

Minnesota Wetland Conservation Act

Notice of Application

Item 7E.
BCWMC 3-16-17

Local Government Unit (LGU) City of Plymouth	Address 3400 Plymouth Blvd. Plymouth, MN, 55447
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1. PROJECT INFORMATION

Applicant Name Derek Asche, City of Plymouth	Project Name Plymouth Creek Stream Restoration - 16007	Date of Application 3/7/17	Application Number NA
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Type of Application (check all that apply):

<input checked="" type="checkbox"/> Wetland Boundary or Type	<input type="checkbox"/> No-Loss	<input type="checkbox"/> Exemption	<input type="checkbox"/> Sequencing
<input type="checkbox"/> Replacement Plan	<input type="checkbox"/> Banking Plan		

Summary and description of proposed project (attach additional sheets as necessary):

A wetland delineation was completed as part of a feasibility study proposing restoration of Plymouth Creek from Plymouth Creek Regional Park to Annapolis Lane in Plymouth, MN. Plymouth Creek is a DNR Public Water. Two wetlands were delineated on-site. Wetland 1 is a Type 1, PEMA, seasonally flooded basin dominated by reed canary grass with smaller amounts of green bulrush. Wetland 2 is a Type 2, PEMB, fresh wet meadow dominated by reed canary grass and eastern cottonwood with smaller amounts of water smartweed.

2. APPLICATION REVIEW AND DECISION

Signing and mailing of this completed form to the appropriate recipients in accordance with 8420.0255, Subp. 3 provides notice that an application was made to the LGU under the Wetland Conservation Act as specified above. A copy of the application is attached. Comments can be submitted to:

Name and Title of LGU Contact Person Derek Asche Water Resources Manager	Comments must be received by (minimum 15 business-day comment period): March 30, 2017
Address (if different than LGU) Plymouth City Hall 3400 Plymouth Blvd. Plymouth, MN, 55447	Date, time, and location of decision: March 31, 2017 9am Plymouth City Hall
Phone Number and E-mail Address 763-509-5526 dasche@plymouthmn.gov	Decision-maker for this application: <input checked="" type="checkbox"/> Staff <input type="checkbox"/> Governing Board or Council

Signature: _____

Derek Asche

Date: _____

3/7/17

3. LIST OF ADDRESSEES

- ☒ SWCD TEP member: **Ms. Stacey Lijewski, HCD, 701 Fourth Avenue South, Suite 700, Minneapolis, MN, 55415-1600 (sent electronically)**
- ☒ BWSR TEP member: **Ben Meyer, BWSR, 520 Lafayette Road North, St. Paul, MN, 55401-1397 (sent electronically)**
- ☐ LGU TEP member (if different than LGU Contact):
- ☒ DNR TEP member: **Beckey Horton, MN DNR, 1200 Warner Road, St. Paul, MN, 55106 (sent electronically)**
- ☒ DNR Regional Office (if different than DNR TEP member)
Kate Drewry, Area Hydrologist, MN DNR, 1200 Warner Road, St. Paul, MN, 55106 (sent electronically)
- ☒ WD or WMO (if applicable):
BCWMC, c/o Laura Jester, Keystone Waters LLC, 16145 Hillcrest Lane, Eden Prairie, MN, 553467 (sent electronically)
- ☒ Applicant (notice only) and Landowner (if different):
Lucius Jonett, Wenck Associates (sent electronically)
St. Paul Properties, Inc., 3500 80th Street W., Suite 200, Bloomington, MN, 55431
- ☒ Members of the public who requested notice (notice only):
- ☒ Corps of Engineers Project Manager (notice only): **Melissa Jenny, Army Corps of Engineers, 180 5th Street East, Suite 700, St. Paul, MN, 55101-1678 (sent electronically)**
- ☐ BWSR Wetland Bank Coordinator (wetland bank plan applications only)

4. MAILING INFORMATION

- For a list of BWSR TEP representatives: www.bwsr.state.mn.us/contact/WCA_areas.pdf
- For a list of DNR TEP representatives: www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf
- Department of Natural Resources Regional Offices:

<u>NW Region:</u>	<u>NE Region:</u>	<u>Central Region:</u>	<u>Southern Region:</u>
Reg. Env. Assess. Ecol. Div. Ecol. Resources 2115 Birchmont Beach Rd. NE Bemidji, MN 56601	Reg. Env. Assess. Ecol. Div. Ecol. Resources 1201 E. Hwy. 2 Grand Rapids, MN 55744	Reg. Env. Assess. Ecol. Div. Ecol. Resources 1200 Warner Road St. Paul, MN 55106	Reg. Env. Assess. Ecol. Div. Ecol. Resources 261 Hwy. 15 South New Ulm, MN 56073

For a map of DNR Administrative Regions, see: http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf

- For a list of Corps of Project Managers: www.mvp.usace.army.mil/regulatory/default.asp?pageid=687
or send to:



US Army Corps of Engineers
St. Paul District, ATTN: OP-R
180 Fifth St. East, Suite 700
St. Paul, MN 55101-1678

- For Wetland Bank Plan applications, also send a copy of the application to:
Minnesota Board of Water and Soil Resources
Wetland Bank Coordinator
520 Lafayette Road North
St. Paul, MN 55155

5. ATTACHMENTS

In addition to the application, list any other attachments:

- ☒ **Wetland Delineation Report by BARR Engineering dated February, 2016**

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Joint Application Form for Activities Affecting Water Resources in Minnesota

This joint application form is the accepted means for initiating review of proposals that may affect a water resource (wetland, tributary, lake, etc.) in the State of Minnesota under state and federal regulatory programs. Applicants for Minnesota Department of Natural Resources (DNR) Public Waters permits **MUST** use the MPARS online permitting system for submitting applications to the DNR. Applicants can use the information entered into MPARS to substitute for completing parts of this joint application form (see the paragraph on MPARS at the end of the joint application form instructions for additional information). This form is only applicable to the water resource aspects of proposed projects under state and federal regulatory programs; other local applications and approvals may be required. Depending on the nature of the project and the location and type of water resources impacted, multiple authorizations may be required as different regulatory programs have different types of jurisdiction over different types of resources.

Regulatory Review Structure

Federal

The St. Paul District of the U.S. Army Corps of Engineers (Corps) is the federal agency that regulates discharges of dredged or fill material into waters of the United States (wetlands, tributaries, lakes, etc.) under Section 404 of the Clean Water Act (CWA) and regulates work in navigable waters under Section 10 of the Rivers and Harbors Act. Applications are assigned to Corps project managers who are responsible for implementing the Corps regulatory program within a particular geographic area.

State

There are three state regulatory programs that regulate activities affecting water resources. The Wetland Conservation Act (WCA) regulates most activities affecting wetlands. It is administered by local government units (LGUs) which can be counties, townships, cities, watershed districts, watershed management organizations or state agencies (on state-owned land). The Minnesota DNR Division of Ecological and Water Resources issues permits for work in specially-designated public waters via the Public Waters Work Permit Program (DNR Public Waters Permits). The Minnesota Pollution Control Agency (MPCA) under Section 401 of the Clean Water Act certifies that discharges of dredged or fill material authorized by a federal permit or license comply with state water quality standards. One or more of these regulatory programs may be applicable to any one project.

Required Information

Prior to submitting an application, applicants are **strongly encouraged** to seek input from the Corps Project Manager and LGU staff to identify regulatory issues and required application materials for their proposed project. Project proponents can request a pre-application consultation with the Corps and LGU to discuss their proposed project by providing the information required in Sections 1 through 5 of this joint application form to facilitate a meaningful discussion about their project. Many LGUs provide a venue (such as regularly scheduled technical evaluation panel meetings) for potential applicants to discuss their projects with multiple agencies prior to submitting an application. Contact information is provided below.

The following bullets outline the information generally required for several common types of determinations/authorizations.

- For delineation approvals and/or jurisdictional determinations, submit Parts 1, 2 and 5, and Attachment A.
- For activities involving CWA/WCA exemptions, WCA no-loss determinations, and activities not requiring mitigation, submit Parts 1 through 5, and Attachment B.
- For activities requiring compensatory mitigation/replacement plan, submit Parts 1 thru 5, and Attachments C and D.
- For local road authority activities that qualify for the state's local road wetland replacement program, submit Parts 1 through 5, and Attachments C, D (if applicable), and E to both the Corps and the LGU.

Submission Instructions

Send the completed joint application form and all required attachments to:

U.S Army Corps of Engineers. Applications may be sent directly to the appropriate Corps Office. For a current listing of areas of responsibilities and contact information, visit the St. Paul District's website at:

<http://www.mvp.usace.army.mil/Missions/Regulatory.aspx> and select "Minnesota" from the contact Information box.

Alternatively, applications may be sent directly to the St. Paul District Headquarters and the Corps will forward them to the appropriate field office.

Section 401 Water Quality Certification: Applicants do not need to submit the joint application form to the MPCA unless specifically requested. The MPCA will request a copy of the completed joint application form directly from an applicant when they determine an individual 401 water quality certification is required for a proposed project.

Wetland Conservation Act Local Government Unit: Send to the appropriate Local Government Unit. If necessary, contact your county Soil and Water Conservation District (SWCD) office or visit the Board of Water and Soil Resources (BWSR) web site (www.bwsr.state.mn.us) to determine the appropriate LGU.

DNR Public Waters Permitting: In 2014 the DNR will begin using the Minnesota DNR Permitting and Reporting System (MPARS) for submission of Public Waters permit applications (<https://webapps11.dnr.state.mn.us/mpars/public/authentication/login>).

Applicants for Public Waters permits **MUST** use the MPARS online permitting system for submitting applications to the DNR. To avoid duplication and to streamline the application process among the various resource agencies, applicants can use the information entered into MPARS to substitute for completing parts of this joint application form. The MPARS print/save function will provide the applicant with a copy of the Public Waters permit application which, at a minimum, will satisfy Parts one and two of this joint application. For certain types of activities, the MPARS application may also provide all of the necessary information required under Parts three and four of the joint application. However, it is the responsibility of the Applicant to make sure that the joint application contains all of the required information, including identification of all aquatic resources impacted by the project (see Part four of the joint application). After confirming that the MPARS application contains all of the required information in Parts one and two the Applicant may attach a copy to the joint application and fill in any missing information in the remainder of the joint application.

PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent's contact information must also be provided.

Applicant/Landowner Name: Derek Asche, City of Plymouth
Mailing Address: 3400 Plymouth Blvd., Plymouth, MN, 55447
Phone: 763-509-5526
E-mail Address: dasche@plymouthmn.gov

Authorized Contact (do not complete if same as above):

Mailing Address:
Phone:
E-mail Address:

Agent Name:
Mailing Address:
Phone:
E-mail Address:

PART TWO: Site Location Information

County: Hennepin **City/Township:** Plymouth
Parcel ID and/or Address: 16-118-22-43-0001; 21-118-22-12-0011; 22-118-22-22-0017; 22-118-22-22-0030
Legal Description (Section, Township, Range):
Lat/Long (decimal degrees): 45.02; -93.46
Attach a map showing the location of the site in relation to local streets, roads, highways.
Approximate size of site (acres) or if a linear project, length (feet): ~2,500 lf

If you know that your proposal will require an individual Permit from the U.S. Army Corps of Engineers, you must provide the names and addresses of all property owners adjacent to the project site. This information may be provided by attaching a list to your application or by using block 25 of the Application for Department of the Army permit which can be obtained at:

http://www.mvp.usace.army.mil/Portals/57/docs/regulatory/RegulatoryDocs/engform_4345_2012oct.pdf

PART THREE: General Project/Site Information

If this application is related to a delineation approval, exemption determination, jurisdictional determination, or other correspondence submitted **prior to** this application then describe that here and provide the Corps of Engineers project number.

Describe the project that is being proposed, the project purpose and need, and schedule for implementation and completion. The project description must fully describe the nature and scope of the proposed activity including a description of all project elements that effect aquatic resources (wetland, lake, tributary, etc.) and must also include plans and cross section or profile drawings showing the location, character, and dimensions of all proposed activities and aquatic resource impacts.

The City of Plymouth and the Bassett Creek Watershed propose a stream restoration on Plymouth Creek to improve water quality and assist in meeting the goals of the Medicine Lake TMDL.

PART FOUR: Aquatic Resource Impact¹ Summary

If your proposed project involves a direct or indirect impact to an aquatic resource (wetland, lake, tributary, etc.) identify each impact in the table below. Include all anticipated impacts, including those expected to be temporary. Attach an overhead view map, aerial photo, and/or drawing showing all of the aquatic resources in the project area and the location(s) of the proposed impacts. Label each aquatic resource on the map with a reference number or letter and identify the impacts in the following table.

Aquatic Resource ID (as noted on overhead view)	Aquatic Resource Type (wetland, lake, tributary etc.)	Type of Impact (fill, excavate, drain, or remove vegetation)	Duration of Impact Permanent (P) or Temporary (T) ¹	Size of Impact ²	Overall Size of Aquatic Resource ³	Existing Plant Community Type(s) in Impact Area ⁴	County, Major Watershed #, and Bank Service Area # of Impact Area ⁵

¹If impacts are temporary; enter the duration of the impacts in days next to the "T". For example, a project with a temporary access fill that would be removed after 220 days would be entered "T (220)".

²Impacts less than 0.01 acre should be reported in square feet. Impacts 0.01 acre or greater should be reported as acres and rounded to the nearest 0.01 acre. Tributary impacts must be reported in linear feet of impact and an area of impact by indicating first the linear feet of impact along the flowline of the stream followed by the area impact in parentheses). For example, a project that impacts 50 feet of a stream that is 6 feet wide would be reported as 50 ft (300 square feet).

³This is generally only applicable if you are applying for a de minimis exemption under MN Rules 8420.0420 Subp. 8, otherwise enter "N/A".

⁴Use *Wetland Plants and Plant Community Types of Minnesota and Wisconsin* 3rd Ed. as modified in MN Rules 8420.0405 Subp. 2.

⁵Refer to Major Watershed and Bank Service Area maps in MN Rules 8420.0522 Subp. 7.

If any of the above identified impacts have already occurred, identify which impacts they are and the circumstances associated with each:

PART FIVE: Applicant Signature

☐ Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature: Deborah A. White Date: **3/7/17**

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

¹ The term "impact" as used in this joint application form is a generic term used for disclosure purposes to identify activities that may require approval from one or more regulatory agencies. For purposes of this form it is not meant to indicate whether or not those activities may require mitigation/replacement.

Attachment A

Request for Delineation Review, Wetland Type Determination, or Jurisdictional Determination

By submission of the enclosed wetland delineation report, I am requesting that the U.S. Army Corps of Engineers, St. Paul District (Corps) and/or the Wetland Conservation Act Local Government Unit (LGU) provide me with the following (check all that apply):

☒ **Wetland Type Confirmation**

☒ **Delineation Concurrence.** Concurrence with a delineation is a written notification from the Corps and a decision from the LGU concurring, not concurring, or commenting on the boundaries of the aquatic resources delineated on the property. Delineation concurrences are generally valid for five years unless site conditions change. Under this request alone, the Corps will not address the jurisdictional status of the aquatic resources on the property, only the boundaries of the resources within the review area (including wetlands, tributaries, lakes, etc.).

☒ **Preliminary Jurisdictional Determination.** A preliminary jurisdictional determination (PJD) is a non-binding written indication from the Corps that waters, including wetlands, identified on a parcel may be waters of the United States. For purposes of computation of impacts and compensatory mitigation requirements, a permit decision made on the basis of a PJD will treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. PJDs are advisory in nature and may not be appealed.

☐ **Approved Jurisdictional Determination.** An approved jurisdictional determination (AJD) is an official Corps determination that jurisdictional waters of the United States are either present or absent on the property. AJDs can generally be relied upon by the affected party for five years. An AJD may be appealed through the Corps administrative appeal process.

In order for the Corps and LGU to process your request, the wetland delineation must be prepared in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, any approved Regional Supplements to the 1987 Manual, and the *Guidelines for Submitting Wetland Delineations in Minnesota* (2013).

<http://www.mvp.usace.army.mil/Missions/Regulatory/DelineationJDGuidance.aspx>

Wetland Delineation Report

Plymouth Creek Feasibility Study

Prepared for
Bassett Creek Watershed Management Commission

February 2016



Wetland Delineation Report

Plymouth Creek Feasibility Study

Prepared for
Bassett Creek Watershed Management Commission

February 2016

Wetland Delineation Report

February 2016

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1.0 Introduction

Bassett 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 (**Figure 1**) 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 (2), 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 loam, 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 loam 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 7.0). 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. Wetland 1 is 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 return 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 redoximorphic features, and had fine sandy loam textures. At 18 inches soils transitioned to black, with 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 officinale*, FACU) and a species of sedge.

4.2.2 Wetland 2

Wetland 2 is a Type 2, PEMB, fresh wet meadow located on the left bank of Plymouth Creek approximately 300 feet downstream from Wetland 1 (**Figure 6**). Wetland 2 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 2 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) at SP 2-1 WET-B.

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 colors with 20 percent redoximorphic features down to 14 inches. From 14 to 20 inches soils transitioned to yellower 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).

4.2.3 Delineated Creek Channel

Plymouth Creek is relatively straight as it extends southeast from the upstream boundary of the project area, which is partially due to historical channelization or ditching. The creek channel becomes over-widened with little or no floodplain as it extends further southeast within the project area and then its banks become lower as it approaches the culvert that extends beneath Fernbrook Lane. East of Fernbrook Lane, areas adjacent to Plymouth Creek become more densely forested with a more sinuous creek channel and includes several locations where meander bends are eroding the valley walls or have an extremely low (and likely unstable) meander radius.

Water flowage within the creek channel had a slow to medium velocity and substrate was sandy in most of the shallow areas and siltier in deeper areas. Downed trees and other debris obstructed several areas within the creek channel, particularly at points where the creek meanders sharply. No emergent, or aquatic plants were observed within the creek channel. Reed canary grass was dominant along creek edge points where the banks were low. Mixed hardwood trees and shrubs were dominant at higher elevations adjacent to the creek.

The entire creek channel within the project area was delineated as a linear waterway and classified using the USFWS Cowardin System. The creek channel within the project area was classified as an R2UBG linear waterway (**Figure 6**), which concurs with the NWI designation identified west of Fernbrook Lane (**Figure 2**).

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, City of Plymouth and Hennepin County. Representatives from the MnDNR, and the USACE may also be present at TEP meetings to evaluate delineated wetlands and waterbodies from their perspective.

6.0 References

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- U.S. Fish and Wildlife Service. 1956. *Wetlands of the United States Circular 39*. U.S. Government Printing Office, Washington, D.C.

Tables

Table 1
Antecedent Moisture Conditions Prior to September 22, 2015 Site Visit
Plymouth Creek Feasibility Study Wetland Delineation
Plymouth, 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: 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:	3.18	3.04	2.92
there is a 30% chance this location will have more than:	4.72	5.28	5.28
type of month: dry normal wet	normal	wet	normal
monthly score	3 * 2 = 6	2 * 3 = 6	1 * 2 = 2
multi-month score: 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 * 3 = 6	1 * 2 = 2
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	14 (normal)		

Table 2
Precipitation in Comparison to WETS Data
Plymouth Creek Feasibility Study Wetland Delineation
Plymouth, 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
1981-2010 Summary Statistics															
	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-to-Year Data															
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



Legend

- Study Reach
- Streams

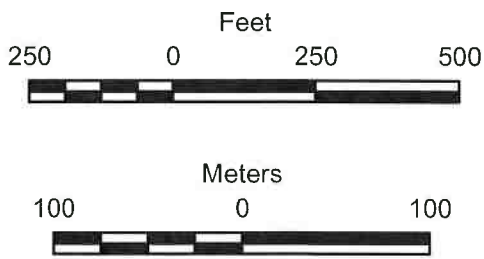




Figure 1



PROJECT LOCATION MAP
Plymouth Creek Feasibility Study
Wetland Delineation
Bassett Creek Watershed
Management Commission



Legend

-  Plymouth Creek
-  Plymouth Creek Study Reach

Contours

-  10-Foot Contour
-  2-Foot Contour

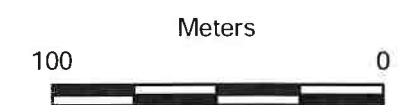
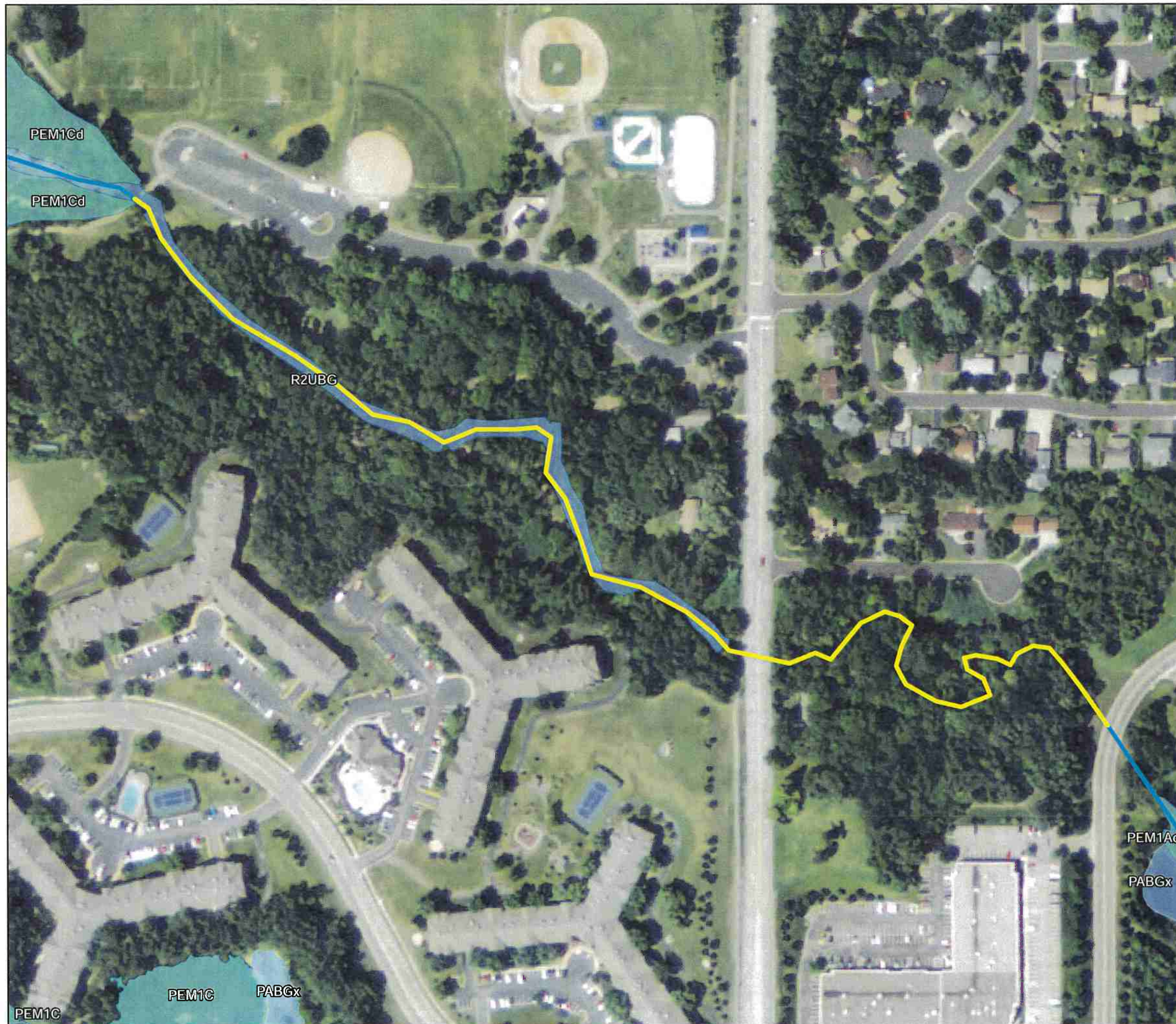


Figure 2

TOPOGRAPHY MAP
Plymouth Creek Feasibility Study
Wetland Delineation
Basset Creek Watershed
Management Commission



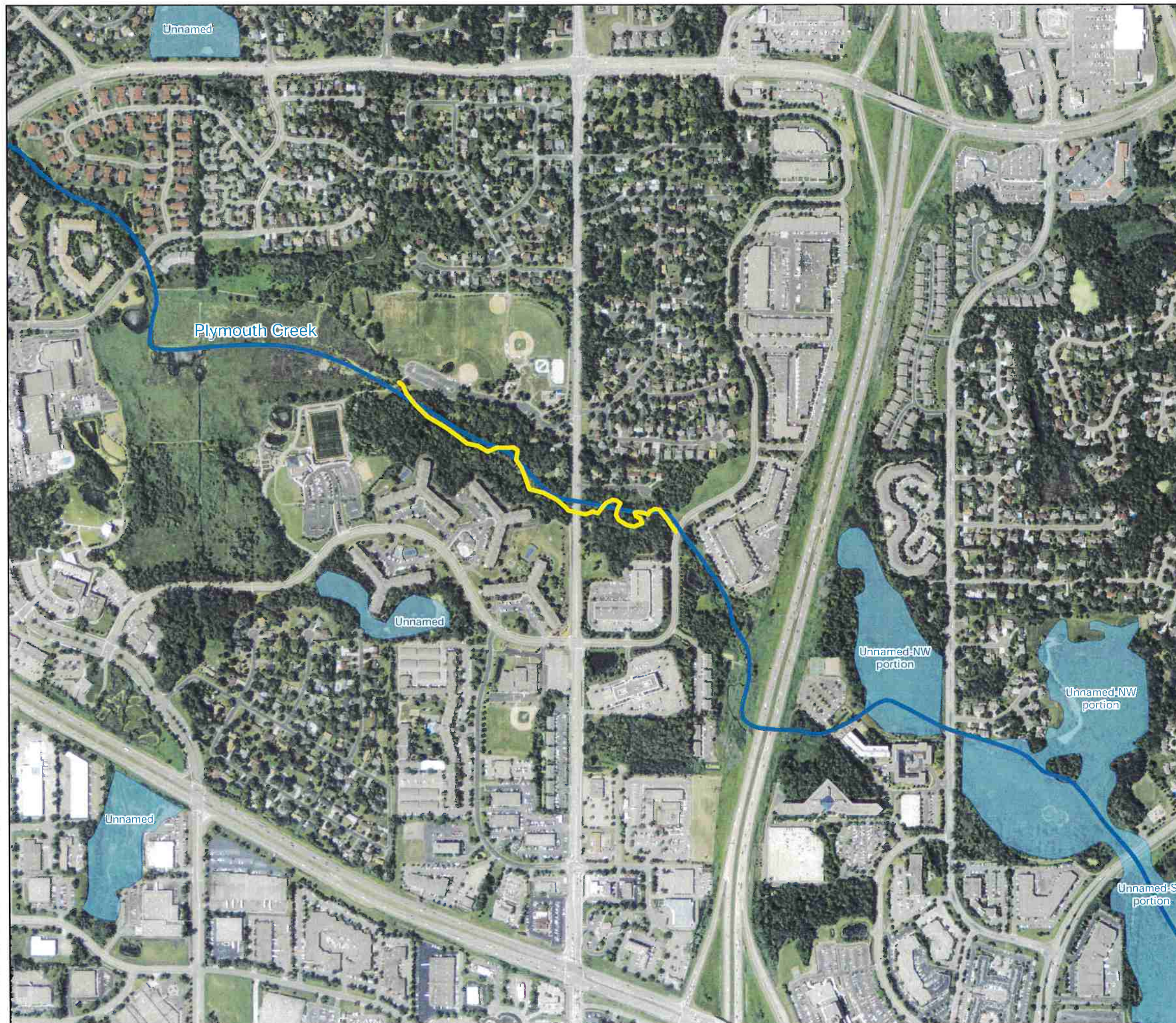
Legend

- Plymouth Creek
- Plymouth Creek Study Reach
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine






Figure 3

NATIONAL WETLAND INVENTORY
Plymouth Creek Feasibility Study
Wetland Delineation
Bassett Creek Watershed
Management Commission



Legend

-  Plymouth Creek Study Reach
-  Public Water Inventory Watercourses
-  Public Water Inventory Basins



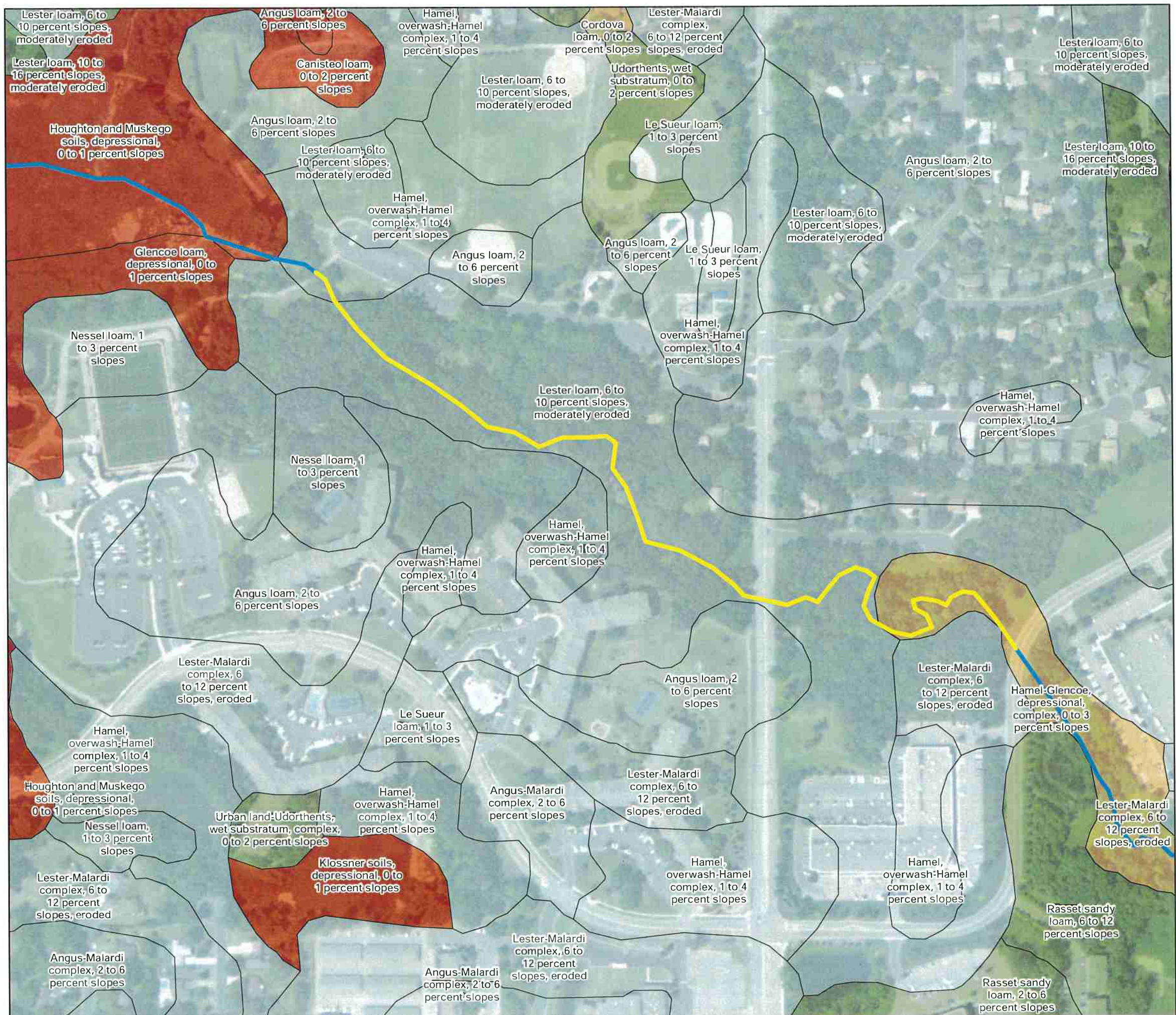
Feet
400 0 400 800

Meters
100 0 100 200



Figure 4

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



Legend

Plymouth Creek Study Reach

Plymouth Creek

Soils Hydric Rating

Hydric

Predominately Hydric

Predominately Non-Hydric

Non-Hydric



Feet

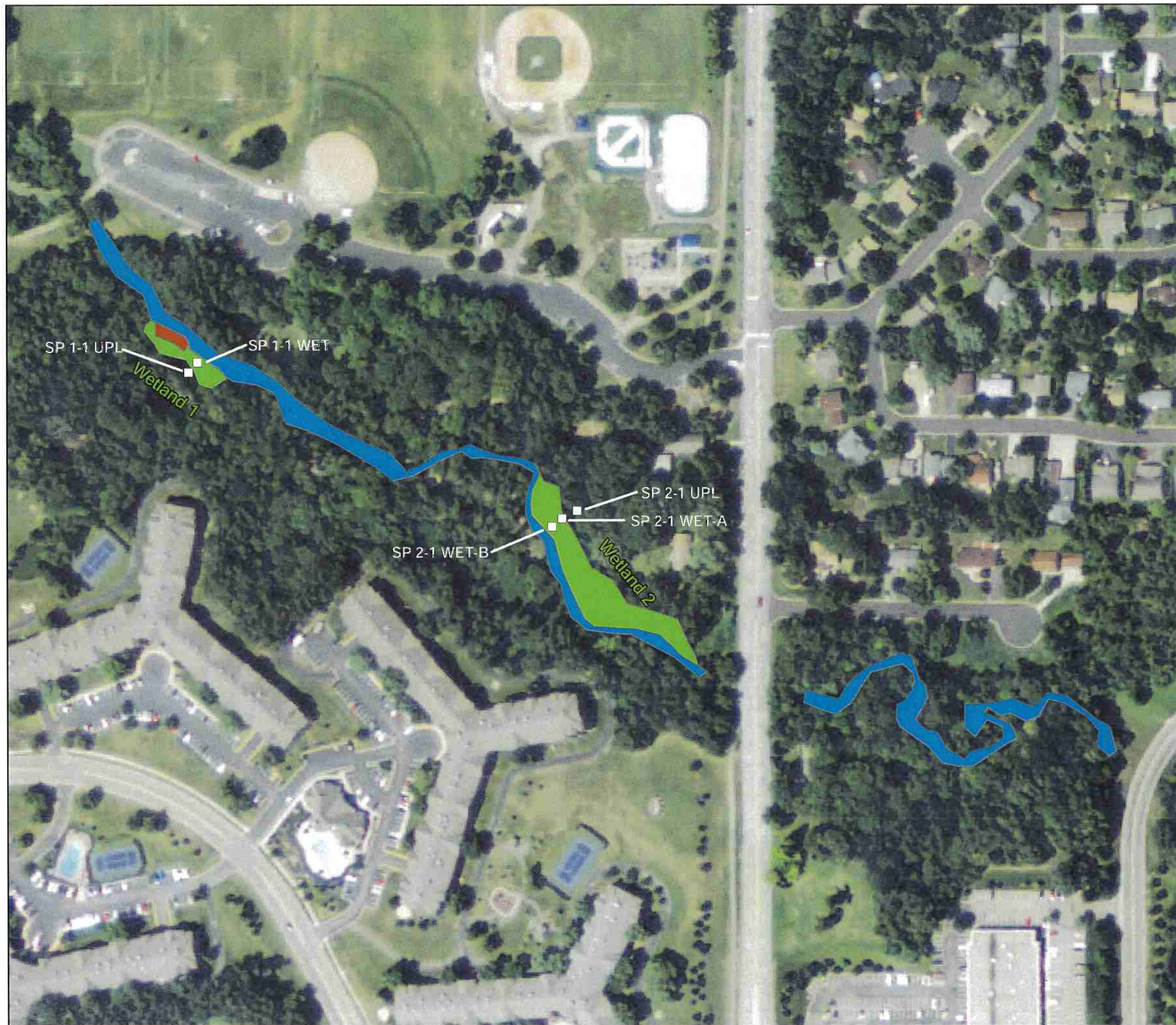


Meters



Figure 5

SOIL SURVEY
Plymouth Creek Feasibility Study
Wetland Delineation
Bassett Creek Watershed
Management Commission



Legend

□ Sample Points

Feature Type

■ Creek

■ Upland Island

■ Wetland

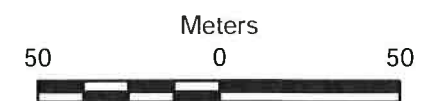


Figure 6

WETLAND & CREEK DELINEATION
Plymouth Creek Feasibility Study
Wetland Delineation
Bassett Creek Watershed
Management Commission

Appendix A

Wetland Data Forms

Are vegetation No Soil No Hydrology No naturally problematic? present? Eggers & Reed (quaternary).

Hydrophytic vegetation present?	No	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

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WETLAND DETERMINATION DATA FORM - Midwest Region

SOIL

Sampling Point:

1-1 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).

	Depth (inches)	Matrix		Redox Features				Texture	Remarks
		Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]		
1.	0 - 11	10YR 2/1						Silt Loam	
2.	11 - 17	10YR 2/1	99	10YR 5/1	1	D	M	Sandy Loam	1% coarse depletions
3.	17 - 20	10YR 3/1	98	10YR 4/2	2	D	M	Sandy Loam	
4.	20 - 24	10YR 2/2	98	7.5 YR 3/4	2	C	M	Sandy Clay Loam	
5.									
6.									

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (applicable to all LRRs, unless otherwise noted)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
☐ Dark Surface (S7)
☐ Iron-Manganese Masses (F12)
☐ Very Shallow Dark Surface (TF12)
☐ Other (explain in soil remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Type: _____	Depth (inches): _____	Hydric soil present? No
Soil Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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)
☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Gauge or Well Data (D9)
☐ Other (explain in remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)

Field Observations:

- Surface water present? ☐ Surface Water Depth (inches): _____
 Water table present? ☐ Water Table Depth (inches): _____
 Saturation present? (includes capillary fringe) ☐ Saturation Depth (inches): _____

 Indicators of wetland hydrology present? **No**

Describe Recorded Data:

 Recorded Data: ☐ Aerial Photo ☐ Monitoring Well ☐ Stream Gauge ☐ Previous Inspections

Hydrology Remarks:

1/25/2016 12:21:12 PM

Project/Site:	<u>Plymouth Creek</u>	Applicant/Owner:	<u>BCWMC</u>	City/County:	<u>Plymouth/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 WET</u>
Land Form:	<u>Flat</u>	Local Relief:	<u>None</u>	Slope %:	<u>0</u>	Soil Map Unit Name:	<u>Lester loam, 1 to 3 percent slopes</u>		
Subregion (LRR):	<u>M</u>	Latitude:	<u>4985553</u>	Longitude:	<u>463342</u>	Datum:	<u>UTM Nad 83 Zone 15N Meters</u>		
Cowardin Classification:	<u>PEMA</u>	Circular 39 Classification:	<u>Type 1</u>	Mapped NWI Classification:			<u>Upland</u>		
Are climatic/hydrologic conditions on the site typical for this time of year?				<u>Yes</u>	(If no, explain in remarks)		Eggers & Reed (primary):	<u>Seasonally Flooded Basin</u>	
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	<u>No</u>	significantly disturbed?	Eggers & Reed (secondary):		
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	<u>No</u>	naturally problematic?	Eggers & Reed (tertiary):		
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	<u>No</u>	naturally problematic?	Eggers & Reed (quaternary):		

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

		<u>Absolute</u>	<u>Dominant</u>	<u>Indicator</u>
<u>Tree Stratum</u> (Plot Size: <u>30 ft</u>))		<u>% Cover</u>	<u>Species?</u>	<u>Status</u>
1.	Ulmus americana	20	Yes	FACW
2.	Acer saccharum	5	Yes	FACU
3.		0		
4.		0		
Total Cover:		25		
<u>Sapling/Shrub Stratum</u> (Plot Size: <u>15 ft</u>))				
1.	Rhamnus cathartica	1	No	FAC
2.		0		
3.		0		
4.		0		
5.		0		
Total Cover:		1		
<u>Herb Stratum</u> (Plot Size: <u>5 ft</u>))				
1.	Phalaris arundinacea	60	Yes	FACW
2.	Scirpus atrovirens	15	No	OBL
3.	Urtica dioica	10	No	FACW
4.	Carex sp.	5	No	
5.		0		
6.		0		
7.		0		
8.		0		
Total Cover:		90		
<u>Woody Vine Stratum</u> (Plot Size: <u>30 ft</u>))				
1.		0		
2.		0		
Total Cover:		0		

% Bare Ground in Herb Stratum: _____ **% Sphagnum Moss Cover:** _____

Vegetation Remarks: (include photo numbers here or on a separate sheet) _____

WETLAND DETERMINATION DATA FORM - Midwest Region

SOIL

Sampling Point:

1-1 WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).

	Depth (inches)	Matrix		Redox Features				Texture	Remarks
		Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]		
1.	0 - 9	10YR 2/1	98	7.5YR 3/4	2	C	M	Sandy Loam	
2.	9 - 18	10YR 4/2	95	7.5YR 3/4	5	C	M	Fine Sandy Loam	
3.	18 - 25	N 2.5/0	100					Sandy Mucky Mineral	
4.	-								
5.	-								
6.	-								

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (applicable to all LRRs, unless otherwise noted)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (explain in soil remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Type: _____	Depth (inches): _____	Hydric soil present? <u>Yes</u>
Soil Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (explain in remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)

Field Observations:

- Surface water present? ☐ Surface Water Depth (inches): _____
- Water table present? ☒ Water Table Depth (inches): 8
- Saturation present? (includes capillary fringe) ☒ Saturation Depth (inches): 0

Indicators of wetland hydrology present? Yes

Describe Recorded Data:

Recorded Data: ☐ Aerial Photo ☐ Monitoring Well ☐ Stream Gauge ☐ Previous Inspections

Hydrology Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek Applicant/Owner: BCWMC City/County: Plymouth/Hennepin State: MN Sampling Date: 10/16/15

Investigator(s): BKB Section: 21 Township: 118 Range: 22 Sampling Point: 2-1 UPL
 Land Form: Hillslope Local Relief: Concave Slope %: 3 Soil Map Unit Name: Lester loam, 1 to 3 percent slopes
 Subregion (LRR): M Latitude: 4985472 Longitude: 463549 Datum: UTM Nad 83 Zone 15N Meters

Cowardin Classification: Upland Circular 39 Classification: Upland Mapped NWI Classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (if no, explain in remarks) Eggers & Reed (primary): Upland

Are vegetation No Soil No Hydrology No significantly disturbed? Are "normal circumstances" present? Yes Eggers & Reed (secondary):

Are vegetation No Soil No Hydrology No naturally problematic? Eggers & Reed (tertiary):
 Eggers & Reed (quaternary):

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

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

VEGETATION

Tree Stratum	(Plot Size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer saccharum</u>		90	Yes	FACU
2.		0		
3.		0		
4.		0		
Total Cover:		90		
<u>Sapling/Shrub Stratum</u> (Plot Size: <u>15 ft</u>)				
1. <u>Rhamnus cathartica</u>		20	Yes	FAC
2.		0		
3.		0		
4.		0		
5.		0		
Total Cover:		20		
<u>Herb Stratum</u> (Plot Size: <u>5 ft</u>)				
1. <u>Acer saccharum</u>		40	Yes	FACU
2. <u>Rhamnus cathartica</u>		10	Yes	FAC
3.		0		
4.		0		
5.		0		
6.		0		
7.		0		
8.		0		
Total Cover:		50		
<u>Woody Vine Stratum</u> (Plot Size: <u>30 ft</u>)				
1.		0		
2.		0		
Total Cover:		0		

% Bare Ground in Herb Stratum: _____ % Sphagnum Moss Cover: _____

Vegetation Remarks: (include photo numbers here or on a separate sheet)

50/20 Thresholds:	20%	50%
Tree Stratum	18	45
Sapling/Shrub Stratum	4	10
Herb Stratum	10	25
Woody Vine Stratum	0	0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 50.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species	0	X 1	0
FACW Species	0	X 2	0
FAC Species	30	X 3	90
FACU Species	130	X 4	520
UPL Species	0	X 5	0
Column Totals:	160	(A)	610 (B)
Prevalence Index = B/A =			3.81

Hydrophytic Vegetation Indicators:

- No Rapid Test for Hydrophytic Vegetation
- No Dominance Test is >50%
- No Prevalence Index ≤ 3.0 [1]
- No Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)
- No Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present? No

WETLAND DETERMINATION DATA FORM - Midwest Region

SOIL

Sampling Point:

2-1 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).

	Depth (inches)	Matrix		Redox Features		Type [1]	Loc [2]	Texture	Remarks
		Color (moist)	%	Color (moist)	%				
1.	0 - 8	10YR 2/1						Clay Loam	
2.	8 - 15	10YR 3/2						Clay	
3.	15 - 20	10YR 5/4	98	10YR 5/8	2	C	M	Sandy Clay Loam	
4.	-								
5.	-								
6.	-								

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (applicable to all LRRs, unless otherwise noted)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
☐ Dark Surface (S7)
☐ Iron-Manganese Masses (F12)
☐ Very Shallow Dark Surface (TF12)
☐ Other (explain in soil remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: Depth (inches):

Hydric soil present? No

Soil Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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)
☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Gauge or Well Data (D9)
☐ Other (explain in remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)

Field Observations:

- Surface water present? ☐ Surface Water Depth (inches):
 Water table present? ☐ Water Table Depth (inches):
 Saturation present? (includes capillary fringe) ☐ Saturation Depth (inches):

Indicators of wetland hydrology present? No

Describe Recorded Data:

 Recorded Data: ☐ Aerial Photo ☐ Monitoring Well ☐ Stream Gauge ☐ Previous Inspections

Hydrology Remarks:

Project/Site:	<u>Plymouth Creek</u>	Applicant/Owner:	<u>BCWMC</u>	City/County:	<u>Plymouth/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:	<u>2-1 WET-A</u>
Land Form:	<u>Flat</u>	Local Relief:	<u>None</u>	Slope %:	<u>0</u>	Soil Map Unit Name:	<u>Lester loam, 1 to 3 percent slopes</u>		
Subregion (LRR):	<u>M</u>	Latitude:	<u>4985467</u>	Longitude:	<u>463541</u>	Datum:	<u>UTM Nad 83 Zone 15N Meters</u>		
Cowardin Classification:	<u>PEMB</u>	Circular 39 Classification:	<u>Type 2</u>	Mapped NWI Classification:			<u>Upland</u>		
Are climatic/hydrologic conditions on the site typical for this time of year?				<u>Yes</u>	(if no, explain in remarks)		Eggers & Reed (primary):	<u>Fresh (Wet) Meadow</u>	
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	<u>No</u>	significantly disturbed?	Are "normal circumstances" present?	<u>Yes</u>	Eggers & Reed (secondary):
Are vegetation	<u>No</u>	Soil	<u>No</u>	Hydrology	<u>No</u>	naturally problematic?	Eggers & Reed (tertiary):		
							Eggers & Reed (quaternary):		

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

<u>Tree Stratum</u>		(Plot Size: <u>30 ft</u>)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>
1.	Populus deltoides	15	Yes	FAC	
2.		0			
3.		0			
4.		0			
Total Cover:		15			
<u>Sapling/Shrub Stratum</u> (Plot Size: <u>15 ft</u>)					
1.		0			
2.		0			
3.		0			
4.		0			
5.		0			
Total Cover:		0			
<u>Herb Stratum</u> (Plot Size: <u>5 ft</u>)					
1.	Phalaris arundinacea	100	Yes	FACW	
2.		0			
3.		0			
4.		0			
5.		0			
6.		0			
7.		0			
8.		0			
Total Cover:		100			
<u>Woody Vine Stratum</u> (Plot Size: <u>30 ft</u>)					
1.		0			
2.		0			
Total Cover:		0			

Vegetation Remarks: (include photo numbers here or on a separate sheet)

<u>Hydrophytic Vegetation Indicators:</u>	
No	Rapid Test for Hydrophytic Vegetation
Yes	Dominance Test is >50%
Yes	Prevalence Index ≤ 3.0 [1]
No	Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)
No	Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present?	Yes
---------------------------------	-----

WETLAND DETERMINATION DATA FORM - Midwest Region

SOIL

Sampling Point:

2-1 WET-A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).

	Depth (inches)	Matrix		Redox Features		Type [1]	Loc [2]	Texture	Remarks
		Color (moist)	%	Color (moist)	%				
1.	0 - 8	10YR 3/1						Clay Loam	
2.	8 - 14	10YR 4/2	80	7.5YR 3/4	20	C	M	Clay Loam	
3.	14 - 20	5Y 4/1						Clay Loam	Gravelly
4.	-								
5.	-								
6.	-								

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (applicable to all LRRs, unless otherwise noted)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☒ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
☐ Dark Surface (S7)
☐ Iron-Manganese Masses (F12)
☐ Very Shallow Dark Surface (TF12)
☐ Other (explain in soil remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: _____ Depth (inches): _____

 Hydric soil present? Yes

Soil Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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)
☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Gauge or Well Data (D9)
☐ Other (explain in remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:

- Surface water present? ☐ Surface Water Depth (inches): _____
 Water table present? ☐ Water Table Depth (inches): _____
 Saturation present? (includes capillary fringe) ☐ Saturation Depth (inches): _____

 Indicators of wetland hydrology present? Yes

Describe Recorded Data:

Soils were moist at 5 inches below ground surface

 Recorded Data: ☐ Aerial Photo ☐ Monitoring Well ☐ Stream Gauge ☐ Previous Inspections

Hydrology Remarks:

1/25/2016 12:21:18 PM

Project/Site: <u>Plymouth Creek</u>		Applicant/Owner: <u>BCWMC</u>		City/County: <u>Plymouth/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: <u>2-1 WET-B</u>	
Land Form: <u>Flat</u>		Local Relief: <u>None</u>		Slope %: <u>0</u>		Soil Map Unit Name: <u>Lester loam, 1 to 3 percent slopes</u>	
Subregion (LRR): <u>M</u>		Latitude: <u>4985463</u>		Longitude: <u>463535</u>		Datum: <u>UTM Nad 83 Zone 15N Meters</u>	
Cowardin Classification: <u>PEMB</u>		Circular 39 Classification: <u>Type 2</u>		Mapped NWI Classification: <u>R2UBG</u>			
Are climatic/hydrologic conditions on the site typical for this time of year? <u>Yes</u> (If no, explain in remarks)				Eggers & Reed (primary): <u>Fresh (Wet) Meadow</u>			
Are vegetation <u>No</u> Soil <u>No</u> Hydrology <u>No</u> significantly disturbed?				Eggers & Reed (secondary): <u>Yes</u>			
Are vegetation <u>No</u> Soil <u>No</u> Hydrology <u>No</u> naturally problematic?				Eggers & Reed (tertiary): <u>present?</u>			
				Eggers & Reed (quaternary): <u></u>			

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

<u>Tree Stratum</u>		(Plot Size: <u>30 ft</u>)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>
1.	Populus deltoides		10	Yes	FAC
2.			0		
3.			0		
4.			0		
Total Cover:			10		
<u>Sapling/Shrub Stratum</u>		(Plot Size: <u>15 ft</u>)			
1.			0		
2.			0		
3.			0		
4.			0		
5.			0		
Total Cover:			0		
<u>Herb Stratum</u>		(Plot Size: <u>5 ft</u>)			
1.	Phalaris arundinacea		100	Yes	FACW
2.	Persicaria amphibia		1	No	OBL
3.			0		
4.			0		
5.			0		
6.			0		
7.			0		
8.			0		
Total Cover:			101		
<u>Woody Vine Stratum</u>		(Plot Size: <u>30 ft</u>)			
1.			0		
2.			0		
Total Cover:			0		

Vegetation Remarks: (include photo numbers here or on a separate sheet)

<u>Hydrophytic Vegetation Indicators:</u>	
No	Rapid Test for Hydrophytic Vegetation
Yes	Dominance Test is >50%
Yes	Prevalence Index ≤ 3.0 [1]
No	Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)
No	Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present?	Yes
---------------------------------	-----

WETLAND DETERMINATION DATA FORM - Midwest Region

SOIL

Sampling Point:

2-1 WET-B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).

	Depth (inches)	Matrix		Redox Features				Texture	Remarks
		Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]		
1.	0 - 15	5GY 4/1 Gley	40	7.5 YR 3/4	2	C	M	Sandy Clay	
2.	0 - 15	10Y 3/1 Gley	60						
3.	15 - 25	5Y 4/1						Sand	
4.									
5.									
6.									

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (applicable to all LRRs, unless otherwise noted)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☒ Sandy Gleyed Matrix (S4)
☒ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
☐ Dark Surface (S7)
☐ Iron-Manganese Masses (F12)
☐ Very Shallow Dark Surface (TF12)
☐ Other (explain in soil remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):	Type: _____	Depth (inches): _____	Hydric soil present? <u>Yes</u>
Soil Remarks:			

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ 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)
- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Gauge or Well Data (D9)
☐ Other (explain in remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:

- Surface water present? ☐ Surface Water Depth (inches): _____
 Water table present? ☐ Water Table Depth (inches): _____
 Saturation present? (includes capillary fringe) ☒ Saturation Depth (inches): 20

 Indicators of wetland hydrology present? Yes

Describe Recorded Data:




 Recorded Data: ☐ Aerial Photo ☐ Monitoring Well ☐ Stream Gauge ☐ Previous Inspections

Hydrology Remarks:




Appendix B

Site Photographs

Appendix B – Plymouth Creek Feasibility Study Wetland Delineation Site Photos

<p>Photo 1 – September 22, 2015</p> <p>Study Reach (West of Fernbrook Ln. N)</p> <p>Water-level-control structure at start of the survey within Plymouth Creek Park.</p>	 <p>2015/09/22 09:01 N: 43° 22' 57.50" W: 71° 23.162"</p>
<p>Photo 2 – September 22, 2015</p> <p>Study Reach (West of Fernbrook Ln. N)</p> <p>Bridge crossing and typical view of Plymouth Creek in this area.</p>	 <p>2015/09/22 09:15 N: 43° 21' 59.10" W: 71° 23.323"</p>
<p>Photo 3 – September 22, 2015</p> <p>Wetland 1</p> <p>Facing southeast. This photo shows the eroded edge of Wetland 1 and saturated soils.</p>	 <p>2015/09/22 09:17 N: 43° 21' 41.100"</p>

Appendix B – Plymouth Creek Feasibility Study Wetland Delineation Site Photos

<p>Photo 4 – September 22, 2015</p> <p>Wetland 2</p> <p>Facing northwest. The upland island is located on the right side of the photo.</p>	
<p>Photo 5 – September 22, 2015</p> <p>Study Reach (West of Fernbrook Ln. N)</p> <p>Typical view of the stream reach between Wetlands 1 and 2.</p>	
<p>Photo 6 – September 22, 2015</p> <p>Wetland 2</p> <p>Facing south at the north edge of Wetland 2. Wetland 2 is located on the left side of this photo.</p>	

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.

