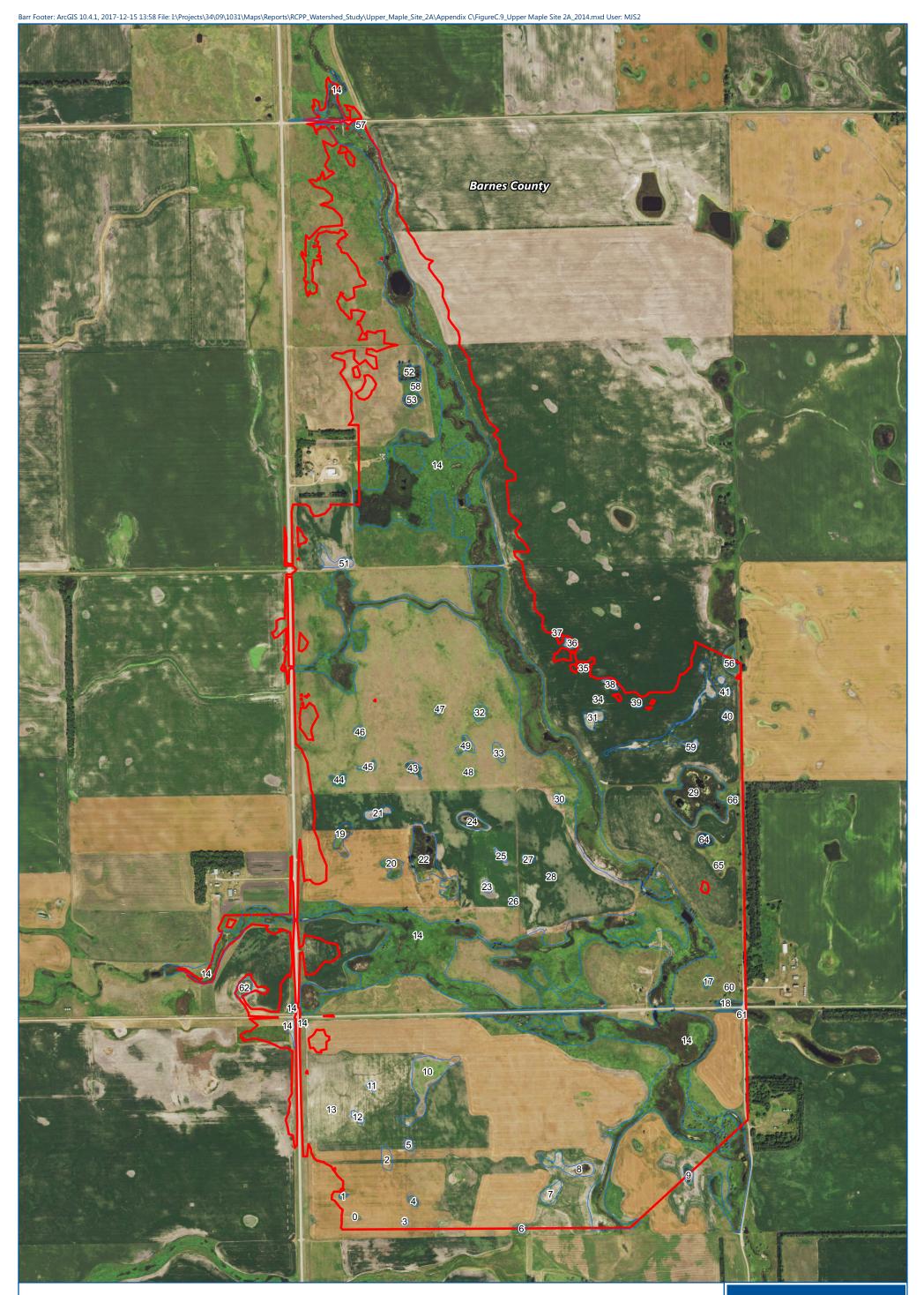




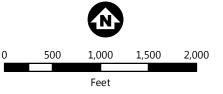




AUGUST 12, 2014 IMAGERY Upper Maple Watershed Alternative Site 2A Wetland Delineation







SEPTEMBER 26, 2015 IMAGERY Upper Maple Watershed Alternative Site 2A Wetland Delineation

NRCS Addendum

Addendum to Wetland Delineation Report

Upper Maple River Watershed – Site 2A

Prepared by NRCS

January 4, 2024

1.0 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.

2.0 Methods

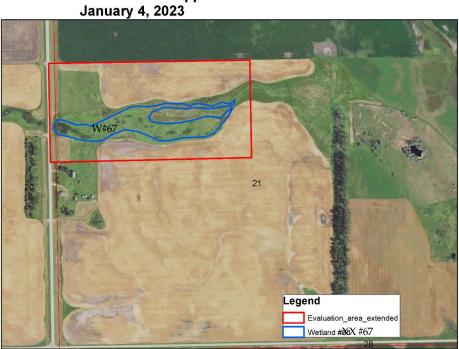
A field delineation was not feasible at this time of year due to frozen soils and winter precipitation. Offsite procedures were used to determine a wetland boundary. The same Normal-year precipitation aerial photography was used as that for all other wetlands in the original determination: was used (2003 – 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
		Vallers-saline-Parnell complex, 0-1 %		
	G12A	Slope	86	predominantly hydric
	G25A	Marysland loam, 0-1% slope	86	predominantly hydric predominantly non-
	G250A	Divide loam, 0-2% slope	14	hydric
USFWS Na	tional We	tlands Inventory		
NWI (2005)		Definition		
NA		Non-Wetland		
NWI (2023)				
PEM1C		Palustrine Emergent, Seasonally Flooded		

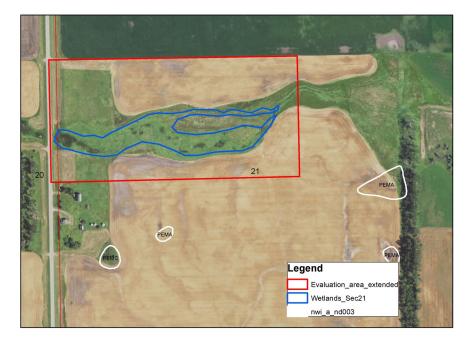
Imagery Date	Imagery Source	Climate conditions	Wetland 67
8/6/2016	NDGISHUB_WMS	Normal	WS
9/26/2015	NDGISHUB_WMS	Normal	WS
8/12/2014	NDGISHUB_WMS	Normal	WS
7/8/2006	NDGISHUB_WMS	Normal	WS
6/20/2005	NDGISHUB_WMS	Normal	WS
8/19/2004	NDGISHUB_WMS	Normal	WS
6/29/2003	NDGISHUB_WMS	Normal	WS
WS = Wetland Signature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

3.0 Results

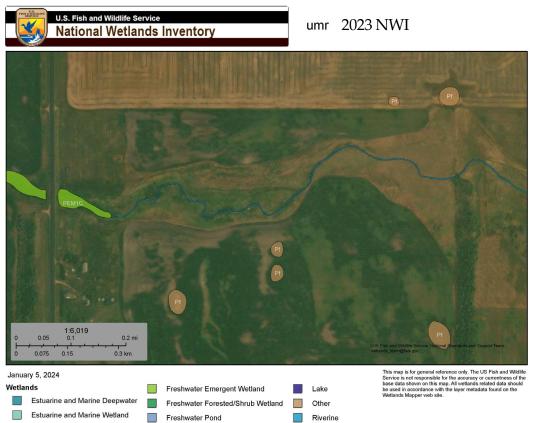
The plan design includes an embankment to be constructed through and perpendicular to Wetland 67, which is a new wetland with continued numbering from Appendix D-4 (Wetland Delineation Report, 2017). A culvert will be installed through the embankment to maintain major hydrologic inputs to the wetland; 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. The acres impacted were determined to be insufficient to warrant changes to the economics and summary of the project. The project as designed, has net wetland gains that more than offset the loss of 0.08 acres of Wetland #68; Appendix D-5 (Environmental Quality Report) calculates 236.2 acres of wetland gain, which was rounded to 230 acres of wetland gain in OMB summary.



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



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



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

