Wetland Delineation Report - DRAFT

Plymouth Creek Feasibility Study

Prepared for Bassett Creek Watershed Management Commission

January 2016



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1.0 Introduction

Basset Creek Watershed Management Commission (BCWMC) is submitting a Wetland Delineation Report as part of a study that examines the feasibility of restoring sites along Plymouth Creek reaches damaged by erosion or affected by sedimentation. The project area is located along several reaches of Plymouth Creek beginning at Plymouth Creek Park and continues between Fernbrook Lane North and Annapolis Lane North, Plymouth, Hennepin County, Minnesota. The project area is within Sections 16, 21 and 22 of Township 118 North, Range 21 West (**Figure 1**).

A field wetland delineation was conducted along the fringes of these stream reaches to include delineation of creek edges. Two wetland boundaries were delineated along the creek fringes and are depicted in **Figure 6**.

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: Midwest Region (USACE, 2010) and the requirements of the Minnesota Wetland Conservation Act (WCA) of 1991. Barr delineated the wetland boundaries and determined wetland types within the project area on September 22, 2015.

This report includes a project overview (Section 2.0), general environmental information (Section 3.0), descriptions of the delineated wetlands (Section 4.0), and a discussion of regulations and the administering authorities (Section 5.0). The Tables section includes the precipitation data. The Figures section includes the Site Location Map, Topography Map, National Wetland Inventory (NWI), Public Waters Inventory (PWI), Hydric Soils Map and the Wetland Boundary Map. **Appendix A** includes Wetland Data Forms, and site photographs are included in **Appendix B**.

2.0 **Project Description**

The entire Plymouth Creek project area (Error! Reference source not found.) extends approximately 2,800 feet from Annapolis Lane North on the downstream end to approximately 1,700 feet upstream of Fernbrook Lane North on the upstream end. The upstream boundary of the project area is a water-level-control structure (**Photo 1**). Originally known as the Central Park Pond Outlet, this structure runs under an access road that connects the Plymouth Creek Park parking lot on the north and the Plymouth Creek Center on the south.

The BCWMC Engineer walked the entire project area in September 2015 and identified sites with bank erosion, scour, and/or bank failure. Additional site visits were conducted in October and November 2015 to meet with stakeholders, check conceptual stabilization alternatives, and observe the creek during different flow conditions. Restoration/stabilization of the sites were considered critically important to meeting BCWMC goals and objectives cost effectively.

Stream bank erosion is a natural process that occurs at some rate on all alluvial channels, and the natural erosion rate can be accelerated by local and regional changes in land use and hydrology. The bank erosion and bank failures throughout the project area appear to be caused by a combination of natural stream erosion processes, problems associated with changing watershed hydrology, and effects of riparian land use. Of the 5,600 feet of stream bank in the project area, approximately 2,850 feet (more than half) showed some degree of erosion.

Stable stream channels are often said to be in a state of "dynamic equilibrium" with their watersheds, adjusting to changes in the watershed hydrology. It may take many years or decades for a stream to fully adjust to a rapid change in watershed hydrology. The use of best management practices (BMPs) helps reduce the impact of development projects on streams. Nonetheless, development and land use changes fundamentally change the hydrology of the watershed. These changes to hydrology often include increased magnitude and frequency of high-flow events, which subsequently increases erosion rates. In addition, the heavy use of golf course in the riparian area of Reaches 1 and 2 has decreased groundcover on the stream banks and adjacent wooded areas, increasing the potential for erosion.

3.0 General Environmental Setting

3.1 Site Description

The proposed project area is located within City of Plymouth property. The project area west of Fernbrook Lane North is bordered by medium density apartment property to the south and Plymouth Creek Park to the north and west. The project area located east of Fernbrook Lane North has medium density housing to the North and office building space to the south. Lands surrounding the project area are forested with deciduous trees (**Figure 1**).

3.2 Topography

The project area has moderately undulating to flat topography throughout and in most areas along Plymouth creek there is an abrupt topographic break leading into the creek due to erosion. Topography surrounding the project area further away is relatively flat (**Figure 2**).

3.3 Precipitation

Recent precipitation data were compared to historic data for evaluating annual and monthly deviations from normal conditions. Simulated precipitation data were obtained from the Minnesota Climatology Working Group, Wetland Delineation Precipitation Data Retrieval from a Gridded Database (http://climate.umn.edu/gridded_data/precip/wetland/wetland.asp) for wetlands in Hennepin County, Township 118 North, Range 22 West, Section 21.

In 2015, antecedent moisture conditions were within the normal range based on precipitation for the three months prior to the September 22, 2015 site visit. These data were obtained from NRCS climate station 215838, New Hope Weather Station (**Table 1**). The water year has varied between normal and wet for the past six years but fell mostly into the wet range from 2010 through 2015 (**Table 2**).

3.4 National Wetland Inventory

The National Wetland Inventory (NWI) Map has identified a portion of the Plymouth Creek Study Reach as riverine wetland located west of Fernbrook Lane North. It was identified as a riverine (R) wetland, lower perennial (L), with an unconsolidated bottom (UB) that has an intermittently exposed hydrologic regime (G) or an R2UBG riverine wetland. No other NWI wetlands were mapped within the Plymouth Creek Study Reach (**Figure 3**).

3.5 Water Resources

The Minnesota Department of Natural Resources (MnDNR) Public Waters Inventory (PWI) has identified Plymouth Creek as a public water inventory watercourse (**Figure 4**). Reaches of Plymouth Creek located within the project area were delineated along with two wetland fringe areas. Plymouth Creek is not identified by the Minnesota Pollution Control Agency (MPCA) as an impaired water.

3.6 Soil Resources

Soil information for the wetland evaluation area was obtained from the Soil Survey of Hennepin County, Minnesota (USDA, 1974). Three soil map units were identified within the project area along the Plymouth Creek reaches: Hamel overwash-Hamel complex, 1 to 4 percent slopes (L36A), Lester Ioam, 6 to 10 percent slopes, moderately eroded (L22C2) and Hamel-Glencoe depressional, complex, 0 to 3 percent slopes (L132A). The Hamel overwash-Hamel complex and Lester Ioam are mapped as predominately Non-Hydric. The Hamel-Glencoe depressional is mapped as predominately hydric (**Figure 5**).

4.0 Wetland Delineation

4.1 Wetland Delineation and Classification Methods

Wetlands within the site were delineated and classified during a site visit on September 22, 2015. 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: Midwest Region (USACE, 2010).

The delineated wetland boundaries and sample points were surveyed using a Global Positioning System (GPS) with sub-meter accuracy (**Figure 6**).

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 placed in and around the wetland, to a depth of at least 20 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 6.0). 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**.

4.2 Wetland Descriptions

Two wetlands were delineated within the project site. Descriptions and assessments of the wetland areas are provided below, with representative photographs in **Appendix B**.

4.2.1 Wetland 1

Wetland 1 is a Type 1 (PEMA), seasonally flooded basin within floodplain located on the right bank of Plymouth Creek within Plymouth Creek Park (**Figure 6**). The surrounding area has steep and abrupt slopes leading into Wetland 1. There is an upland island between Wetland 1 and Plymouth creek approximately 8 feet higher in elevation than the surface of the wetland. Flood waters may periodically enter the north end of Wetland 1 between the upland island and the adjacent forested uplands to the south, which flow through and back to Plymouth Creek further downstream.

Dominant plants within wetland 1 and at Wetland Sample Point 1-1 (SP 1-1 WET) was reed canary grass (*Phalaris arundinacea*, FACW). Sub-dominant species included green bulrush (*Scirpus atrovirens*, OBL), stinging nettle (*Urtica dioica*, FACW) and a species of sedge (*Carex sp.*) that could not be identified. Tree and shrub species were present within 30 feet of SP 1-1 WET but were not directly within the basin.

Primary indicators of hydrology that were observed were high water table (A2), and saturation (A3). Secondary indicators of hydrology present included geomorphic position (D2) and a positive FAC-Neutral test (D5).

Soils mapped at SP 1-1 WET and throughout Wetland 1 were identified as Lester loam, 6-10% slopes. Sampled soils were black at the surface with 2 percent redoximorphic concentrations down to 9 inches with sandy loam textures. Soils from 9 inches to 18 inches were dark grayish brown with 5 percent redoximorhic features and had fine sandy loam textures. At 18 inches soils transitioned to black and sandy mucky mineral textures down to 25 inches. The hydric soil indicator at SP 1-1 WET is sandy redox (S5).

The transition to upland was defined by the lack of vegetation, hydrology and hydric soil indicators. Dominant vegetation in upland areas consisted of sugar maple (*Acer saccharum*, FACU), common dandelion (*Taraxacum offcinale*, FACU) and a species of sedge.

4.2.2 Wetland 2

Wetland 2 is a Type 2 (PEMB), fresh meadow located on the left bank of Plymouth Creek approximately 300 feet downstream from Wetland 1 (**Figure 6**). Wetland 1 may occasionally flood during the growing season but in most year's water likely remains within 12 inches of the soil surface. Two sample points were taken within Wetland 1 along the same transect. Data from SP 2-1 WET-A was collected close to the wetland boundary and data from SP 2-1 WET-B was collected closer to the creek channel.

Reed canary grass and eastern cottonwood (*Populus deltoides*, FAC) is dominant at both SP 2-1 WET-A and SP 2-1 WET-B with a sub-dominance of water smartweed (*Persicaria amphibia*, OBL).

There were no primary indicators of hydrology observed within Wetland 2. Secondary indicators of hydrology present included geomorphic position (D2) and a positive FAC-Neutral test (D5).

Soils mapped at both sample locations and throughout Wetland 2 were identified as Lester loam, 6-10% slopes. Soils at SP 2-1 WET-A were very dark gray clay loams down to 8 inches and transitioned to dark grayish brown with 20 percent redoximorphic features down to 14 inches. From 14 to 20 inches soils

transitioned to more yellow hues that were dark gray. Textures were clay loam throughout the soil profile. The hydric soil indicator at SP 2-1 WET-A is redox dark surface (F6).

Soils at SP 2-1 WET-B were sandy clay and gleyed down to 15 inches with 2 percent redoximorphic concentrations. Soils transitioned to sand and dark gray colors with yellower hues from 15 to 25 inches. The hydric soil indicators at SP 2-1 WET-B are sandy gleyed matrix (S4) and sandy redox (S5).

The transition to upland was defined by the lack of vegetation, hydrology and hydric soil indicators. Dominant vegetation in upland areas consisted of sugar maple and European buckthorn (*Rhamnus cathartica*, FAC).

5.0 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.

Filling, excavating, and draining wetlands are also regulated by the Minnesota Wetland Conservation Act (WCA), and the Minnesota Public Waters Inventory Program, which are administered by the City of Plymouth and the Minnesota Department of Natural Resources (DNR) respectively. The USACE, the City of Plymouth and the DNR should be contacted before altering any wetlands on the site. In addition, delineated wetland boundaries may be reviewed, if needed, by a Technical Evaluation Panel (TEP) consisting of representatives from the Minnesota Board of Water and Soil Resources, and Hennepin County, along with the City of Plymouth, DNR and USACE.

6.0 References

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- 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.

Tables

Table 1Antecedent Moisture Conditions Prior to September 22, 2015 Site VisitPlymouth Creek Feasibility Study Wetland DelineationPlymouth, MN

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:								
County: Hennepin	Township Number: 118N							
Township Name: Plymouth	Range Number: 22W							

Nearest Community: Plymouth Section Number: 21

Aerial photograph or site visit date:

Tuesday September 22, 2015

Score using 1971-2000 normal period

(value are in inches)	first prior month:	second prior month:	third prior month:			
	August 2015	July 2015	June 2015			
estimated precipitation total for this location:	3.6	7.02	3.56			
there is a 30% chance this location will have less	3.18	3.04	2.02			
than:	3.18	5.04	2.92			
there is a 30% chance this location will have	4.72	5.28	5.28			
more than:	4.72	5.20	5.20			
type of month: dry normal wet	normal	wet	normal			
monthly score	3 * 2 = 6	2 * <mark>3</mark> = 6	1 * 2 = 2			
multi-month score:		14 (marmal)				
6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	14 (normal)					

Score using 1981-2010 normal period

(value are in inches)	first prior month: August 2015	second prior month: July 2015	third prior month: June 2015
estimated precipitation total for this location:	3.6	7.02	3.56
there is a 30% chance this location will have less than:	2.94	2.7	2.93
there is a 30% chance this location will have more than:	4.93	4.98	5.33
type of month: dry normal wet	normal	wet	normal
monthly score	3 * 2 = 6	2 * <mark>3</mark> = 6	1 * 2 = 2
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)		14 (normal)	

Table 2Precipitation in Comparison to WETS DataPlymouth Creek Feasibility Study Wetland DelineationPlymouth, MN

Precipitation data for target wetland location:

County: Hennepin	Township Number: 118N			
Township Name: Plymouth	Range Number: 22W			
Nearest Community: Plymouth	Section Number: 21			

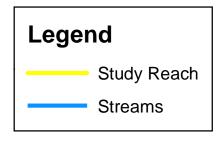
Precipitation Totals are in Inches							
Color Key	Multi-month Totals:						
total is in lowest 30th percentile of the period-of-record distribution	WARM = warm season (May thru September)						
total is => 30th and <= 70th percentile	ANN = calendar year (January thru December)						
total is in highest 30th percentile of the period-of-record distribution	WAT = water year (Oct. previous year thru Sep.						
	present year)						

	Period-of-Record Summary Statistics														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT
30%	0.53	0.53	1.13	1.50	2.62	3.25	2.41	2.94	1.92	1.16	0.75	0.59	16.18	26.29	25.98
70%	1.07	1.24	1.95	2.76	4.28	5.66	4.50	4.44	3.75	2.65	1.92	1.31	20.94	32.47	32.04
mean	0.90	0.92	1.65	2.40	3.70	4.50	3.82	3.62	3.04	2.18	1.50	1.03	18.67	29.24	29.30
	1971-2000 Summary Statistics														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT
30%	0.63	0.35	1.25	1.33	2.70	3.24	2.83	3.34	1.98	0.98	1.12	0.60	17.43	28.26	27.09
70%	1.13	0.98	1.96	2.62	4.03	5.53	4.89	4.84	3.28	2.80	2.24	1.28	20.78	32.84	33.70
mean	1.00	0.82	1.82	2.31	3.47	4.41	4.43	4.08	2.94	2.18	1.90	0.96	19.33	30.33	30.47
						1981-2	2010 Su	mmary	Statistic	s		-			
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT
30%	0.53	0.40	1.27	2.03	2.70	3.32	2.50	3.16	2.27	1.29	1.05	0.69	17.17	28.50	27.09
70%	1.06	0.91	1.96	2.84	4.08	5.44	4.41	4.91	3.73	3.35	2.02	1.45	21.56	34.09	34.04
mean	0.83	0.80	1.81	2.66	3.56	4.44	4.14	4.16	3.39	2.45	1.72	1.17	19.70	31.14	30.95
								-Year D							
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT
2015	0.38	0.34	0.67	1.84	4.44	3.56	7.02	3.60	3.76	2.84	-	-	22.38	-	28.86
2014	1.33	1.46	0.75	7.49	4.63	11.07	3.27	2.99	2.01	1.10	1.16	0.99	23.97	38.25	41.53
2013	0.65	1.17	1.89	4.05	5.17	7.78	4.72	1.53	1.45	4.37	0.58	1.58	20.65	34.94	32.40
2012	0.46	2.13	1.20	2.95	9.96	4.25	4.35	1.38	0.54	1.62	0.83	1.54	20.48	31.21	29.04
2011	0.92	0.96	1.57	3.00	6.50	4.13	6.45	3.64	0.60	0.94	0.16	0.72	21.32	29.59	34.81
2010	0.57	0.80	0.95	1.85	3.00	5.77	3.46	5.61	6.08	2.02	1.98	3.04	23.92	35.13	36.51
2009	0.43	0.91	1.92	1.18	0.49	3.80	0.89	6.62	0.87	5.62	0.60	2.20	12.67	25.53	21.26
2008	0.16	0.52	2.00	3.71	2.51	4.46	2.21	3.05	2.66	1.49	1.21	1.45	14.89	25.43	28.32
2007	0.71	1.29	3.31	2.37	3.22	1.30	2.02	6.86	4.96	5.24	0.09	1.71	18.36	33.08	30.45
2006	0.57	0.41	1.54	3.18	3.27	4.05	1.57	4.42	3.27	0.68	1.13	2.60	16.58	26.69	29.85
2005	1.31	0.88	1.23	2.47	3.50	6.25	2.47	3.08	6.59	4.60	1.61	1.36	21.89	35.35	32.81
2004	0.45	1.33	2.18	2.54	6.36	5.73	4.35	1.45	5.17	3.55	1.05	0.43	23.06	34.59	32.41
2003	0.22	0.92	1.62	2.77	4.66	6.73	2.36	0.47	2.52	0.92	1.13	0.80	16.74	25.12	26.26
2002	0.55	0.55	1.81	3.86	3.95	8.13	6.51	7.09	4.24	3.66	0.07	0.26	29.92	40.68	41.01
2001	1.25	1.25	0.89	7.93	5.27	5.07	2.51	3.17	3.46	0.87	2.86	0.59	19.48	35.12	36.01
2000	0.88	1.12	0.99	1.33	3.43	3.32	6.17	3.07	2.06	0.86	3.23	1.12	18.05	27.58	24.16
1999	1.19	0.32	1.54	3.12	6.57	5.31	4.49	4.06	2.33	0.66	0.81	0.32	22.76	30.72	33.69
1998	1.07	0.78	3.54	1.66	3.77	4.53	2.86	4.94	1.25	2.52	1.63	0.61	17.35	29.16	27.14
1997	1.60	0.26	1.39	1.04	1.73	2.62	9.74	4.54	2.86	1.95	0.57	0.22	21.49	28.52	36.05
1996	2.26	0.34	1.95	0.64	4.26	3.89	1.66	1.57	1.60	3.96	4.74	1.57	12.98	28.44	25.72

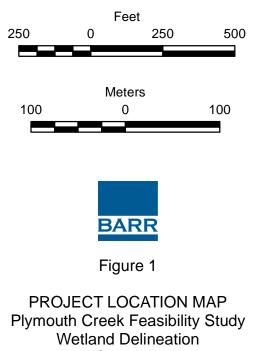
Figures







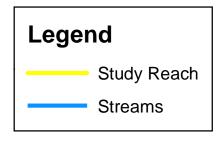




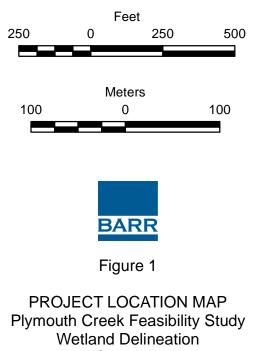
Bassett Creek Watershed Management Commission



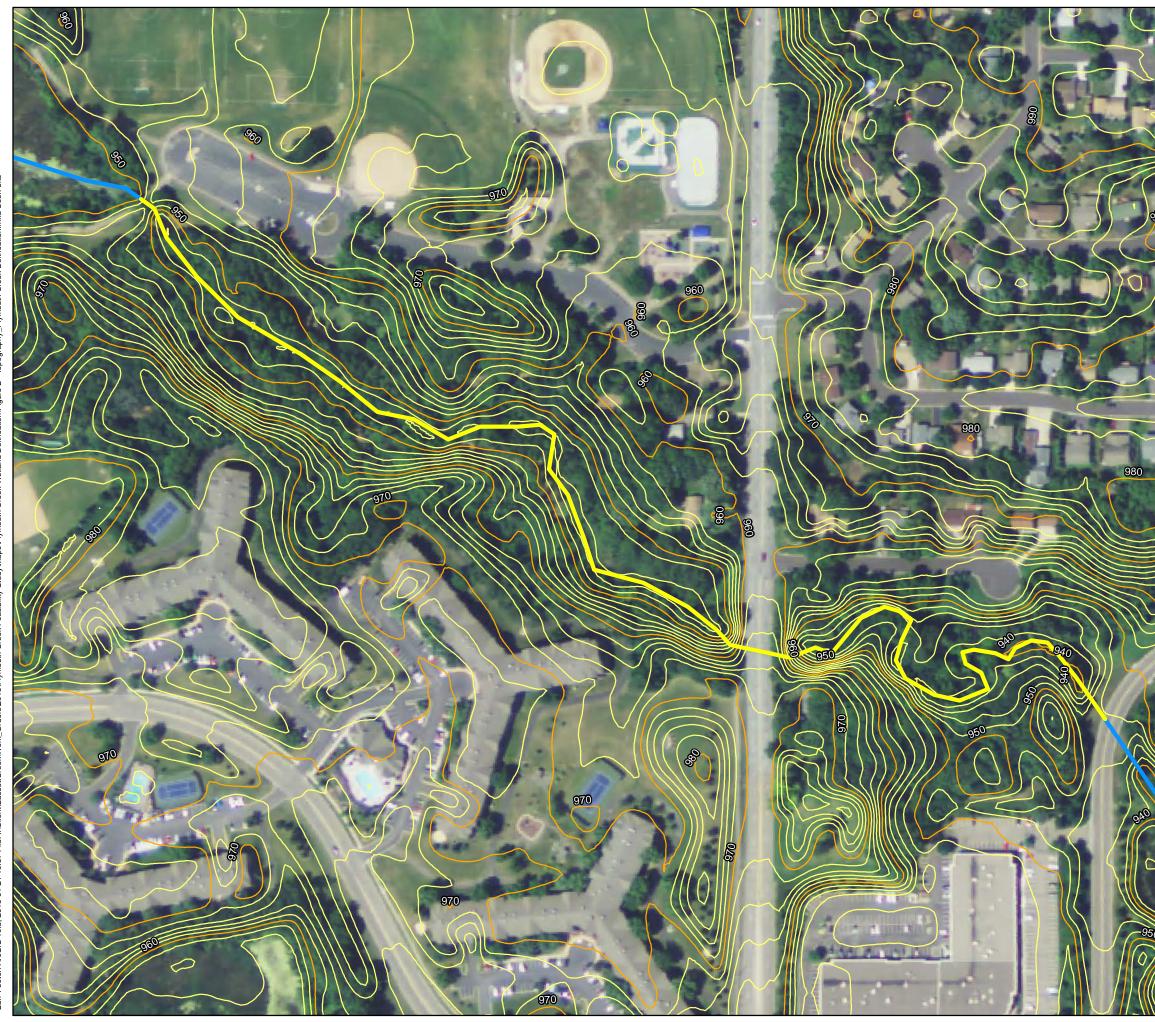








Bassett Creek Watershed Management Commission



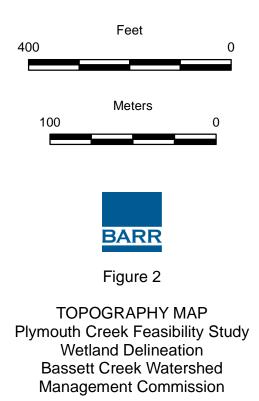
Legend

- Plymouth Creek
- Plymouth Creek Study Reach

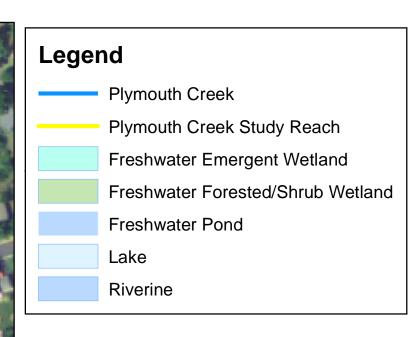
Contours

- 10-Foot Contour
- 2-Foot Contour

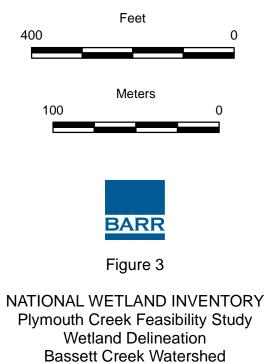




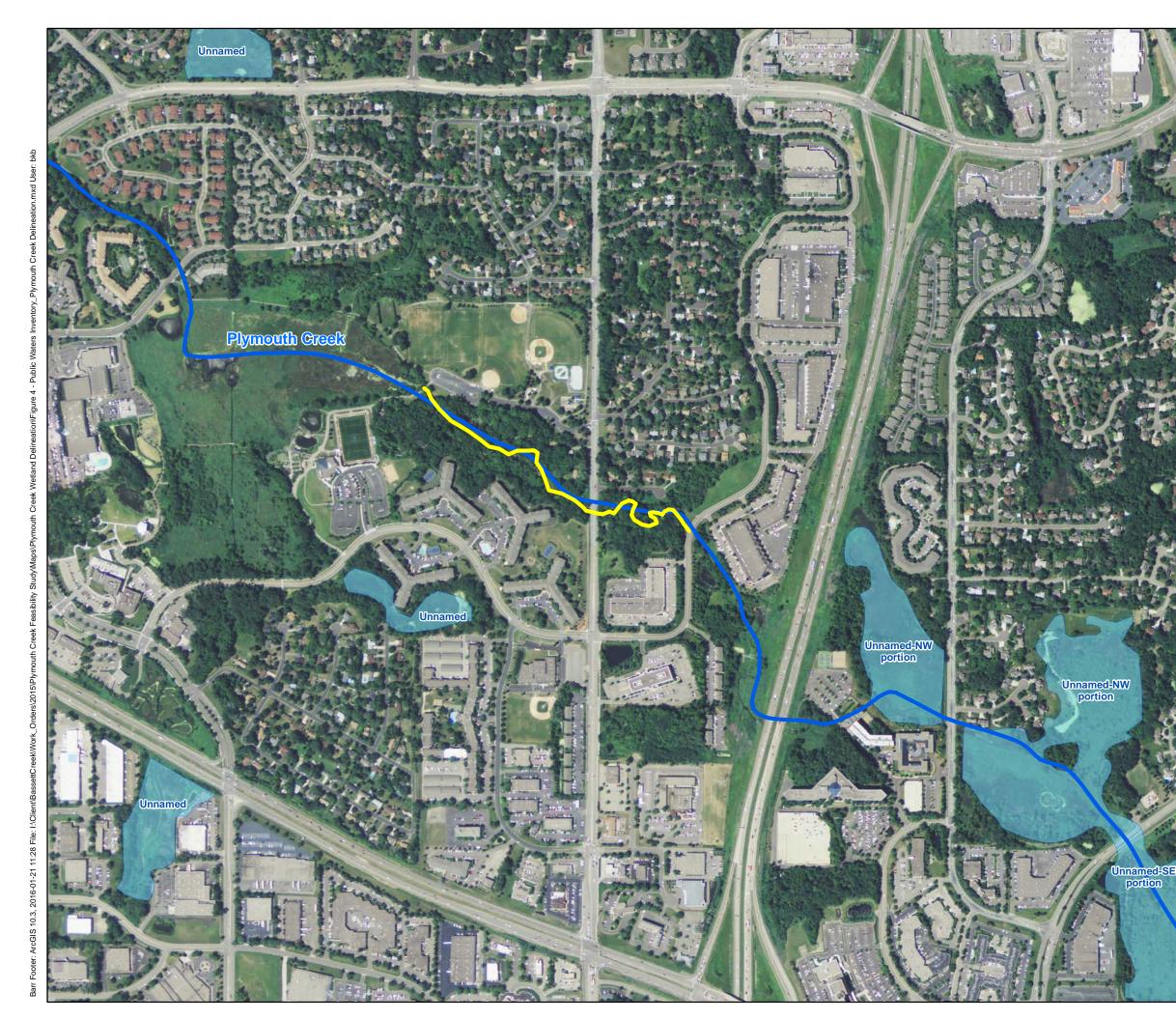






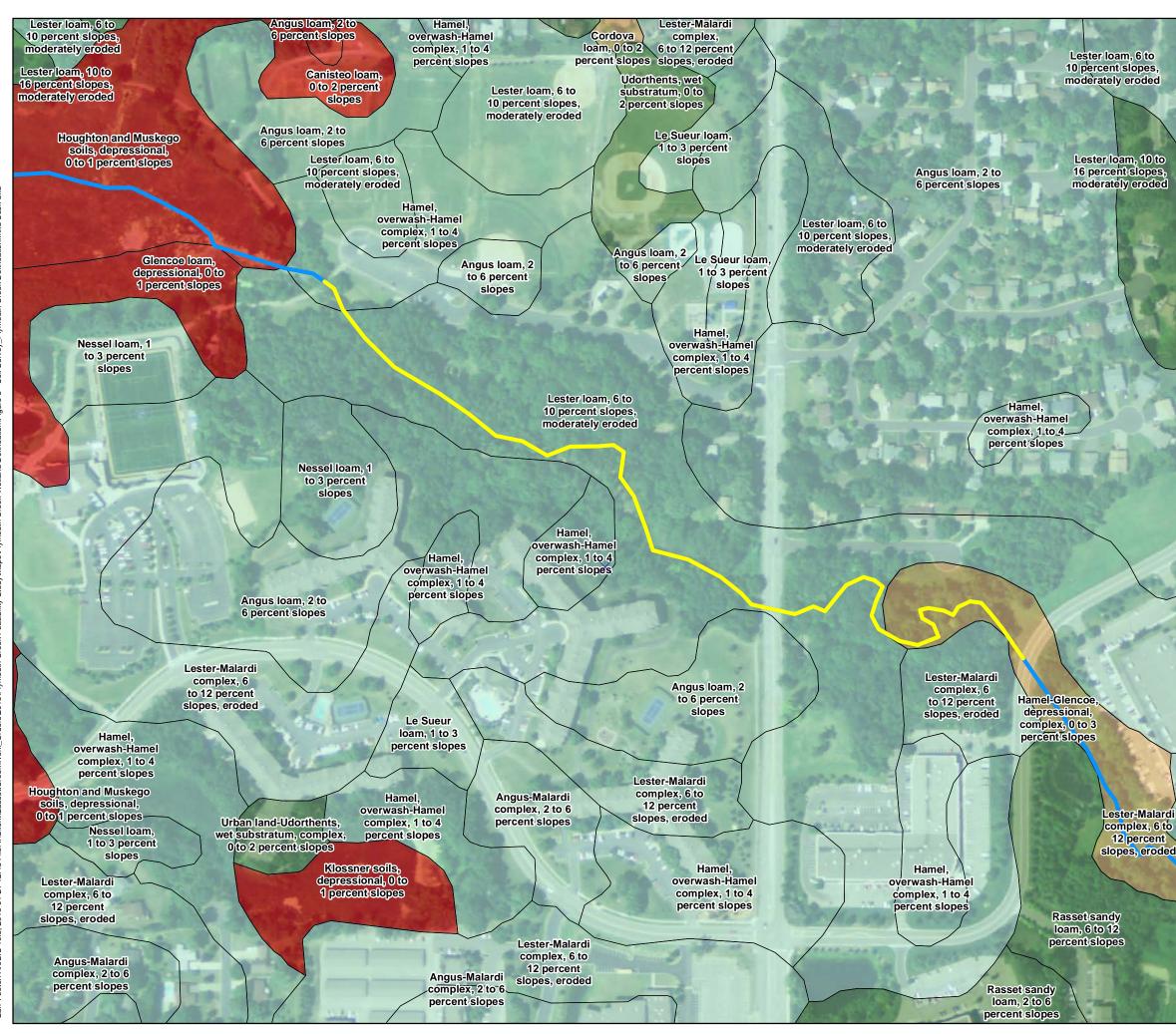


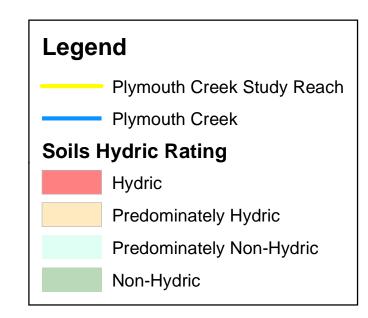
Management Commission



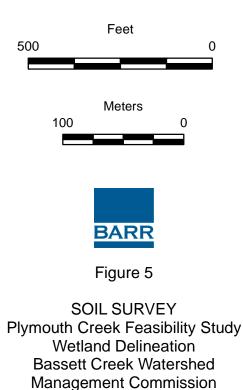


PUBLIC WATER INVENTORY Plymouth Creek Feasibility Study Wetland Delineation Bassett Creek Watershed Management Commission

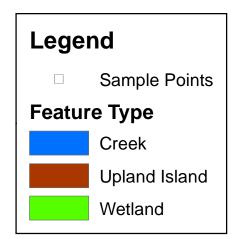




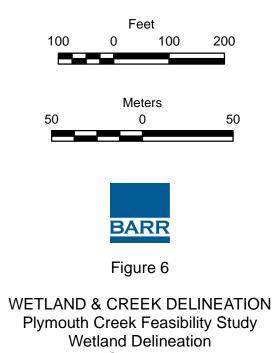












Bassett Creek Watershed Management Commission

Appendix A

Wetland Data Forms

Project/Site:	<u>Plymouth</u>	<u>n Creek</u>			Applicant/	Owner: <u>BCWMC</u>	City/County: Plymouth	<u>n/Hennepin</u> State: <u>MN</u>	Sampling Date: <u>10/16/15</u>
Investigator(s):	<u>BKB</u>				Section:	<u>16</u>	Township: <u>118</u>	Range: <u>22</u>	Sampling Point: <u>1-1 UPL</u>
Land Form: Footslope				Local Rel	lief: <u>None</u>	Slope %: <u>2</u>	Soil Map Unit Name: Leste	er loam, 1 to 3 percent slopes	
Subregion (LRR)	: <u>M</u>				Latitude:	<u>4985548</u>	Longitude: <u>463337</u>	Datum: UTM N	ad 83 Zone 15N Meters
Cowardin Classii	fication:	<u>Uplar</u>	<u>nd</u>		Circular 3	9 Classification: Upland		Mapped NWI Classificatio	n: <u>Upland</u>
Are climatic/hydro	ologic cond	litions o	n the site	typical for this	time of yea	ar? <u>Yes</u> (If no, exp	lain in remarks)	Eggers & Reed (primary).	Upland
Are vegetation	No	Soil	No	Hydrology	No	significantly disturbed?	Are "normal <u>Yes</u> circumstances"		**
C C				, ,,		с ,	present?	Eggers & Reed (tertiary):	
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	<u>No</u>	naturally problematic?	procont.	Eggers & Reed (quaterna	nry):

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

Hydrophytic vegetation present?	<u>No</u>	General Remarks	
Hydric soil present?	No	(explain any	
Indicators of wetland hydrology present?	No	answers if needed):	
Is the sampled area within a wetland?	No	If yes, optional Wetland Site ID: Upland	

VEGETATION

1. 2. 3. 4.	Tree Stratum Acer saccharum	(Plot Size:	<u>30 ft</u>)	Absolute % Cover 25 0 0 0 0	Dominant Species? Yes	Indicator Status FACU	50/20 Thresholds: Tree Stratum Sapling/Shrub Stratum Herb Stratum Woody Vine Stratum Dominance Test Worksheet:	$ \begin{array}{r} \underline{20\%} & \underline{50\%} \\ 5 & 12.5 \\ \hline 2 & 5 \\ \hline 8.4 & 21 \\ 0 & 0 \\ \end{array} $
1. 2. 3. 4.	Sapling/Shrub Stratum Acer saccharum	(Plot Size:	Total Cover: <u>15 ft</u>)	25 10 0 0	Yes	FACU	Number of Dominant Species That Are OBL, FACW or FAC: Total Number of Dominant Species Across All Strata: Percent of Dominant Species That Are OBL, FACW or FAC:	0 (A) 4 (B) 00% (A/B)
5.	Herb Stratum	(Plot Size:	Total Cover:	0 10			Prevalence Index Worksheet: Total % Cover of: OBL Species 0	Multiply by:
 1. 2. 3. 4. 5. 6. 7. 	Taraxacum officinale Carex sp. Plantago major Trifolium pratense Cirsium arvense Arctium minus Solanum dulcamara			15 10 5 2 2 2	Yes Yes No No No No	FACU FAC FACU FACU FACU FACU	FACW Species 0 X 2 FAC Species 7 X 3 FACU Species 59 X 4 UPL Species 1 X 5 Column Totals: 67 (A) Prevalence Index = B/A = A	0 21 236 5 262 (B) 3.91
8. 1. 2.	Woody Vine Stratum are Ground in Herb Stratum	(Plot Size:	Total Cover: <u>30 ft</u>) Total Cover:	1 42 0 0 0 0	Mo No m Moss Cove	UPL	Hydrophytic Vegetation Indicators: No Rapid Test for Hydrophytic Veget No Dominance Test is >50% No Prevalence Index ≤ 3.0 [1] No Morphological Adaptations [1] (µ in vegetation remarks or on a sep No No Problematic Hydrophytic Vegetation [1] Indicators of hydric soil & wetland hydrology mudisturbed or problematic.	provide supporting data parate sheet) tion [1] (Explain)
Veg	etation Remarks: (include p	hoto number	rs here or on a separate	sheet)			Hydrophytic vegetation present? <u>No</u>	

		needed to	document the indicator or			of indicators,).			
Depth	Matrix			dox Featu		1	To fair	Develo		
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks		
0 - 11	10YR 2/1						Silt Loam			
11 - 17 17 - 20	10YR 2/1 10YR 3/1	99 98	10YR 5/1 10YR 4/2	2	D	M	Sandy Loam Sandy Loam	1% coarse depletions	S	
20 - 24	10YR 2/2	98	7.5 YR 3/4	2	C	M	Sandy Clay Loam			
-										
 ype: C=Conc	entration, D=Depletion, RM	/=Reduced	d Matrix, MS=Masked San	d Grains	[2] Locatior	n: PL=Pore L	ining, M=Matrix.			
ric Soil Indicat	ors: (applicable to all LRF	Rs, unless	otherwise noted)			Ind	icators for Problematic Hydric	Soils [3]:		
Histosol (A1)			_	Geyed Matri	ix (S4)		Coast Prairie Redox (A16)			
Histic Epipedon	(A2)			Redox (S5)	(-)		Dark Surface (S7)			
Black Histic (A3				Matrix (S6)		Iron-Manganese Masses (F12)			
Hydrogen Sulfia				Mucky Mine			Very Shallow Dark Surface (TF1	(2)		
· ·								-/		
Stratified Layers				Gleyed Matr			Other (explain in soil remarks)			
2 cm Muck (A10	·			d Matrix (F3	, ,					
	Dark Surface (A11)			oark Surface						
Thick Dark Surf				d Dark Surf		[3]	Indicators of hydrophytic year	etation and wetland hvdi	Irola	
Sandy Mucky M	lineral (S1)		Redox I	Depressions	; (F8)		[3] Indicators of hydrophytic vegetation and wetland hydrolo must be present, unless disturbed or problematic.			
	at or Peat (S3)			oth (inches			Hydric soil present?	No		
estrictive Layer (bil Remarks:	at or Peat (S3) if present): Type:									
strictive Layer (il Remarks:	at or Peat (S3) if present): Type:									
strictive Layer (il Remarks: DROLOG	at or Peat (S3) if present): Type:									
strictive Layer (il Remarks: 'DROLOG etland Hydrolog	at or Peat (S3) if present): Type:	d; check a	Dep					<u>No</u>		
strictive Layer (il Remarks: 'DROLOG etland Hydrolog	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required	d; check a	Dep	oth (inches			Hydric soil present?	<u>No</u>		
strictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1)	d; check a	Dep Dep Utation Utati	oth (inches ves (B9)			Hydric soil present? Condary Indicators (minimum of Surface Soil Cracks (B6)	<u>No</u>		
estrictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (High Water Tab	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1)	d; check a		ves (B9)			Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10)	<u>No</u>		
strictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3)	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2)	d; check a	Dep Il that apply) Water-Stained Lea Aquatic Fauna (B1. True Aquatic Plants	ves (B9) 3) 5 (B14)			Hydric soil present? Condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2)	<u>No</u>		
estrictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B	at or Peat (S3) if present): Type: Y undicators: (minimum of one required A1) le (A2) 1)	d; check a	Dep Dep Uthat apply) Water-Stained Lea Aquatic Fauna (B1) True Aquatic Plants Hydrogen Sulfide C	th (inches th (inches ves (B9) 3) ≤ (B14) 0dor (C1)	s):		Hydric soil present? Condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)	<u>No</u>		
estrictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B Sediment Depo	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2) 1) sits (B2)	d; check a	It that apply) Water-Stained Lea Aquatic Fauna (B1) True Aquatic Plants Hydrogen Sulfide C Oxidized Rhizospho	ves (B9) 3) 5 (B14) Door (C1) eres on Livin	s):		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag	No of two required) gery (C9)		
estrictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B Sediment Depo Drift Deposits (E	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2) 1) sits (B2) 33)	d; check a	Dep It that apply) Water-Stained Lea Aquatic Fauna (B1: True Aquatic Plants Hydrogen Sulfide C Oxidized Rhizosphu Presence of Reduc	ves (B9) 3) s (B14) odor (C1) eres on Livin ed Iron (C4,	s): ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1)	No of two required) gery (C9)		
estrictive Layer (il Remarks: DROLOG etland Hydrolog; imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B Sediment Depo Drift Deposits (E Algal Mat or Cru	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2) 1) sits (B2) 33) Ist (B4)	d; check a		ves (B9) 3) 5 (B14) 2dor (C1) 2eres on Livin ed Iron (C4, tion in Tilleo	s): ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2)	No of two required) gery (C9)		
estrictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B Sediment Depo Drift Deposits (E	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2) 1) sits (B2) 33) Ist (B4)	d; check a	Dep Dep Uthat apply) Water-Stained Lea Aquatic Fauna (B1: True Aquatic Plants Hydrogen Sulfide C Oxidized Rhizosphe Presence of Reduc Recent Iron Reduc Thin Muck Surface	oth (inches ves (B9) 3) s (B14) odor (C1) eres on Livii ed Iron (C4) tion in Tilleo (C7)	s): ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1)	No of two required) gery (C9)		
strictive Layer (il Remarks: DROLOG atland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B Sediment Depo Drift Deposits (E Algal Mat or Cru Iron Deposits (E Inundation Visib	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2) 1) sits (B2) 33) Ist (B4) 15) le on Aerial Imagery (B7)	d; check a		oth (inches ves (B9) 3) s (B14) odor (C1) eres on Livii ed Iron (C4) tion in Tilleo (C7)	s): ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2)	No of two required) gery (C9)		
strictive Layer (il Remarks: DROLOG atland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B Sediment Depo Drift Deposits (E Algal Mat or Cru Iron Deposits (E Inundation Visib	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2) 1) sits (B2) 33) ust (B4) 25)	d; check a	Dep Dep Uthat apply) Water-Stained Lea Aquatic Fauna (B1: True Aquatic Plants Hydrogen Sulfide C Oxidized Rhizosphe Presence of Reduc Recent Iron Reduc Thin Muck Surface	ves (B9) 3) 5 (B14) 2dor (C1) 2eres on Livin ed Iron (C4, tion in Tilleo (C7) a (D9)	s): ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2)	No of two required) gery (C9)		
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estrictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B Sediment Depo Drift Deposits (E Algal Mat or Cru Iron Deposits (E Inundation Visib Sparsely Vegeta Saturations	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2) 1) sits (B2) 33) lst (B4) 15) le on Aerial Imagery (B7) ated Concave Surface (B8) 5:	d; check a		oth (inches ves (B9) 3) 5 (B14) odor (C1) eres on Livin ed Iron (C4, tion in Tilleo (C7) a (D9) marks)	s): ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5)	No of two required) gery (C9)		
estrictive Layer (il Remarks: DROLOG etland Hydrolog imary Indicators Surface Water (High Water Tab Saturation (A3) Water Marks (B Sediment Depo Drift Deposits (E Algal Mat or Cru Iron Deposits (E Inundation Visib	at or Peat (S3) if present): Type: Y y Indicators: (minimum of one required A1) le (A2) 1) sits (B2) 33) Ist (B4) 15) le on Aerial Imagery (B7) ated Concave Surface (B8) 5: sent?	d; check a	Dep Dep Uthat apply) Water-Stained Lea Aquatic Fauna (B1. True Aquatic Plants Hydrogen Sulfide C Oxidized Rhizospho Presence of Reduc Presence of Reduc Recent Iron Reduc Thin Muck Surface Gauge or Well Data Other (explain in re	eth (inches ves (B9) 3) 5 (B14) odor (C1) eres on Livin ed Iron (C4, tion in Tilleo (C7) a (D9) marks) (inches):	s): ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5) Indicators of wetland hydro	No of two required) gery (C9)		

Project/Site: Plymouth Creek	Applicant/Owner: <u>BCWMC</u>	City/County: Plymouth/Hennepin State: MN Sa	mpling Date: <u>10/16/15</u>
Investigator(s): <u>BKB</u>	Section: <u>16</u>	Township: <u>118</u> Range: <u>22</u> Sa	ampling Point: <u>1-1 WET</u>
Land Form: Flat	Local Relief: None	Slope %: 0 Soil Map Unit Name: Lester loa	am, 1 to 3 percent slopes
Subregion (LRR): M	Latitude: <u>4985553</u>	Longitude: 463342 Datum: UTM Nad 8	33 Zone 15N Meters
Cowardin Classification: PEMA	Circular 39 Classification: <u>Type 1</u>	Mapped NWI Classification:	<u>Upland</u>
Are climatic/hydrologic conditions on the site typical for th	is time of year? <u>Yes</u> (If no, expl	lain in remarks) Eggers & Reed (primary):	Seasonally Flooded Basin
Are vegetation <u>No</u> Soil <u>No</u> Hydrolog	y <u>No</u> significantly disturbed?	Are "normal circumstances" Yes Eggers & Reed (secondary): Eggers & Reed (tertiary): Eggers & Reed (tertiary):	
Are vegetation <u>No</u> Soil <u>No</u> Hydrolog	y <u>No</u> naturally problematic?	present? Eggers & Reed (quaternary):	

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

I	Hydrophytic vegetation present?	Yes	General Remarks					
	Hydric soil present?	Yes	(explain any					
	Indicators of wetland hydrology present?	Yes	answers if needed):					
	Is the sampled area within a wetland?	Yes	If yes, optional Wetland S	Site ID:	Wetland 1			

VEGETATION

1. 2. 3. 4.	Ulmus americana Acer saccharum	(Plot Size:	<u>30 ft</u>) Total Cover:	Absolute % Cover 20 5 0 0 25	Dominant Species? Yes Yes	Indicator Status FACW FACU	50/20 Thresholds: Tree Stratum Sapling/Shrub Stra Herb Stratum Woody Vine Stratu Dominance Test V Number of Domini	atum Im Vorksheet:		20% 5 0.2 18 0	50% 12.5 0.5 45 0
1. 2. 3. 4.	Sapling/Shrub Stratum Rhamnus cathartica	(Plot Size:	<u>15.ft</u>)		No	FAC	That Are OBL, FA Total Number of D Species Across A Percent of Domina That Are OBL, FA	ominant Il Strata: ant Species	66.67	2 (A) 3 (B) 7% (A/E	3)
5.	Herb Stratum	(Plot Size:	Total Cover:	0			Prevalence Index N Total % Co OBL Species		X 1	Multiply by	r: 15
 1. 2. 3. 4. 5. 6. 7. 	Phalaris arundinacea Scirpus atrovirens Urtica dioica Carex sp.			60 15 10 5 0 0	Yes No No	FACW OBL FACW	FACW Species FAC Species FACU Species UPL Species Column Totals:	90 1 5 0 111 valence Index =	X 2 X 3 X 4 X 5 (A) B/A =	;	180 3 20 0 218 (B) .96
8. 1. 2. % B	<u>Woody Vine Stratum</u> are Ground in Herb Stratun etation Remarks: (include p		Total Cover:		m Moss Cove	r:	Yes Domina Yes Prevale No Morpho in veget No	est for Hydroph nce Test is >509 nce Index ≤ 3.0 logical Adaptati tation remarks o natic Hydrophyt soil & wetland hy tic.	ytic Vegeta % [1] ions [1] (pr r on a sepa ic Vegetatio	ovide supp arate sheet) on [1] (Expla	ain)

ile Description: (Describe to the depth ne Depth Matrix	eded to d		onfirm th ox Featur		of indicators).	
(inches) Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 - 9 10YR 2/1	98	7.5YR 3/4	2	C	М	Sandy Loam	
9 - 18 10YR 4/2	95	7.5YR 3/4	5	С	М	Fine Sandy Loam	
<u>18 - 25</u> <u>N 2.5/0</u>	100					Sandy Mucky Mineral	
Type: C=Concentration, D=Depletion, RM=	Reduced	Matrix, MS=Masked Sand	Grains	[2] Location	: PL=Pore L	ining, M=Matrix.	
dric Soil Indicators: (applicable to all LRRs	, unless c	otherwise noted)			Inc	licators for Problematic Hydric So	ils [3]:
Histosol (A1)		Sandy Gle	eyed Matri	ix (S4)		Coast Prairie Redox (A16)	
Histic Epipedon (A2)		🖌 Sandy Red	dox (S5)			Dark Surface (S7)	
Black Histic (A3)		Stripped N	Matrix (S6))		Iron-Manganese Masses (F12)	
Hydrogen Sulfide (A4)		🗌 Loamy Mu	ıcky Miner	ral (F1)		Very Shallow Dark Surface (TF12)	
Stratified Layers (A5)		🗌 Loamy Gle	eyed Matri	rix (F2)		Other (explain in soil remarks)	
2 cm Muck (A10)		Depleted I	Matrix (F3	3)			
Depleted Below Dark Surface (A11)		🗌 Redox Dai	rk Surface	e (F6)			
Thick Dark Surface (A12)		Depleted L	Dark Surfa	ace (F7)			
Sandy Mucky Mineral (S1)		Redox Dej	pressions	: (F8)		Indicators of hydrophytic vegetat st be present, unless disturbed o	
5 cm Mucky Peat or Peat (S3)							
5 cm Mucky Peat or Peat (S3)							
		Depth	h (inches	ş):		Hydric soil present?	Yes
estrictive Layer (if present): Type:		Depth	h (inches	s):	_	Hydric soil present?	Yes
estrictive Layer (if present): Type:		Deptl	h (inches	s):		Hydric soil present?	Yes
estrictive Layer (if present): Type:		Deptl	h (inches	s):		Hydric soil present?	Yes
ostrictive Layer (if present): Type: bil Remarks: /DROLOGY		Deptl	h (inches	s):		Hydric soil present?	Yes
estrictive Layer (if present): Type: bil Remarks: /DROLOGY etland Hydrology Indicators:	check all		h (inches	s):	Se	Hydric soil present? Hydric soil present? condary Indicators (minimum of tw	
estrictive Layer (if present): Type: bil Remarks: /DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one required;	check all	that apply)		s):		condary Indicators (minimum of to	
estrictive Layer (if present): Type: bil Remarks: //DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one required; Surface Water (A1)	check all	that apply)	s (B9)	s):		condary Indicators (minimum of to Surface Soil Cracks (B6)	
estrictive Layer (if present): Type: bil Remarks: //DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one required;] Surface Water (A1)] High Water Table (A2)	check all	that apply) Uthat apply Water-Stained Leave	s (B9)	s):		condary Indicators (minimum of t Surface Soil Cracks (B6) Drainage Patterns (B10)	
estrictive Layer (if present): Type: bil Remarks: /DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one required; Surface Water (A1) High Water Table (A2) Saturation (A3)	check all	that apply) Water-Stained Leave Aquatic Fauna (B13) True Aquatic Plants (J	s (B9) B14)	s):	Sea	condary Indicators (minimum of to Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2)	
estrictive Layer (if present): Type: oil Remarks: //DROLOGY /etland Hydrology Indicators: rimary Indicators (minimum of one required;] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)	check all	that apply) Water-Stained Leave Aquatic Fauna (B13) True Aquatic Plants (I Hydrogen Sulfide Odd	s (B9) B14) or (C1)			condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)	wo required)
estrictive Layer (if present): Type: oil Remarks: //DROLOGY /etland Hydrology Indicators: rimary Indicators (minimum of one required;] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)	check all	that apply) Water-Stained Leave Aquatic Fauna (B13) True Aquatic Plants (I Hydrogen Sulfide Odd Oxidized Rhizosphered	s (B9) B14) or (C1) es on Livir	ng Roots (C3)		condary Indicators (minimum of to Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery	wo required)
estrictive Layer (if present): Type: pil Remarks: //DROLOGY /etland Hydrology Indicators: rimary Indicators (minimum of one required;] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)] Drift Deposits (B3)	check all	that apply) Water-Stained Leave Aquatic Fauna (B13) True Aquatic Plants (I Hydrogen Sulfide Odd Oxidized Rhizosphered Presence of Reduced	s (B9) B14) or (C1) es on Livir I Iron (C4)	ng Roots (C3)		condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Stunted or Stressed Plants (D1)	wo required)
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estrictive Layer (if present): Type: bil Remarks: //DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required; 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) Sparsely Vegetated Concave Surface (B8) etld Observations: urface water present?		Ithat apply) Water-Stained Leave Aquatic Fauna (B13) True Aquatic Plants (I Hydrogen Sulfide Odd Oxidized Rhizosphere Presence of Reduced Recent Iron Reduction Thin Muck Surface (C Gauge or Well Data (I Other (explain in remaining	s (B9) B14) or (C1) es on Livir I Iron (C4) n in Tilled C7) (D9) arks) sches):	ng Roots (C3)) I Soils (C6)		condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5)	ν required) γ (C9)
estrictive Layer (if present): Type:		that apply) Water-Stained Leave. Aquatic Fauna (B13) True Aquatic Plants (I Hydrogen Sulfide Odd Oxidized Rhizosphere Presence of Reduced Recent Iron Reduction Thin Muck Surface (C Gauge or Well Data (I Other (explain in remain	s (B9) B14) or (C1) es on Livir I Iron (C4) I Iron (C4) I Iron (C4) n in Tilled C7) (D9) arks) arks)	ng Roots (C3)		condary Indicators (minimum of to Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5)	ν required) γ (C9)

Project/Site:	<u>Plymouth</u>	n Creek			Applicant/	Owner: <u>BCWMC</u>	City/County: Plymouth	<u>h/Hennepin</u> State: <u>MN</u>	Sampling Date: <u>10/16/15</u>
Investigator(s):	<u>BKB</u>				Section:	<u>21</u>	Township: <u>118</u>	Range: <u>22</u>	Sampling Point: 2-1 UPL
Land Form:	<u>Hillslope</u>	<u>!</u>			Local Reli	ief: <u>Concave</u>	Slope %: <u>3</u>	Soil Map Unit Name: Leste	r loam, 1 to 3 percent slopes
Subregion (LRR)): <u>M</u>				Latitude:	<u>4985472</u>	Longitude: <u>463549</u>	Datum: UTM N	ad 83 Zone 15N Meters
Cowardin Classi	fication:	<u>Uplar</u>	<u>nd</u>		Circular 3	9 Classification: Upland		Mapped NWI Classification	n: <u>Upland</u>
Are climatic/hydro	ologic cond	itions o	n the site t	ypical for this	time of yea	ar? <u>Yes</u> (If no, expl	lain in remarks)	Eggers & Reed (primary):	<u>Upland</u>
Are vegetation	No	Soil	No	Hydrology	No	significantly disturbed?	Are "normal <u>Yes</u> circumstances"	00	y):
°,						ů ,	present?	Eggers & Reed (tertiary):	
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	No	naturally problematic?	procont.	Eggers & Reed (quaterna	ry):

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

Hydrophytic vegetation present?	<u>No</u>	General Remarks	
Hydric soil present?	No	(explain any	
Indicators of wetland hydrology present?	No	answers if needed):	
Is the sampled area within a wetland?	<u>No</u>	If yes, optional Wetland Site ID:	Upland

VEGETATION

	<u>Tree Stratum</u>	(Plot Size:	<u>30 ft</u>)	<u>Absolute</u> <u>% Cover</u>	<u>Dominant</u> <u>Species?</u>	<u>Indicator</u> <u>Status</u>	50/20 Thresholds: Tree Stratum			20% 18 4	<u>50%</u> 45 10
1.	Acer saccharum			90	Yes	FACU	Sapling/Shrub Stra Herb Stratum	atum		<u>4</u> 10	25
2.				0			Woody Vine Strate	ım		0	0
3. 4.				0			Dominance Test V	Vorksheet:			
7.			Total Cover:	90			Number of Domina	ant Species			
	Sapling/Shrub Stratum	(Plot Size:	15 ft)	_			That Are OBL, FA	CW or FAC:		2 (A)	
1.	Rhamnus cathartica	(,	20	Yes	FAC	Total Number of D Species Across A			4 (B)	
2.				0			Percent of Domina				
3.				0			That Are OBL, FA		50.00	0% (A/B	
4.				0			Prevalence Index V	Norkohaati			
5.			Total Cover:	0			Total % Co			Multiply by:	
				<u>20</u>			II	0	X 1	wutupiy by.	0
	<u>Herb Stratum</u>	(Plot Size:	<u>5 ft</u>)				OBL Species	0	X 2		0
1.	Acer saccharum			40	Yes Yes	FACU	FACW Species	30			90
2.	Rhamnus cathartica			10	res	FAC	FAC Species		X 3	-	_
3.				0			FACU Species	130	X 4	5	20
4. 5.				0			UPL Species	0	X 5		0
5. 6.				0			Column Totals:	160	(A)	6	10 (B)
7.				0			Pre	valence Index =	B/A =	3.	81
8.				0			Hydrophytic Vegeta	ation Indicators:			
			Total Cover:	50			No Rapid T	est for Hydroph	ytic Vegeta	ntion	
	Woody Vine Stratum	(Plot Size:	<u>30 ft</u>)				No Domina	nce Test is >509	6		
1.				0				nce Index ≤ 3.0			
2.				0				logical Adaptati			rting data
2.			Total Cover:	0				tation remarks o natic Hydrophyt			in)
% B	are Ground in Herb Stratur	n:	_	-	m Moss Cove	r:	[1] Indicators of hydrid disturbed or problema	soil & wetland hy	-		
Veg	etation Remarks: (include	photo number	s here or on a separate	sheet)			Hydrophytic vegeta	tion present?	<u>No</u>		
							••				

le Description: (Describe to the depth i	needed to	document the indicator or	confirm th	e abscence (of indicators).		
Depth Matrix			dox Featu					
(inches) Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Rema	rks
0 - 8 10YR 2/1						Clay Loam		
8 - 15 10YR 3/2						Clay		
15 - 20 10YR 5/4	98	10YR 5/8	2	C	M	Sandy Clay Loam		
						- <u></u>		
Type: C=Concentration, D=Depletion, RI	M=Reduced	l Matrix, MS=Masked San	d Grains	[2] Location	: PL=Pore L	ining, M=Matrix.		
Iric Soil Indicators: (applicable to all LR	Rs, unless	otherwise noted)			Ind	icators for Problematic Hydric Soil	's [3]:	
Histosol (A1)		Sandy G	Gleyed Matri	ix (S4)		Coast Prairie Redox (A16)		
Histic Epipedon (A2)		Sandy R	Redox (S5)			Dark Surface (S7)		
Black Histic (A3)		Stripped	Matrix (S6))		Iron-Manganese Masses (F12)		
Hydrogen Sulfide (A4)		🗌 Loamy I	Aucky Mine	ral (F1)		Very Shallow Dark Surface (TF12)		
Stratified Layers (A5)		Loamy (- Gleyed Matr	ix (F2)		Other (explain in soil remarks)		
2 cm Muck (A10)		Depleted	d Matrix (F3	?)				
Depleted Below Dark Surface (A11)		🗌 Redox L	ark Surface	e (F6)				
Thick Dark Surface (A12)		Deplete	d Dark Surfa	ace (F7)				
Sandy Mucky Mineral (S1)			Depressions			Indicators of hydrophytic vegetation st be present, unless disturbed or		hydrolo
				· · ·	inu	si ne present, uniess uisturneu or	problematic.	
5 cm Mucky Peat or Peat (S3) estrictive Layer (if present): Type:		Dep	oth (inches	s):	_	Hydric soil present?	No	
		Dep	oth (inches	s):		Hydric soil present?	No	
estrictive Layer (if present): Type:		Dep	oth (inches	i):		Hydric soil present?	<u>No</u>	
estrictive Layer (if present): Type: il Remarks: 'DROLOGY		Dep	oth (inches	s):		Hydric soil present?	No	
estrictive Layer (if present): Type:	d; check al		oth (inches	s):	See	Hydric soil present? Condary Indicators (minimum of tw		
estrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators:	d; check al		· · · · · · · · · · · · · · · · · · ·	s):				
estrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one require Surface Water (A1)	d; check al	I that apply)	ves (B9)	s):		condary Indicators (minimum of tw Surface Soil Cracks (B6)		
estrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one require Surface Water (A1) High Water Table (A2)	d; check al	I that apply) Water-Stained Lean Aquatic Fauna (B1:	ves (B9) 3)	s):		condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10)		
estrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3)	d; check al	I that apply) U Water-Stained Lean Aquatic Fauna (B1:	ves (B9) 3) \$ (B14)	s):	See	condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2)		
estrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	d; check al	I that apply) Utater-Stained Lean Aquatic Fauna (B1: True Aquatic Plants Hydrogen Sulfide C	ves (B9) 3) \$ (B14) bdor (C1)			condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)	o required)	
estrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	d; check al	I that apply) Utater-Stained Lean Aquatic Fauna (B1) True Aquatic Plants Hydrogen Sulfide C	ves (B9) 3) s (B14) odor (C1) eres on Livir	ng Roots (C3)		condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery	o required)	
estrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one require Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	d; check al	I that apply) Utater-Stained Lean Aquatic Fauna (B1: True Aquatic Plants Hydrogen Sulfide C Oxidized Rhizosphe	ves (B9) 3) s (B14) Ddor (C1) ares on Livir ed Iron (C4,	ng Roots (C3)	Sea	condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Stunted or Stressed Plants (D1)	o required)	
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estrictive Layer (if present): Type: il Remarks: DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one require 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)	d; check al	I that apply) Utater-Stained Lean Aquatic Fauna (B1) Aquatic Fauna (B1) True Aquatic Plants Hydrogen Sulfide C Oxidized Rhizosphe Presence of Reduc Recent Iron Reduct Thin Muck Surface	ves (B9) 3) 5 (B14) Odor (C1) eres on Livir ed Iron (C4, tion in Tilleo (C7)	ng Roots (C3)	Sea	condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Stunted or Stressed Plants (D1)	o required)	
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estrictive Layer (if present): Type:		I that apply) Utater-Stained Lean Aquatic Fauna (B1: Aquatic Fauna (B1: Hydrogen Sulfide C Oxidized Rhizosphe Presence of Reduc Recent Iron Reduct Recent Iron Reduct Gauge or Well Data Other (explain in re	ves (B9) 3) 5 (B14) odor (C1) eres on Livin ed Iron (C4, tion in Tilleo (C7) a (D9) marks) (inches): ches):	ng Roots (C3)	See	condary Indicators (minimum of tw Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5)	o required) (C9)	

Project/Site:	<u>Plymoutl</u>	h Creek			Applicant/O	wner: BCWMC	City/County: Ply	mouth/Hennepin State: MN S	Sampling Date: <u>10/16/15</u>
Investigator(s):	<u>BKB</u>				Section:	<u>21</u>	Township: <u>118</u>	Range: <u>22</u> S	Sampling Point: <u>2-1 WET-A</u>
Land Form:	<u>Flat</u>				Local Relie	f: <u>None</u>	Slope %: <u>0</u>	Soil Map Unit Name: Lester lo	oam, 1 to 3 percent slopes
Subregion (LRR): <u>M</u>				Latitude:	<u>4985467</u>	Longitude: 4635	41 Datum: UTM Nad	83 Zone 15N Meters
Cowardin Classi	fication:	PEM	<u>3</u>		Circular 39	Classification: <u>Type 2</u>		Mapped NWI Classification:	<u>Upland</u>
Are climatic/hydr	ologic cond	litions o	n the site	typical for this	time of year	r? <u>Yes</u> (If no, expla	ain in remarks)	Eggers & Reed (primary):	Fresh (Wet) Meadow
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	<u>No</u>	significantly disturbed?	Are "normal circumstances"	Yes Eggers & Reed (secondary): Eggers & Reed (tertiary):	
Are vegetation	No	Soil	No	Hydrology	<u>No</u> n	naturally problematic?	present?	Eggers & Reed (quaternary)	:

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

Hydrophytic vegetation present?	<u>Yes</u>	General Remarks
Hydric soil present?	Yes	(explain any
Indicators of wetland hydrology present?	Yes	answers if needed):
Is the sampled area within a wetland?	Yes	If yes, optional Wetland Site ID: Wetland 2

VEGETATION

	<u>Tree Stratum</u>	(Plot Size:	<u>30 ft</u>)	Absolute <u>% Cover</u>	<u>Dominant</u> <u>Species?</u>	Indicator Status	50/20 Thresholds: Tree Stratum Sapling/Shrub Stratum		<u>20%</u> 3 0	50% 7.5 0
1. 2.	Populus deltoides			15	Yes	FAC	Herb Stratum		20	50
3.				0			Woody Vine Stratum		0	
4.				0			Dominance Test Worksheet:			
			Total Cover:	<u>15</u>			Number of Dominant Species		2 (A)	
	Sapling/Shrub Stratum	(Plot Size:	<u>15 ft</u>)				That Are OBL, FACW or FAC		2 (A)	
1.				0			Total Number of Dominant Species Across All Strata:		2 (B)	
2.				0			Percent of Dominant Species			
3.				0			That Are OBL, FACW or FAC		00% (A/B)	
4.				0			Prevalence Index Worksheet:			
5.				0					M 14	
			Total Cover:	<u>0</u>			Total % Cover of:	0 X 1	Multiply by:	0
	<u>Herb Stratum</u>	(Plot Size:	<u>5 ft</u>)	· ۱			OBL Species	0 X 2		00
1.	Phalaris arundinacea			100	Yes	FACW	FACW Species			
2.				0			FAC Species	15 X 3		45
3.				0			FACU Species	0 X 4		0
4.				0			UPL Species	0 X 5		0
5. 6.				0			Column Totals:	15 (A)	2	45 (B)
о. 7.				0			Prevalence Inc	ex = B/A =	2.	13
8.				0			Hydrophytic Vegetation Indica	tors:		
•.			Total Cover:	100			No Rapid Test for Hyd	rophytic Vegel	tation	
	Woody Vine Stratum	(Plot Size:	30 ft)	100			Yes Dominance Test is	>50%		
1.				0			Yes Prevalence Index :	3.0 [1]		
1. 2.				0			No Morphological Ada			rting data
2.			Total Cover:	0			in vegetation rema No Problematic Hydro			in)
			Total Oover.	<u>v</u>			· · ·			·
% B	are Ground in Herb Stratun	n:	_	% Sphagnu	m Moss Cove	r:	[1] Indicators of hydric soil & wetla disturbed or problematic.	id hydrology mu	st be present, u	nless
Veg	legetation Remarks: (include photo numbers here or on a separate s			sheet)			Hydrophytic vegetation present	? <u>Yes</u>		

Depth Matrix	eeded to	document the indicator or Red	dox Featu		or indicators	<i>y.</i>	
(inches) Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0 - 8 10YR 3/1						Clay Loam	
8 - 14 10YR 4/2	80	7.5YR 3/4	20	С	М	Clay Loam	
14 - 20 5Y 4/1						Clay Loam	Gravelly
ype: C=Concentration, D=Depletion, RM	=Reduce	d Matrix, MS=Masked Sand	Grains	[2] Location	n: PL=Pore I	Lining, M=Matrix.	
ric Soil Indicators: (applicable to all LRR	s, unless	otherwise noted)			Inc	licators for Problematic Hydric	Soils [3]:
Histosol (A1)		Sandy G	leyed Matri	ix (S4)		Coast Prairie Redox (A16)	
Histic Epipedon (A2)		Sandy R	edox (S5)			Dark Surface (S7)	
Black Histic (A3)		Stripped	Matrix (S6))		Iron-Manganese Masses (F12)	
Hydrogen Sulfide (A4)			lucky Mine			Very Shallow Dark Surface (TF1	12)
Stratified Layers (A5)		Loamy G	leyed Matr	rix (F2)		Other (explain in soil remarks)	
2 cm Muck (A10)		_	- Matrix (F3			,	
Depleted Below Dark Surface (A11)		✓ Redox D	ark Surface	e (F6)			
Thick Dark Surface (A12)		Depleted	Dark Surfa	ace (F7)			
Sandy Mucky Mineral (S1)			epressions			Indicators of hydrophytic vege ist be present, unless disturbed	
					inc	ist be present, unless distarbed	
		Dep	th (inches	5):		Hydric soil present?	Yes
estrictive Layer (if present): Type:		Dep	th (inches	s):		Hydric soil present?	Yes
strictive Layer (if present): Type: il Remarks: 'DROLOGY		Dep	th (inches	s):		Hydric soil present?	<u>Yes</u>
Instrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators:			th (inches	s):			
estrictive Layer (if present): Type: il Remarks: 'DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required	; check a	ll that apply)		s):		condary Indicators (minimum c	
estrictive Layer (if present): Type: il Remarks: TDROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required Surface Water (A1)	; check a	II that apply)	es (B9)	s):	Se	condary Indicators (minimum c Surface Soil Cracks (B6)	
strictive Layer (if present): Type: il Remarks: DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required	; check a	ll that apply)	es (B9)	s):	Se	condary Indicators (minimum c	
estrictive Layer (if present): Type: il Remarks: TDROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required Surface Water (A1)	; check a	II that apply)	es (B9))	s):	Se	condary Indicators (minimum c Surface Soil Cracks (B6)	
strictive Layer (if present): Type: il Remarks: /DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required Surface Water (A1) High Water Table (A2)	'; check a	II that apply) Water-Stained Leav Aquatic Fauna (B13	es (B9)) (B14)	x):	Se	condary Indicators (minimum c Surface Soil Cracks (B6) Drainage Patterns (B10)	
estrictive Layer (if present): Type: il Remarks: 'DROLOGY estland Hydrology Indicators: imary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3)	; check a	II that apply) U Water-Stained Leav Aquatic Fauna (B13	es (B9)) (B14) dor (C1)			condary Indicators (minimum c Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2)	of two required)
estrictive Layer (if present): Type:	; check a	II that apply) Uter-Stained Leav Aquatic Fauna (B13 True Aquatic Plants Hydrogen Sulfide Ou	es (B9)) (B14) dor (C1) res on Livir	ng Roots (C3		condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)	of two required) gery (C9)
strictive Layer (if present): Type: il Remarks: DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	; check a	II that apply) Uater-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou	es (B9)) (B14) dor (C1) res on Livir red Iron (C4,	ng Roots (C3		condary Indicators (minimum o Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag	of two required) gery (C9)
estrictive Layer (if present): Type:	; check a	II that apply) Utater-Stained Leav Aquatic Fauna (B13 Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce	es (B9)) (B14) dor (C1) res on Livin red Iron (C4, on in Tillea	ng Roots (C3		condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1)	of two required) gery (C9)
strictive Layer (if present): Type:	; check a	II that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti	es (B9)) (B14) dor (C1) res on Livii res on	ng Roots (C3		condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2)	of two required) gery (C9)
strictive Layer (if present): Type:	; check a	II that apply) Utater-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (es (B9)) (B14) dor (C1) res on Livin ed Iron (C4, on in Tillea C7) (D9)	ng Roots (C3		condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2)	of two required) gery (C9)
strictive Layer (if present): Type:	; check a	II that apply) Water-Stained Leav Aquatic Fauna (B13 True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (Gauge or Well Data	es (B9)) (B14) dor (C1) res on Livin ed Iron (C4, on in Tillea C7) (D9)	ng Roots (C3		condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2)	o f two required) gery (C9)
strictive Layer (if present): Type: il Remarks: DROLOGY etland Hydrology Indicators: imary 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) Sparsely Vegetated Concave Surface (B8) etd Observations:	'; check a	II that apply) Water-Stained Leav Aquatic Fauna (B13 True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (Gauge or Well Data	es (B9)) (B14) dor (C1) res on Livin ed Iron (C4, ion in Tillea (C7) (D9) marks)	ng Roots (C3		condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5)	o f two required) gery (C9)
estrictive Layer (if present): Type: il Remarks: DROLOGY etland Hydrology Indicators: imary 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)	; check a	II that apply) Water-Stained Leav Aquatic Fauna (B13 True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (Gauge or Well Data Other (explain in ren	es (B9)) (B14) dor (C1) res on Livin ed Iron (C4, on in Tilled (C7) (D9) narks) nches):	ng Roots (C3		condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Imag Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5)	of two required) gery (C9) plogy present? <u>Yes</u>

Project/Site:	<u>Plymoutl</u>	h Creek			Applicant/O	wner: <u>BCWMC</u>	City/County: Plyn	nouth/Hennepin State: MN State: State: State: MN State: Stat	ampling Date: <u>10/16/15</u>
Investigator(s):	<u>BKB</u>				Section:	<u>21</u>	Township: <u>118</u>	Range: <u>22</u> S	ampling Point: <u>2-1 WET-B</u>
Land Form:	<u>Flat</u>				Local Relie	f: <u>None</u>	Slope %: <u>0</u>	Soil Map Unit Name: Lester lo	am, 1 to 3 percent slopes
Subregion (LRR): <u>M</u>				Latitude:	<u>4985463</u>	Longitude: 46353	5 Datum: UTM Nad	83 Zone 15N Meters
Cowardin Classi	fication:	PEM	<u>B</u>		Circular 39	Classification: <u>Type 2</u>		Mapped NWI Classification:	R2UBG
Are climatic/hydr	ologic cond	litions o	n the site t	typical for this	time of year	r? <u>Yes</u> (If no, expla	ain in remarks)	Eggers & Reed (primary):	Fresh (Wet) Meadow
Are vegetation	No	Soil	No	Hydrology	<u>No</u> s	significantly disturbed?	Are "normal circumstances"	Yes Eggers & Reed (secondary):	
Ū			_			o ,	present?	Eggers & Reed (tertiary):	
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	<u>No</u> n	naturally problematic?	prosont:	Eggers & Reed (quaternary):	

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

Hydrophytic vegetation present?	<u>0</u>	General Remarks	
Hydric soil present?	Yes	(explain any	
Indicators of wetland hydrology present?	Yes	answers if needed):	
Is the sampled area within a wetland?	Yes	If yes, optional Wetland Site ID:	Wetland 2

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>	<u>50/20 Thresholds:</u> Tree Stratum		20% 2 0	50% 5 0
1.	Populus deltoides			10	Yes	FAC	Sapling/Shrub Stratum Herb Stratum		20.2	50.5
2.				0			Woody Vine Stratum		0	0
3.				0			Dominance Test Worksheet:			
4.			Total Cover:	10			Number of Dominant Species			
	Sapling/Shrub Stratum	(Plot Size:		<u>10</u>			That Are OBL, FACW or FAC:	2	(A)	
1.	<u>Saping/Shrub Stratum</u>	(FIOL 3126.	<u>1511</u>)	0			Total Number of Dominant	2	(B)	
1. 2.				0			Species Across All Strata:	2	(₽)	
3.				0			Percent of Dominant Species That Are OBL, FACW or FAC:	100.00%	(A/B)	
4.				0						
5.				0			Prevalence Index Worksheet:			
			Total Cover:	<u>0</u>			Total % Cover of:		ltiply by:	
	Herb Stratum	(Plot Size:	<u>5 ft</u>)				OBL Species	X 1 _		1
1.	Phalaris arundinacea			100	Yes	FACW	FACW Species 100	X 2 _	20	-
2.	Persicaria amphibia			1	No	OBL	FAC Species 10	X 3 _	3	80
3.				0			FACU Species 0	X 4		0
4. 5.				0			UPL Species 0	X 5		0
э. 6.				0			Column Totals:111	(A)	23	81 (B)
7.				0			Prevalence Index = B	2/A =	2.0	8
8.				0			Hydrophytic Vegetation Indicators:			
			Total Cover:	101			No Rapid Test for Hydrophy	tic Vegetatio	n	
	Woody Vine Stratum	(Plot Size:	<u>30 ft</u>)				Yes Dominance Test is >50%			
1.				0			Yes Prevalence Index ≤ 3.0 [1	·		the sector to the
2.				0			No Morphological Adaptation in vegetation remarks or			ting data
			Total Cover:	<u>0</u>			No Problematic Hydrophytic	Vegetation	1] (Explaii	1)
% B	% Bare Ground in Herb Stratum: % Sphagnum Moss Cover:						[1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.			
Vegetation Remarks: (include photo numbers here or on a separate sheet)							Hydrophytic vegetation present?	<u>0</u>		

ofile Description: (Describe to the depth nee	ded to d				f indicators).		
Depth Matrix (inches) Color (moist) %		Redox Features Color (moist) % Type [1]			Loc [2]	Texture	Rema	Remarks
0 - 15 5GY 4/1 Gley		7.5 YR 3/4	2	<u> </u>	M	Sandy Clay		
0 - 15 10Y 3/1 Gley	60							
15 - 25 5Y 4/1						Sand		
- <u>-</u>				·				
· · <u> </u>								
J Type: C=Concentration, D=Depletion, RM=F	Reduced	Matrix, MS=Masked Sand	Grains	[2] Location	: PL=Pore L	ining, M=Matrix.		
ydric Soil Indicators: (applicable to all LRRs,	unless c	therwise noted)			Ind	licators for Problematic Hydric S	oils [3]:	
] Histosol (A1)		✓ Sandy G	leyed Matr	ix (S4)		Coast Prairie Redox (A16)		
Histic Epipedon (A2)		Sandy R	edox (S5)			Dark Surface (S7)		
Black Histic (A3)			Matrix (S6)		Iron-Manganese Masses (F12)		
Hydrogen Sulfide (A4)			lucky Mine			Very Shallow Dark Surface (TF12)	1	
Stratified Layers (A5)			- leyed Mati			Other (explain in soil remarks)		
2 cm Muck (A10)			Matrix (F3			, , , , , ,		
Depleted Below Dark Surface (A11)		Redox D	ark Surfac	e (F6)				
Thick Dark Surface (A12)		Depleted	Dark Surf	ace (F7)				
Sandy Mucky Mineral (S1)			epressions			Indicators of hydrophytic vegeta st be present, unless disturbed		hydrolo
							or problematic.	
5 cm Mucky Peat or Peat (S3) Restrictive Layer (if present): Type:		Dep	th (inches	s):		Hydric soil present?	Yes	
		Dep	th (inches	s):			Yes	
Restrictive Layer (if present): Type:		Dep.	th (inches	s):	_		<u>Yes</u>	
estrictive Layer (if present): Type: oil Remarks: YDROLOGY		Dep	th (inches	s):			Yes	
Prestrictive Layer (if present): Type:			th (inches	s):				
Restrictive Layer (if present): Type: coil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; c	heck all	that apply)		s):		Hydric soil present? condary Indicators (minimum of		
Restrictive Layer (if present): Type: Soil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1)	:heck all	that apply)	es (B9)	s):		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6)		
Restrictive Layer (if present): Type: Foil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2)	:heck all	that apply) UWater-Stained Leav	es (B9))	s):		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10)		
Restrictive Layer (if present): Type: Foil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3)	:heck all	that apply) Uater-Stained Leav Aquatic Fauna (B13	es (B9)) (B14)	s):		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2)		
Restrictive Layer (if present): Type: ioil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	:heck all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Out	es (B9)) (B14) dor (C1)			Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8)	two required)	
Restrictive Layer (if present): Type: Foil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	heck all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe	es (B9)) (B14) dor (C1) res on Livi	ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image	two required)	
Restrictive Layer (if present): Type: ioil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) Guiface Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	:heck all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce	es (B9)) (B14) dor (C1) res on Livi d Iron (C4	ng Roots (C3)		Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1)	two required)	
Restrictive Layer (if present): Type: Foil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	heck all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti	es (B9)) dor (C1) res on Livi d Iron (C4 on in Tillec	ng Roots (C3)	See	Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1) Geomorphic Position (D2)	two required)	
Restrictive Layer (if present): Type: ioil Remarks: YDROLOGY Vetland Hydrology Indicators: trimary Indicators (minimum of one required; of 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)	check all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (es (B9)) (B14) dor (C1) res on Livi d Iron (C4 on in Tillec C7)	ng Roots (C3)	See	Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1)	two required)	
Restrictive Layer (if present): Type: Foil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of 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)	check all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Out Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (Gauge or Well Data	es (B9)) (B14) dor (C1) res on Livin d Iron (C4 on in Tillec C7) (D9)	ng Roots (C3)	See	Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1) Geomorphic Position (D2)	two required)	
Restrictive Layer (if present): Type: ioil Remarks: YDROLOGY Vetland Hydrology Indicators: rrimary Indicators (minimum of one required; of 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) Sparsely Vegetated Concave Surface (B8)	check all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (es (B9)) (B14) dor (C1) res on Livin d Iron (C4 on in Tillec C7) (D9)	ng Roots (C3)	See	Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5)	two required) ry (C9)	
Restrictive Layer (if present): Type: Foil Remarks: YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required; of 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)	check all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Out Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (Gauge or Well Data Other (explain in rem	es (B9)) (B14) dor (C1) res on Livin d Iron (C4) on in Tilleo C7) (D9) narks)	ng Roots (C3)	See	Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5) Indicators of wetland hydrology	two required) ry (C9)	Yes
Restrictive Layer (if present): Type: Soil Remarks: YDROLOGY Vetland Hydrology Indicators: trimary Indicators (minimum of one required; of 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) Sparsely Vegetated Concave Surface (B8) Tield Observations: Water water present?	check all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Out Oxidized Rhizosphe Presence of Reduce Recent Iron Reducti Thin Muck Surface (Gauge or Well Data	es (B9)) (B14) dor (C1) res on Livia d Iron (C4 on in Tilleo (C7) (D9) narks) nches):	ng Roots (C3)	See	Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5)	two required) ry (C9)	<u>Yes</u>
Restrictive Layer (if present): Type: foil Remarks: YDROLOGY Vetland Hydrology Indicators: rimary Indicators (minimum of one required; of 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) Sparsely Vegetated Concave Surface (B8)	check all	that apply) Water-Stained Leav Aquatic Fauna (B13) True Aquatic Plants Hydrogen Sulfide Ou Oxidized Rhizosphe Presence of Reducte Recent Iron Reducti Thin Muck Surface (Gauge or Well Data Other (explain in rem Surface Water Depth (i	es (B9)) (B14) dor (C1) res on Livin d Iron (C4 on in Tillec C7) (D9) narks) nches): hes):	ng Roots (C3)	See	Hydric soil present? condary Indicators (minimum of Surface Soil Cracks (B6) Drainage Patterns (B10) Dry-Season Water Table (C2) Crayfish Burrows (C8) Saturation Visible on Aerial Image Stunted or Stressed Plants (D1) Geomorphic Position (D2) FAC-Neutral Test (D5) Indicators of wetland hydrology	two required) ry (C9)	

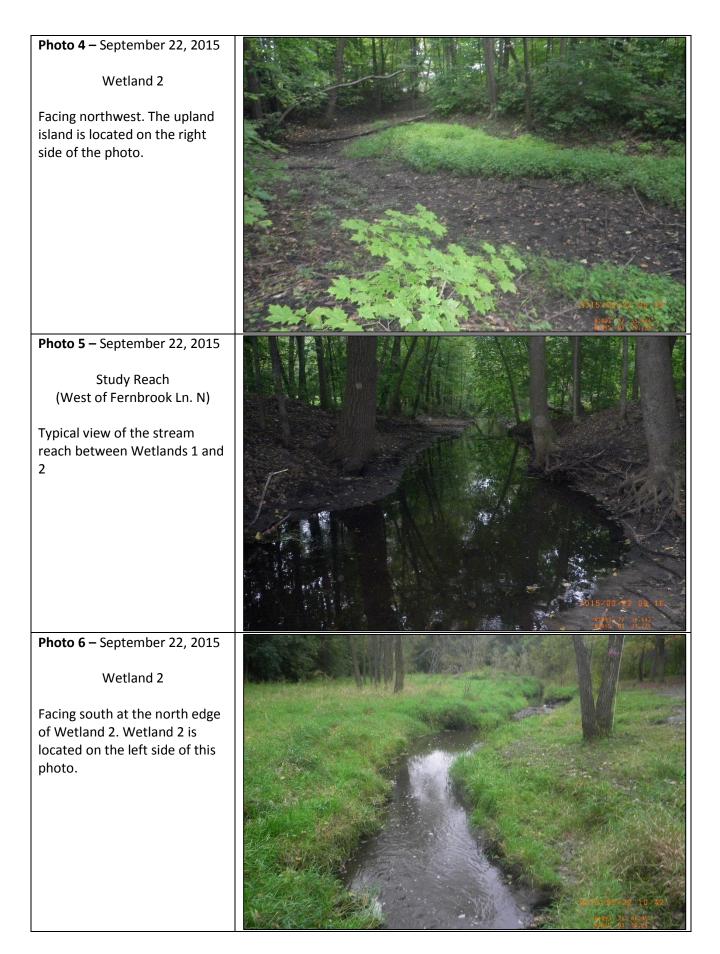
Appendix B

Site Photographs

Appendix B – Plymouth Creek Feasibility Study Wetland Delineation Site Photos

Photo 1 – September 22, 2015	
Study Reach	
(West of Fernbrook Ln. N)	
, , , , , , , , , , , , , , , , , , ,	
Water-level-control structure	
at start of the survey within Plymouth Creek Park.	
Flymouth creek Fark.	
	20:15/29-22/ 08:06
	21-51.00C
Photo 2 – September 22, 2015	
Cturchu Danach	
Study Reach (West of Fernbrook Ln. N)	
(West of rembrook En. Ny	
Bridge crossing and typical view	
of Plymouth Creek in this area.	
	2015/09/22 02.18
	9:093 27' 58.902 H:045' 01' 22:212'
Photo 3 – September 22, 2015	
Wetland 1	
Facing southeast. This photo	
shows the eroded edge of	
Wetland 1 and saturated soils.	
	A State of the second

Appendix B – Plymouth Creek Feasibility Study Wetland Delineation Site Photos



Appendix B – Plymouth Creek Feasibility Study Wetland Delineation Site Photos

Photo 7 – September 22, 2015 Wetland 2 Another view of wetland 2 facing southeast. Wetland 2 is dominated by reed canary grass.	
Photo 8 – September 22, 2015 Study Reach (East of Fernbrook Ln. N) This photo shows an undercut portion of stream channel, which is typical along many areas of Plymouth Creek.	
Photo 9 – September 22, 2015 Study Reach (East of Fernbrook Ln. N) Many areas within the stream reach east of Fernbrook Lane have snags that obstruct water flow	