moore engineering, inc.

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Memorandum

Date: 10/6/2026

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Project: Plymouth Creek Restoration Phase 2

Subject: Plymouth Creek Restoration Phase 2 60% Design Memo

Narrative:

The City of Plymouth (City) contracted Moore Engineering, Inc. (Moore) to prepare construction plans for the second phase of restoration of Plymouth Creek. The project is split into two phases with the first phase starting at Dunkirk Lane and ending downstream of a trail crossing at 41St Avenue North and the second phase starting downstream of the trail crossing at 41St Avenue and continuing to 38th Avenue. This memo will discuss the project background and need, along with Moore's design approach in preparing the construction plans for the second phase of the restoration project.

Background

The Bassett Creek Watershed Management Commission (BCWMC) completed a feasibility study of Plymouth Creek between Dunkirk Lane and 38th Avenue reviewing the existing conditions of the stream and proposed restoration options. This feasibility study was presented to BCWMC and the City of Plymouth for their review and consideration. The feasibility study evaluated three options for restoration: Option 1 – High Priority Areas, Option 2 – High and Moderate Priority Areas, Options 3- All Identified Restoration Areas. BCWMC and the City selected Option 3, which encompasses all proposed sediment removal, stream restoration, channel meander reconstruction, and vegetation management measures presented in the feasibility study.

Upon review of the entire proposed project and the level of effort needed to complete Option 3, the City decided to break out the creek restoration into two phases. The first phase focused on the restoration components from Dunkirk Lane to the trail crossing near 41st Avenue. The second phase begins at the end of Phase 1 and continues through 38th Avenue (Figure 1). Phase 1 is under active construction but on schedule to be substantial complete by October 23. The goal is to design and permit the second phase of the project in fall and winter of 2026 and construct the project in 2027.



Figure 1: Project Location – Phase 2 Restoration from 41st Avenue Trail to 38th Avenue with Existing Alignment Stationing

Data Collection

BCWMC provided Moore with the feasibility study findings and ArcGIS shapefiles depicting the proposed restoration practices for consideration during project development. Velocity and flow information for the stream were obtained from the BCWMC XPSWMM model and provided to Moore by Barr Engineering, the BCWMC District Engineer. Because data collection supporting the feasibility study likely occurred prior to publication of the feasibility study in May 2024 and the watershed experienced above average precipitation and large rainfall events in 2024 and 2025, a field investigation was conducted to evaluate current channel conditions and identify any notable changes since completion of the feasibility study. The ArcGIS shapefiles of the restoration practices identified in the feasibility study were added to an online web map to compare existing field conditions with what was proposed in the feasibility study. In addition to the field evaluation, a topographic survey of the stream corridor was also completed. Survey data included stream centerline, toe and top of bank shots collected at approximately 20 foot intervals, along with surrounding ground features and trail features. A wetland delineation and desktop cultural review were completed for the entire project corridor during Phase 1 of the project. This information will be used to support Phase 2 development as well. In addition, Moore completed a cultural resources field investigation during Phase 2 to further evaluate

cultural resources within the project area and support project permitting. Wetland delineation and cultural resource reports are attached.

Existing Conditions

Moore walked the extents of the second phase of the project multiple times, including documenting the entire channel through videos filmed while walking through the stream. For most of the stream in both Phase 1 and 2, current conditions generally matched what was shown in the feasibility study. Stations listed in this report match existing conditions centerline stations in the plans. Existing flow rates, velocities, and flow depths results from BCWMC's XPSWMM model are shown in below. Velocities greater than four feet per second are highlighted in red. Erosion of native grasses begins when channel velocities exceed four to six feet per second. Final stabilization will be designed based on velocities from Moore's proposed condition HEC-RAS model, velocities below are shown for initial site review.

Station	2-year			10-year			100-year		
	Flow Rate (cfs)	Velocity (fps)	Flow Depth (ft)	Flow Rate (cfs)	Velocity (fps)	Flow Depth (ft)	Flow Rate (cfs)	Velocity (fps)	Flow Depth (ft)
0+00	53.4	2	2.8	85.1	2.6	3.3	206.3	5.8	4.8
6+50	53.4	2.1	3.3	85.8	2.4	3.9	206.2	3.2	4.4
11+70	72.7	2.3	3.9	135.2	2.2	5.1	312.2	2.2	7.5
12+40	90.2	1.2	4.5	170.3	2.2	5.6	397	5.1	7.5
22+00	91.9	1.4	3.4	172	1.7	4.3	396	2.1	5.8
24+00	91.9	1.6	2.7	172	2	3.4	395.9	2.6	4.9
25+00	91.9	1.9	2.1	172	2.2	2.7	395.9	2.5	4.4
25+30	94.2	1.9	4.3	176.5	2.1	5.3	403.5	2.3	7.2
26+20	94.2	2	5.4	176.5	2	6.6	403.6	2.2	8.6
27+80	103.6	4.5	1.3	195.3	4.4	2.4	452.8	6.1	4
44+00	124.7	3.4	0.3	249.5	2.1	1.4	559.4	4.7	2.8
Average	87.5	2.2	3.1	162.7	2.4	4	375.3	3.5	4.8

Table 1: BCWMC XPSWMM Velocities

Moore used survey data along with the Bassett Creek Watershed XPSWMM model, and StreamStats to determine bankfull depth, depth/width ratios, and bankfull widths. Surveyed top of banks were consistently six to seven feet away from the steam centerline with an average depth near two feet. This is less than what StreamStats assumed of two feet deep with a width of 18 to 20 feet. The BCWMC XP model also showed water levels in the one to two year event overtopping the banks which also points to the existing channel cross sectional area being less than expected. The StreamStats report is attached.

Station 0+00 to 13+00 (41st Ave Trail to Vicksburg Lane)

The first 150 feet downstream of the 41st Ave trail were stabilized during Phase 1. Banks after the ending of Phase 1 were near vertical or undercut with adjacent plant roots exposed all the way to Vicksburg Lane. The channel has also widened in portions of this reach as there was a large amount of fallen trees and partial blockages within the stream. The upland area on the north side of the stream had dense tree cover with little understory vegetation. The upland area on the south side of the stream after station 4+00 opens to a large wetland complex. The stream bed was significantly lower than either top of bank with the normal thalweg elevation being around 957 to 958 and the top of bank specifically on the south side, along the wetland, ranging from 962 to 963, equating to bank heights of five to six feet. After reviewing historical aerials and based on site visits there seems to be a spoil pile along the south

bank from when this section of channel was straightened and realigned between 1945 and 1953. A soils investigation was completed within the south wetland and stream bed by Moore staff. The wetland generally showed around one foot of topsoil and organic material, followed by a two to three foot layer of non-organic silty-clay, followed by a tightly compacted clay layer. Within the streambed there was a thin layer of silty sediment before the tightly compacted clay layer was encountered again.



Figure 2: Exposed Banks and Deadfall in Stream

Station 13+00 to 29+00 (Vicksburg Lane to Rockford Road)

This section of Plymouth Creek was relatively stable as compared to other reaches within the restoration project limits. Modeled smaller bankfull events such as the one and two year event did show water levels overtop the existing banks. Observed existing field conditions did not show signs of active high bank erosion, so it is assumed once the banks are overtopped the energy levels dissipate over the floodplain which allowed for minimal active erosion in this area. The floodplain and upland area were better connected to this portion of the stream. The tree canopy fully covered the stream with much of the ground either bare or covered with non-desirable species. Historic aerials show the stream was realigned from Vicksburg Lane to roughly station 22+00 prior to 1945 and then around 1985 downstream of station 22+00 was realigned as the surrounding area was developed. Both on the upstream and downstream ends of the Vicksburg and Rockford culvert crossings had significant sediment accumulation which caused the channel flow to be concentrated into a single culvert.



Figure 3: Sediment Accumulation Upstream of Rockford Road

Station 29+00 to 44+00 (Rockford Road to 38th Avenue)

Between Rockford and 38th Ave the stream corridor had much more of a valley section with the stream being approximately ten feet lower than the city trail that runs adjacent to the stream. The gradient of the stream channel slope was also clearly steeper than upstream portions. Banks throughout this section showed several signs of active erosion including undermined banks and exposed soil and root systems along the banks, especially along the outside bends. Between stations 38+00 and 40+00 the stream had an "S" curve that had severely eroded banks. Similar to the other crossings at Vicksburg and Rockford, sediment had accumulated near the culverts at 38th Ave partially blocking two of the three culverts.



Figure 4: Erosion along Outside Bend

Proposed Conditions

After reviewing the proposed restoration best management practices (BMP) shown in the feasibility study, channel velocities, and completing the evaluation of existing site conditions, Moore prepared preliminary construction plans for Plymouth Creek. The proposed restoration BMPs shown in the construction plans generally follow what was presented in the feasibility study with refinements based on the field investigation and detailed design evaluation. Moore is proposing the same suite of restoration BMPs successfully implemented during Phase 1, including bank grading with erosion control blanket, vegetated riprap, coir toe protection, and brush mattresses. Refinements primarily consist of extending vegetated riprap further along an unstable bank or replacing lower-intensity stabilization practices, such as limited bank grading with vegetation enhancement, with a more robust BMP, such as coir toe or riprap toe to provide increased protection where current channel conditions warrant additional resistance to erosion. Due to constructability concerns with a relatively narrow creek, J-hook riprap vanes were replaced with stream-width rock vanes.

Moore proposes to include a re-meander between station 3+50 and 11+65 matching the general limits of the feasibility study. Instead of excavating a new channel, Moore's proposed alignment more closely follows the existing stream alignment but increases the sinuosity to 1.3 by adding meanders. Stable meander geometry typically exhibits radius of curvature values between 1.5 and 2.3 times the bankfull width. Based on the proposed bankfull width of 13 feet, target radii range from approximately 20 to 30 feet, with most of the proposed bends designed near the upper end of this range. The proposed profile and cross sectional geometry are still in progress, but will balance ecological function and hydraulic performance by reestablishing floodplain connectivity while maintaining a no-rise condition during the 100-year flood event. The proposed alignment adds approximately 235 feet of channel length and extends beyond the existing spoil pile along the south side of the channel, enhancing hydrologic and groundwater connectivity between the stream and surrounding wetland.

No-Rise

In order to verify no rise conditions are met, Moore is developing a HEC-RAS steady state model. A HEC-RAS model was selected, rather than utilizing BCWMC's XPSWMM model, as HEC-RAS has more options to model specific stream attributes that are not available in XPSWMM (such as bridge modeling, varied manning's n values, etc.). The model uses Hennepin County lidar for elevation information outside of the stream banks, with Moore's survey data added into the model's cross sections within the stream for accurate elevations. Peak 100-year flow rates were taken from BCWMC's district wide XPSWMM model and used in Moore's HEC-RAS model. Moore is creating an effective existing model which will then be updated with proposed conditions. The updates to proposed conditions includes resloping banks, adjusting stream widths, and updating stream bottom elevations to match proposed grade controlling structures such as arch vanes, and the meander section. Moore is following direction from Minnesota Department of Natural Resources (MnDNR) that no rise would mean no increase in water surface elevation more than 0.004 feet and no decrease more than -0.1 feet.

The model and project will be designed to balance material cut and fill on site and fill in previously eroded areas. Areas where brush mattress or coir logs are proposed, these BMPs are filling in areas that were eroded and would be a net fill. Vegetated riprap is proposed both in eroded areas and in areas that currently have native material. The eroded areas will be filled and in areas that riprap is replacing the native material, that native material will either be used to fill the voids in the riprap or will be used to fill voids in the brush mattress. Bank grading will cut material from the top of the bank and fill near the toe to address over steepened banks and will ultimately be balanced cut and fill. The existing

channel where the meander is proposed will be filled with excavated material from the meander channel to balance cut and fill in that area.

Pollutant Reduction

Moore will estimate pollutant removal using Natural Resources Conservation Service (NRCS) guidance. Total pollutant reduction will be dependent final design, so pollutant estimates have not yet been completed.

Recommendations

The practices shown in the plans follow both the recommendations of the BCWMC initial feasibility study and have been updated to address current conditions of the stream based on Moore's field investigation.

Attachments

A. 60% Design Plans
B. 60% Engineer's Opinion of Cost
C. Wetland Delineation Report
D. Cultural Resource Report
E. StreamStats Report

Attachment A
60% Design Plans

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PLYMOUTH CREEK STREAM RESTORATION PHASE 2

CITY PROJECT NO. WR25001

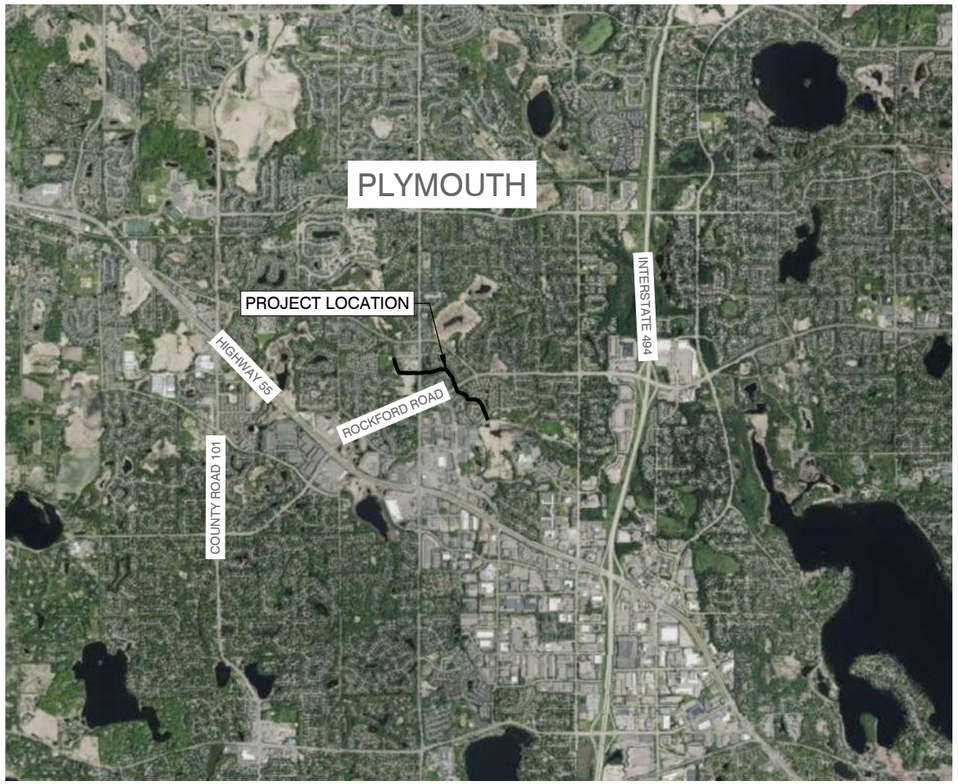
CITY OF PLYMOUTH, MINNESOTA

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City of Plymouth

Bassett Creek Watershed Management Commission

VICINITY MAP



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PROJECT No. 32231

PRELIMINARY

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PRELIMINARY

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GENERAL
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
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MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

G-002

CIVIL LEGEND

EXISTING

- BENCHMARK
- IRON MONUMENT FOUND
- EXISTING PROPERTY LINE
- EXISTING PLAT LOT LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING EASEMENT LINE
- EXISTING PLAT EASEMENT LINE
- EXISTING GAS LINE MARKER
- EXISTING GAS METER
- EXISTING GAS GATE VALVE
- EXISTING POWER POLE
- EXISTING LIGHT POLE
- EXISTING LIGHT POLE W/SIGN
- EXISTING GUY WIRE
- EXISTING TRAFFIC SIGNAL ARM
- EXISTING SIGN
- EXISTING CULVERT W/ FLARED END SECTION (FES)
- EXISTING FLARED END SECTION (FES)
- EXISTING CURB STOP
- EXISTING GATE VALVE
- EXISTING HYDRANT W/ GATE VALVE
- EXISTING YARD HYDRANT
- EXISTING PROPANE TANK
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING STORM SEWER CATCH BASIN
- EXISTING STORM SEWER MANHOLE
- EXISTING WATER MAIN
- EXISTING WATER SERVICE W/ CURB STOP
- EXISTING SANITARY SEWER
- EXISTING SANITARY FORCEMAIN
- EXISTING SANITARY SEWER SERVICE
- EXISTING STORM SEWER
- EXISTING STORM SEWER FORCEMAIN
- EXISTING STEAM PIPE
- EXISTING AIR CONDITIONER
- EXISTING WATER METER PIT
- EXISTING IRRIGATION HEAD
- EXISTING ELECTRIC OUTLET
- EXISTING ELECTRIC METER
- EXISTING ELECTRIC TRANSFORMER
- EXISTING UTILITY PEDESTAL
- EXISTING UTILITY MANHOLE
- EXISTING UTILITY VAULT
- EXISTING UNDERGROUND COMMUNICATIONS
- EXISTING UNDERGROUND FIBER
- EXISTING UNDERGROUND TELEPHONE
- EXISTING OVERHEAD TELEPHONE
- EXISTING UNDERGROUND TELEVISION
- EXISTING OVERHEAD TELEVISION
- EXISTING UNDERGROUND GAS
- EXISTING UNDERGROUND ELECTRIC
- EXISTING OVERHEAD POWER
- EXISTING BARBED WIRE FENCE
- EXISTING CHAIN LINK OR STEEL FENCE
- EXISTING PVC OR WOOD FENCE
- EXISTING RAILROAD
- EXISTING SHRUB
- EXISTING STUMP
- EXISTING BOULDER
- EXISTING TREE / TREE CLUSTER
- EXISTING CLUSTER BOX UNIT (CBU)
- EXISTING MAILBOX
- EXISTING CURB AND GUTTER
- EXISTING CURB AND GUTTER LEVELING

PROPOSED

- NEW PROPERTY LINE
- NEW PLAT LOT LINE
- NEW RIGHT OF WAY LINE
- NEW EASEMENT LINE
- NEW PLAT EASEMENT LINE
- CONSTRUCTION EASEMENT
- CONSTRUCTION LIMITS
- NEW LIGHT POLE
- NEW LIGHT POLE W/ SIGN
- NEW GUY WIRE
- NEW SIGN
- TRAFFIC CONTROL - DRUM
- TRAFFIC CONTROL - TUBULAR MARKER
- NEW CULVERT W/ FLARED END SECTION (FES)
- NEW FLARED END SECTION (FES)
- NEW CURB STOP
- NEW GATE VALVE
- NEW HYDRANT W/ GATE VALVE
- NEW YARD HYDRANT
- NEW TAPPING SLEEVE
- NEW FITTINGS
- NEW PLUG
- NEW SANITARY SEWER MANHOLE
- NEW SANITARY SEWER CLEANOUT
- NEW STORM SEWER CATCH BASIN
- NEW STORM SEWER MANHOLE
- NEW WATER MAIN
- NEW WATER MAIN (DIRECTIONAL DRILLED, CASED OR BURST)
- NEW WATER SERVICE W/CURB STOP (S.B. ELEV.)
- NEW SANITARY SEWER
- NEW SANITARY SEWER (DIRECTIONAL DRILLED OR CASED)
- NEW CURED IN PLACE PIPE (CIPP)
- NEW SANITARY FORCEMAIN
- NEW SANITARY SEWER SERVICE (S.S. ELEV.)
- NEW STORM SEWER
- NEW STORM SEWER (DIRECTIONAL DRILLED OR CASED)
- NEW STORM SEWER FORCEMAIN
- NEW STEAM PIPE
- INSULATION PER DETAIL
- NEW BARBED WIRE FENCE
- NEW CHAIN LINK OR STEEL FENCE
- NEW PVC OR WOOD FENCE
- NEW CLUSTER BOX UNIT (CBU)
- NEW MAILBOX
- NEW LARGE DECIDUOUS TREE
- NEW SMALL DECIDUOUS TREE
- NEW SHRUB
- NEW LARGE EVERGREEN TREE
- NEW SMALL EVERGREEN TREE

REMOVALS

- INDICATES REMOVAL
- REMOVE CURB AND GUTTER
- REMOVE ASPHALT PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE AGGREGATE SURFACE

PAVEMENT REHAB

- UNIFORM MILL & OVERLAY
- TAPERED MILL & OVERLAY
- LEVELING COURSE
- RECLAIM
- ASPHALT PATCH
- CHIP SEAL

PAVEMENT

- NEW INFLOW CURB AND GUTTER
- NEW OUTFLOW CURB AND GUTTER
- NEW ASPHALT SURFACE
- NEW CONCRETE SURFACE
- NEW GRANULAR SURFACE
- NEW CRUSHED CONCRETE SURFACE
- NEW DECORATIVE COLORED CONCRETE
- NEW ASPHALT SIDEWALK OR MULTI-USE PATH
- NEW CONCRETE SIDEWALK OR /MULTI-USE PATH
- NEW CONCRETE APPROACH OR DRIVEWAY
- NEW DETECTABLE WARNING PANEL
- NEW GRAVEL APPROACH OR DRIVEWAY
- NEW CONCRETE VALLEY GUTTER
- NEW MEDIAN NOSE APRON
- NEW ADA RAMP W/ WARNING PANEL

SOIL DISTURBANCE

- DISTURBANCE AREA / TOPSOIL REMOVAL
- REMOVE STOCKPILE
- EXISTING STOCKPILE
- TEMPORARY STOCKPILE
- PERMANENT STOCKPILE
- REAR YARD GRADING
- GRASS BUFFER STRIP

SOIL STABILIZATION

- DISTURBED SOIL STABILIZATION
- STRAW MULCH
- SEEDING & STRAW MULCH
- SEEDING & HYDRO MULCH
- TOPSOIL, SEEDING & STRAW MULCH
- TOPSOIL, SEEDING & HYDRO MULCH
- TOPSOIL, SEEDING & BLANKET

MISCELLANEOUS

- EXISTING RIPRAP
- NEW RIPRAP
- EXISTING LANDSCAPING AREA
- NEW LANDSCAPING AREA
- EXISTING WATER SURFACE
- NEW WATER SURFACE
- EXISTING WETLAND

EROSION CONTROL

- DRAINAGE BREAK LINE
- EXISTING DRAINAGE DIRECTION
- FINISHED DRAINAGE DIRECTION & SLOPE (2.0%)
- FINISHED GRADE (4:1)
- EXISTING CONTOUR ELEVATION (895)
- FINISHED CONTOUR ELEVATION (895)
- GRADE ELEVATIONS (FL:900.07)
- SEDIMENTATION CONTROL WATTLE
- SEDIMENTATION CONTROL FENCE
- ROCK CHECK
- STABILIZED CONSTRUCTION ENTRANCE (S.C.E.)
- CONCRETE WASHOUT
- INLET PROTECTION DEVICE

ABBREVIATIONS:

BOC = BACK OF CURB
BOW = BACK OF WALK
C = COMMUNICATION
CB# = STORM SEWER CATCH BASIN
CIPP = CURED IN PLACE PIPE
CL = CENTERLINE
CSP = CORRUGATED STEEL PIPE
CO# = SANITARY SEWER CLEANOUT
CS# = CONTROL STRUCTURE
DIA = DIAMETER
DIP = DUCTILE IRON PIPE
E = ELECTRICAL
ECC = EDGE OF CRUSHED CONCRETE
EG = EXISTING GRADE
EOC = EDGE OF CONCRETE
EOG = EDGE OF GRAVEL
EOP = EDGE OF PAVEMENT
EOW = EDGE OF WALK
EX = EXISTING
F = FIBER OPTIC
FES = FLARED END SECTION
FG = FINISHED GRADE
FL = FLOWLINE
FM = FORCEMAIN
G = GAS LINE
HP = HIGH POINT
INV = INVERT
LP = LOW POINT
MA = MATCH
M# = STORM SEWER MANHOLE
MT# = STORM SEWER TEE MANHOLE
MM# = STORM SEWER MULTI-MANHOLE
MC = MIDPOINT OF CURVE
OHP = OVERHEAD POWER
OHT = OVERHEAD TELEPHONE
OHTV = OVERHEAD TELEVISION
PC = POINT OF CURVATURE
PRC = POINT OF REVERSE CURVE
PVC = POLYVINYL CHLORIDE PIPE
PT = POINT OF TANGENCY
RIM = RIM OF STRUCTURE
S# = SANITARY SEWER MANHOLE
S.B. ELEV = STOP BOX ELEVATION
S.S. ELEV = SANITARY SEWER SERVICE INVERT
SS = SANITARY SEWER
ST = STORM SEWER
STA = ALIGNMENT STATION
T = TELEPHONE
TOC = TOP OF CONCRETE
TOP = TOP OF PAVEMENT
TOP = TOP OF PIPE
TOW = TOP OF WALK
TR# = SANITARY TELEVISING RISER
TRANS = TRANSFORMER
TV = TELEVISION
U = UTILITY (UNKNOWN UTILITY)

PRELIMINARY

moore engineering, inc.
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City of Plymouth

Bassett Creek Watershed Management Commission

CIVIL
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
CIVIL LEGEND

DATE:	10.01.26
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MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-001

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PRELIMINARY

GOVERNING SPECIFICATIONS:

1. The following specifications apply to this project, listed in order of precedence:
   a. General and Technical specifications in project manual.
   b. City of Plymouth Engineering Guidelines, Standard Detail Specifications, and Technical Specifications, current edition.
   c. City Engineers Association of Minnesota Construction Standard Specifications, current edition.
   d. Minnesota Department of Transportation Standard Specifications for Construction, current edition.

GENERAL NOTES:

1. Take necessary precautions required to protect adjacent properties during the construction operations.
2. Notify Engineer where section, subsection or property monuments are encountered, before such monuments are removed. Protect and carefully preserve all property markers and monuments until the engineer and authorized surveyor has witnessed or otherwise referenced the location.
3. Coordinate a staging area location with the City for construction. There is no guarantee that City has an area suitable for staging.
4. The removal and replacement of existing street signs are incidental to the installation of the new utility. Replace any damaged signs. Coordinate with homeowners or businesses on the removal/relocation of personal/business affects prior to construction taking place in that area.
5. All mailbox relocations must be coordinated with the city and the post office.
6. The drawings designate those existing items for removal, replacement, or improvement. If not designated for removal, replacement, or improvement, all other existing items within the site to be protected.
7. Any construction traffic damage to roads outside the construction area to be repaired by the contractor.
8. Contractor to protect existing ADA ramps not designated for replacement. Any damage caused by construction equipment to the ADA ramp is the responsibility of the contractor to repair.

UNDERGROUND NOTES:

1. Coordinate any utility relocations.
2. Unless otherwise noted, any removal, relocation, replacement, or bracing of power poles or any other utilities is the responsibility of the Contractor.
3. Existing utilities (both public and private) shown on the plans are approximate and may not be complete. It will be the contractor's responsibility to verify and locate any utilities prior to excavation. There will be no additional payment for exploratory time.
4. There is a potential for water on the project. It shall be the contractor's responsibility to dewater for constructability.
5. No extra payment will be made for bedding material for pipe, structures, or fittings.
6. The subsurface utility information in this plan is Utility Quality Level D. This quality level was determined according to the guidelines of ASCE 38-02 entitled "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data".
7. Not all fittings required for a complete installation may be shown on the plans. Provide all required fittings (incidental to other project items).

REMOVAL NOTES

1. All miscellaneous debris, fittings, pipe material, appurtenances etc. Resulting from construction operations shall be first right of refusal to the owner. Otherwise, it will become the property of the contractor and shall be properly disposed of off-site.
2. All removals shall be saw cut. Saw cuts must be full depth.
3. Reclaimed material from the path to be removed from site leaving approximately three inches in place. Reclaimed material to be compacted and graded to ensure drainage off of and away from path.

TRAFFIC CONTROL NOTES:

1. The contractor will be responsible for maintaining access to all businesses/residences/public facilities at all times. This would include building & maintaining any required temporary access roadways.
2. Contractor must follow the current M.U.T.C.D. for traffic control for any and all construction operations that interfere with traffic.
3. Contractor to give no less than 48 hour notice prior to any work being done on the project. All no parking signs and any traffic control shall be posted at least 48 hours prior to work commencing.

STANDARD PLANS THE FOLLOWING STANDARD PLANS, APPROVED BY THE MINNESOTA DEPARTMENT OF TRANSPORTATION & THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.*			
INDEX NO.	**DESCRIPTION**	**APPROVED**	**REVISED**
5-297.250 (1 OF 6)	PEDESTRIAN CURB RAMP DETAILS	11-04-2021	
5-297.250 (2 OF 6)	PEDESTRIAN CURB RAMP DETAILS	11-04-2021	
5-297.250 (3 OF 6)	PEDESTRIAN CURB RAMP DETAILS	11-04-2021	
5-297.250 (4 OF 6)	PEDESTRIAN CURB RAMP DETAILS	11-04-2021	
5-297.250 (5 OF 6)	PEDESTRIAN CURB RAMP DETAILS	11-04-2021	
5-297.250 (6 OF 6)	PEDESTRIAN CURB RAMP DETAILS	11-04-2021	

BASIS OF ESTIMATED QUANTITY	
ITEM:	**APPLICATION RATE**
BSWR FOREST GROUNDCOVER	37.91 POUNDS/ACRE
EARLY SUCCESSIONAL FLOODPLAIN	33.25 POUNDS/ACRE
RESIDENTIAL TURFGRASS (RT)	200 POUNDS/ACRE
BIT TACK COAT (INCIDENTAL)	0.08 - 0.10 GALS/SY

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City of Plymouth

Bassett Creek Watershed Management Commission

CIVIL
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
GENERAL NOTES

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-002

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADiC3D\Production\32231_Cover.dwg

Project Description/Location:
The project is located in the City of Plymouth in Hennepin County, MN. The project corridor consists of approximately 2,400 linear feet of Plymouth Creek between Dunkirk Lane North and Vicksburg Lane North, south of Old Rockford Road and north of County Road 9 (Rockford Road). The project proposes to install a number of bank and channel stabilization practices to improve channel conditions and enhance aquatic habitat. The project will also include a variety of vegetation improvements within the adjacent riparian areas, including removing invasive and undesirable species and planting native species.

Land Feature Changes:
Total disturbed area: 3.99 acres
Total existing impervious area: 0.49 acres
Total proposed impervious area: 0.49 acres
Total proposed net change in impervious area: 0.00 acres

Project Contacts:

	Agency	Contact	Phone No.
Owner:	City of Plymouth	Ben Scharenbroich	(763) 509-5527
Contractor:	TBD	TBD	TBD
State:	MPCA	MPCA Duty Officer	(651) 649-5451

Chain of Responsibility:
The Contractor is the permitee for the national pollutant discharge elimination system (NPDES) construction permit. The contractor is responsible to comply with all aspects of the NPDES construction permit at all times until the notice of termination (NOT) has been filed with the MPCA. The contractor will develop a chain of command with all operators on the site to ensure that the SWPPP with be implemented and stay in effect until the construction project is complete, the entire site has undergone final stabilization, and a notice of termination (NOT) has been submitted to the MPCA.

Contractors Responsibilities:
The Contractor shall be responsible for compliance with, monitoring, and maintenance of the requirement of the MPCA general storm water permit for construction activity. The Contractor must identify a certified erosion and sediment control supervisor. This person must be knowledgeable and experienced in the application of erosion prevention and sediment control bmp's. This person is to oversee the implementation of this SWPPP, and the installation, inspection, and maintenance of the erosion prevention and sediment control bmp's before, during, and after construction. The SWPPP is to remain in effect until the project is complete, the entire site has undergone final stabilization, and the MPCA permit been terminated.

Project Personnel and Training:
Name of person with Best Management Practices (BMP) experience who will oversee SWPPP implementation and coordinate with contractor:
TBD and will be documented in this SWPPP narrative prior to start of construction. (First name, last name, company)

SWPPP Designer:
Company: Moore Engineering Inc.
Name: Kelsey Kline
Email: Kelsey.kline@mooreengineeringinc.com
Phone: 320-281-5493
Training date(s): 5/1/2025
Training activity/content: Design of Construction SWPPP, University of Minnesota

Individual overseeing implementation, revision and/or amendment of the SWPPP that are available for an onsite inspection within 72 hours upon request of MPCA:
TBD and will be documented in this SWPPP narrative prior to start of construction.
Company: [ ]
Name: [ ]
Email: [ ]
Phone: [ ]
Training date(s): [ ]
Training activity/content: [ ]

Individual performing or supervising the installation, maintenance and repair of BMPs:
TBD and will be documented in this SWPPP narrative prior to start of construction.
Company: [ ]
Name: [ ]
Email: [ ]
Phone: [ ]
Training date(s): [ ]
Training activity/content: [ ]

Discharges to special and impaired waters:
Discharging into a special or impaired water must comply with MNR100001 Permit 2023 reference 23 of the NPDES Permit. Plymouth Creek is impaired for aquatic life (Benthic macroinvertebrates bioassessments; Chloride) and aquatic recreation (E. coli) and Medicine Lake is impaired for aquatic consumption (mercury), aquatic life (fish bioassessments), and aquatic recreation (nutrients). Both Plymouth Creek and Medicine Lake have established TMDL goals. Plymouth Creek (Basset Creek) is identified as an impaired waterbody and is included in the Upper Mississippi River Bacteria TMDL and Protection Plan and the Twin Cities Metro Area Chloride TMDL approved by the EPA. The creek also drains to Medicine Lake, which is impaired for excess nutrients and has an approved Medicine Lake Nutrient TMDL (PRJ06316-001). The project will improve water quality and habitat by repairing actively eroding sites by stabilizing streambanks; providing and improving instream and riparian habitats; and preventing erosion at other sites by installing preemptive measures to protect existing streambanks. Overall, this project will reduce erosion, total suspended solids, and phosphorous loading to Plymouth Creek and downstream waters.

Discharges to Wetlands:
Discharging into a wetland must comply with MNR100001 Permit 2023 reference 22 of the NPDES Permit. The projects will have impacts to wetlands, and a Section 404 Permit will be obtained prior to construction and will obtain WCA approval.

Permits:
The following water related permits apply to this project:

Agency	Type of Permit
Minnesota Pollution Control Agency (MPCA)	NPDES Construction Permit
	401 Water Quality Certification
City of Plymouth	WCA Approval
Department of Natural Resources (DNR)	Public Waters Work
Army Corps of Engineers	Section 404
Bassett Creek Water Management Commission	Floodplain Review

Stormwater mitigation measures proposed to be part of the final project in any environmental review document, endangered species review, archeological or other required local, state, or federal review conducted for the project:
There are no stormwater mitigation measures required as a result of an environmental, archeological or agency review. All mitigation measures-have been addressed in this plan set or the special provisions.

Any required site assessments for groundwater or soil contamination:
No site assessment for groundwater or soil contamination was conducted prior to construction for the project.

Estimated Quantities:

Item	Estimated Quantity
Rock Exit to Construction Site	5 EA
Flotation Silt Curtain	50 LF
Inlet Protection	6 EA
Seeding BSWR Forest Groundcover	2.7 AC
Seeding Early Successional Floodplain	0.6 AC
Seeding Residential Turfgrass	0.35 AC

SWPPP Amendments:
Permitee must amend SWPPP within 7 days to include additional requirements to correct problems identified or address the following situations:
1. There is a change in design, construction, operation, maintenance, weather or seasonal conditions.
2. Inspections or investigations by site owner or operators, USEPA or MPCA officials determine the SWPPP is not minimizing discharge of pollutants to surface waters or underground waters or discharges are causing water quality standard exceedances.
3. The SWPPP is not achieving the objectives of minimizing pollutants in stormwater discharges associated with construction activity, or the SWPPP is not consistent with the terms and conditions of the permit.
4. The MPCA determines that the project's stormwater discharges may cause, have reasonable potential to cause, or contribute to non-attainment of any applicable water quality standard, or the SWPPP does not incorporate the applicable requirements of the permit.

BMP Selection and Stormwater Management:
Permittees must select, install, and maintain the BMPs identified in this SWPPP and in the NPDES permit in an appropriate and functional manner and in accordance with relevant manufacturer specifications and accepted engineering practices to minimize the discharge of pollutants in stormwater from construction activities. If erosion control netting is being utilized for soil stabilization, the permittee is encouraged to use products that have been shown to minimize impacts on wildlife.

Erosion/Sediment Control Measures:
Erosion and sediment control measures must comply with MNR100001 Permit 2023 reference 8 and 9 of the NPDES Permit.
A. Areas not to be disturbed must be properly marked before work begins.
B. Must minimize the need for disturbance of portions of the project with steep slopes.
C. Exposed soils (including stockpiles) must have erosion protection/cover initiated immediately and completed within 14 days (or 7 days per Section 23).
D. For DNR Public Waters with "work in waters restrictions" during specified fish spawning time frames, stabilization must be completed for all exposed soil areas within 200 feet of the water's edge, and draining to the water, within 24 hours during the restriction period.
E. The wetted perimeter of the last 200 linear feet of ditches must be stabilized within 24 hours of connecting to a surface water or property line.
F. Temporary or permanent ditches or swales that are being used as a sediment containment system during construction must be stabilized within 24 hours after no longer being used as a sediment containment system.

PRELIMINARY

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Bassett Creek Watershed Management Commission

CIVIL
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
SWPPP

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-003

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADiC3D\Production\32231_Cover.dwg

G. Pipe outlets must have energy dissipation within 24 hours of connecting to a surface water or permanent stormwater treatment system.
H. Mulch, hydro mulch, tackifier, polyacrylamide, or similar erosion prevention practices cannot be used within the normal wetted perimeter of drainage ditches or swale sections with a continuous slope greater than 2%.
I. Must not disturb more land than what can be effectively inspected and maintained.
J. Sediment control practices must be established on downgradient perimeters and upgradient of any buffer zones.
K. If downgradient sediment controls are overloaded, based on frequent failure or excessive maintenance requirements, install additional upgradient sediment control practices or redundant BMPs to eliminate the overloading.
L. Sediment control practices must be established at the base of stockpiles on the downgradient perimeter prior to the initiation of stockpiling.
M. Stockpiles must be located outside of natural buffers or surface waters, including stormwater conveyances (e.g., curb and gutter systems) unless there is a bypass.
N. Permittees must install temporary sediment basins as required in Section 14 of the NPDES Permit.
O. Inlet protection BMPs shall be placed at all storm sewer system inlets prior to any work in those areas until permanent cover on all areas that receive discharge from the inlet are established.
P. Inlet protection may be removed for a particular inlet if a safety concern is identified, and it must be documented in this SWPPP.
Q. Vehicle tracking BMPs must be established where vehicles are exiting the site to minimize street tracking. Sediment tracked onto a public street must be removed within 24 hours.
R. Must re-install all sediment control practices adjusted or removed to accommodate short-term activities immediately after the short-term activity is completed or before the next precipitation event even if the short-term activity is not complete.
S. Street sweeping must be used in addition to vehicle tracking BMPs if the vehicle tracking BMPs alone are not adequate to prevent sediment tracking.
T. Topsoil must be preserved unless infeasible.
U. Soil compaction must be minimized.
V. Discharges from BMPs must be directed to vegetated areas, unless infeasible.
W. 50-foot natural buffers must be preserved or (if maintaining buffer is infeasible) redundant sediment controls must be provided when a surface water is located within 50 feet of the project's earth disturbances and drains to the surface water.
X. Any sediment control made of soil must be temporarily or permanently stabilized within 24 hours.

Dewatering:
Dewatering related to the construction activity must comply with MNR100001 Permit 2023 reference 10 of the NPDES Permit. Dewatering must not cause nuisance conditions in surface waters. Turbid or sediment-laden waters must be discharged to a sediment control designed to prevent discharges with visual turbidity. It is prohibited to use receiving waters as part of the treatment area. Visual inspection and photos must be taken every 24 hours of operation to ensure adequate treatment has been obtained and nuisance conditions will not result from the discharge. If nuisance conditions occur from the discharge, dewatering must cease immediately, and corrective actions must occur before dewatering is resumed. Discharge from dewatering must be protected from erosion and scouring by an acceptable energy dissipation method, such as rock riprap, or sandbags. If using filters with backwash water, backwash water must be hauled away for disposal, returned to the beginning of the treatment process, or incorporated into the site in a manner that does not erode into runoff.

Temporary dewatering activities may be required. Therefore, it is possible that a permit for the temporary appropriation of waters of the state, non-irrigation from MNDNR will be required for this project. The contractor is responsible for obtaining this permit prior to commencing dewatering activities.

Site Inspection and Maintenance:
Inspections must comply with MNR100001 Permit 2023 reference 11 of the NPDES Permit. A trained person (as identified in item 21.2.b. of the NPDES Permit) must inspect the entire construction site a minimum of once every seven days during active construction and within 24 hours after a rainfall event greater than 0.5 inches in 24 hours. Inspect and maintain all temporary and permanent stormwater treatment BMPs, and erosion prevention and sediment control BMPS until the site has undergone final stabilization and the NOT has been submitted. Inspect areas adjacent yo the project, surface water including drainage ditches and conveyance systems for evidence of erosion and sediment deposition. Inspect construction site vehicle exit locations, streets, and curb and gutter systems within and adjacent to the project for evidence of sedimentation from erosion or tracked sediment from vehicles. Inspect infiltration areas for signs of sediment deposition and compaction.

Record all inspections and maintenance activities in writing within 24 hours of above stated rainfall. Submit inspection reports in a format that is acceptable to the project engineer. Include the following in the records of each inspection:
A. Date and time of inspection.
B. Name of person(s) conducting inspection.
C. Accurate findings of inspections, including the specific location where corrective actions are needed.
D. Corrective actions taken (including dates, times, and party completing maintenance activities).
E. Date and amount of all rainfall events greater than 0.5 inch in 24 hours. Rainfall amounts must be obtained by a properly maintained rain gauge installed onsite, or by a weather station that is within one mile or by a weather reporting system.
F. If any discharge is observed during the inspection, it must be recorded. Discharge should also be photographed and described.
G. Any amendments to the SWPPP proposed as a result of the inspection must be documented as required in Section 6 within seven (7) calendar days.
H. All photographs of dewatering activities and documentation of nuisance conditions as a result of dewatering

Maintenance requirements are as listed below:

A. All nonfunctional BMPs must be repaired, replaced, or supplemented with functional BMPs by the end of the next business day after discovery, or as soon as field conditions allow.
B. All deltas and sediment deposits must be removed from surface waters (including drainage ways, catch basins, and other drainage systems). Removal and stabilization must be completed within seven days of discovery. Contact all appropriate authorities prior to working in surface waters.
C. Sediment on paved surfaces must be removed within one calendar day of discovery, or within a shorter time to avoid a safety hazard.
D. Perimeter control devices must be repaired, replaced, or supplemented when nonfunctional or sediment reaches one-half the height of the device. Complete repairs by the end of the next business day following discovery.
E. Temporary and permanent sediment basins must be drained, and sediment removed when the depth of sediment collected reaches one-half storage volume within 72 hours of discovery.
F. Dewatering operations must be inspected and photographed at the beginning and at least once every 24 hours during operation.
G. Repair or replace inlet protection devices within 24 hours of discovery when they become nonfunctional, or sediment reaches 1/2 the height and/or depth of the device.

Methods to minimize soil compaction and preserve topsoil:
The contractor is responsible for marking areas that are not to be disturbed on the site. These areas must be marked prior to any construction occurring with stakes, flags, signs, or other appropriate methods. The contractor is responsible for not allowing construction equipment and vehicles to enter these areas in order to minimize soil compaction. Whenever feasible, the contractor must preserve topsoil from the construction site.

Pollution Prevention Measures:
A. Store all construction materials that have potential to leach pollutants, landscape materials, pesticides, fertilizers, and treatment chemicals under cover (e.g., plastic sheeting or temporary roofs) to minimize contact with stormwater.
B. Store, collect and dispose solid waste in compliance with Minn. R. Ch. 7035.
C. Limit vehicle and equipment washing to a defined area of the site. Contain runoff from the washing area to a temporary sediment basin or other effective control. Properly dispose of all waste generated by vehicles and equipment washing. Engine degreasing is not allowed on the site.
D. Provide effective containment for all liquid and solid wastes generated by washout of concrete, stucco, paint, form release oils, curing compounds and other construction materials. Liquid and solid washout wastes must not contact the ground. The liquid and solid waste that is produced must be disposed of in compliance with the MPCA rules. A sign must be installed indicating the location of the washout facility.
E. Portable toilets must be positioned so that they are secure and sanitary waste will be properly disposed of.
F. Fuel and maintain vehicles in a designated contained area whenever feasible. Use drip pans or absorbents to prevent the discharge of spills or leaked chemicals. Provide a spill kit at each location that vehicles and equipment are fueled or maintained at. Spills must be reported and cleaned up immediately as required by Minn. Stat. 115.061.
G. Store all hazardous materials and toxic waste (including but not limited to oil, diesel fuel, gasoline, hydraulic fluids, paint, petroleum-based products, wood preservatives, additives, curing compounds, and acids) in sealed containers with secondary containment. Storage and disposal of hazardous waste materials must be in compliance with Minn. R. ch. 7045

Permit Termination Conditions:
A Notice of Termination (NOT) can be submitted to the MPCA once the following guidelines are met:
A. Permanent uniform perennial vegetative cover must be established at minimum 70% density of its expected final growth.
B. The permanent stormwater treatment system is constructed, meets all requirements, and is operating as designed.
C. All temporary synthetic erosion prevention and sediment control BMPs must be removed, and the surrounding area must be restored to as designed.
D. Clean out sediment from conveyance systems and permanent stormwater treatment systems (return to design capacity).
E. For residential construction only, permit coverage terminates on individual lots if the lot is sold to the homeowner, structures are finished, and permanent cover is established. If permanent cover is not established install temporary erosion protection and downgradient perimeter control and distribute the MPCA's Homeowner Fact Sheet.
F. For construction on agricultural lands, the disturbed land must be returned to its preconstruction agricultural use.
G. When submitting the NOT ground or aerial photographs must be included to show the requirements of Section 13.2 of the NPDES Permit have been met.

Stabilization Time Frames:
A. Initiate stabilization immediately when construction has temporarily or permanently ceased on any portion of the site. Complete stabilization within the time frame listed. In many instances this will require stabilization to occur more than once during the course of the project.
B. Stabilize wetted perimeter of ditch (i.e. where the ditch gets wet).
C. Application of mulch, hydromulch, tackifier and polyarylamide are not acceptable stabilization methods in these areas.
D. Stabilize all areas of the site prior to the onset of winter. Any work still being performed will be snow mulched, seeded, and blanketed within the time frames in the NPDES permit.
E. Topsoil berms must be stabilized in order to be considered perimeter control BMPS. Use rapid stabilization method 2, 3, or 4 as directed by the engineer. The seed mix used in the rapid stabilization may be substituted as follows:
    a. Single year construction between May 1- August 1, seed with seed mixture 21-111
    b. Single year construction between August 1and October 31, seed with seed mixture 21-112
    c. Multi-year construction 22-111

PRELIMINARY

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Bassett Creek Watershed Management Commission

CIVIL
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
SWPPP

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-004

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3D\Production\32231_Cover.dwg

F. Keep ditches and exposed soils in an even rough graded condition in order to be able to apply erosion control mulches, hydromulches and blankets.

G.

Area	Time Frame
Last 200 lineal feet of drainage ditch or swale	Within 24 hours of connection to surface water or property edge
Remaining portions of drainage ditch or swale	Initiate immediately when construction activity has permanently or temporarily ceased 7 days per Section 23 of the NDPES Permit
Pipe and culvert outlets	24 hours
Exposed soils and stockpiles	Initiate immediately when construction activity has permanently or temporarily ceased 7 days per Section 23 of the NPDES Permit
Within 200 feet of a public water	24 hours

Permanent Stormwater Treatment Systems:
There are no permanent stormwater treatment systems needed for the proposed project. If there is a permanent stormwater treatment system needed later in the project the contractor must design and implement the permanent stormwater treatment systems to be compliant with MNR100001 Permit 2023 reference 15 of the NPDES Permit.

Infeasibility Documentation:
No infeasible documentation requirements are anticipated for the project.

Record Retention:
The SWPPP must be kept at the site during construction by the permittee who has operational control of that portion of the site. The SWPPP and associated records must be stored and maintained by an employee or representative of the Owner for 3 years after the submission of the NOT.

Responsibility for overseeing the records will be transferred to another employee or representative should the current personnel become uninvolved with the project or Owner. These records must include the following:

1. The final SWPPP
2. Any other stormwater related permits required for the project
3. Records of all inspection and maintenance conducted during construction
4. All permanent operation and maintenance agreements that have been implemented, including all right-of-way, contracts, covenants and other binding requirements regarding perpetual maintenance
5. All required calculations for design of the temporary and permanent Stormwater Management Systems.

Permanent Cover:
Permanent cover is achieved when vegetative cover is established at minimum 70% density of its expected final growth. This can be done by using permanent seeding with mulch, erosion control blankets, riprap, gravel, concrete, bituminous, etc. The specific permanent cover types can be found in the plan sheets.

Construction Phasing:
Construction will generally work upstream to downstream starting at Dunkirk Lane. Construction will be phased to avoid having areas open that are not being actively worked on. Flotation silt curtain will be moved within the stream as construction moves downstream to ensure disturbed sediment within the stream is captured.

Chemical Treatment Systems:
Must use polymers, flocculants, or other sedimentation treatment chemicals in accordance with accepted engineering practices. Must be in compliance with MNR100001 Permit 2023 reference 9.18 of the NPDES Permit and Minn. R. 7090.

PRELIMINARY

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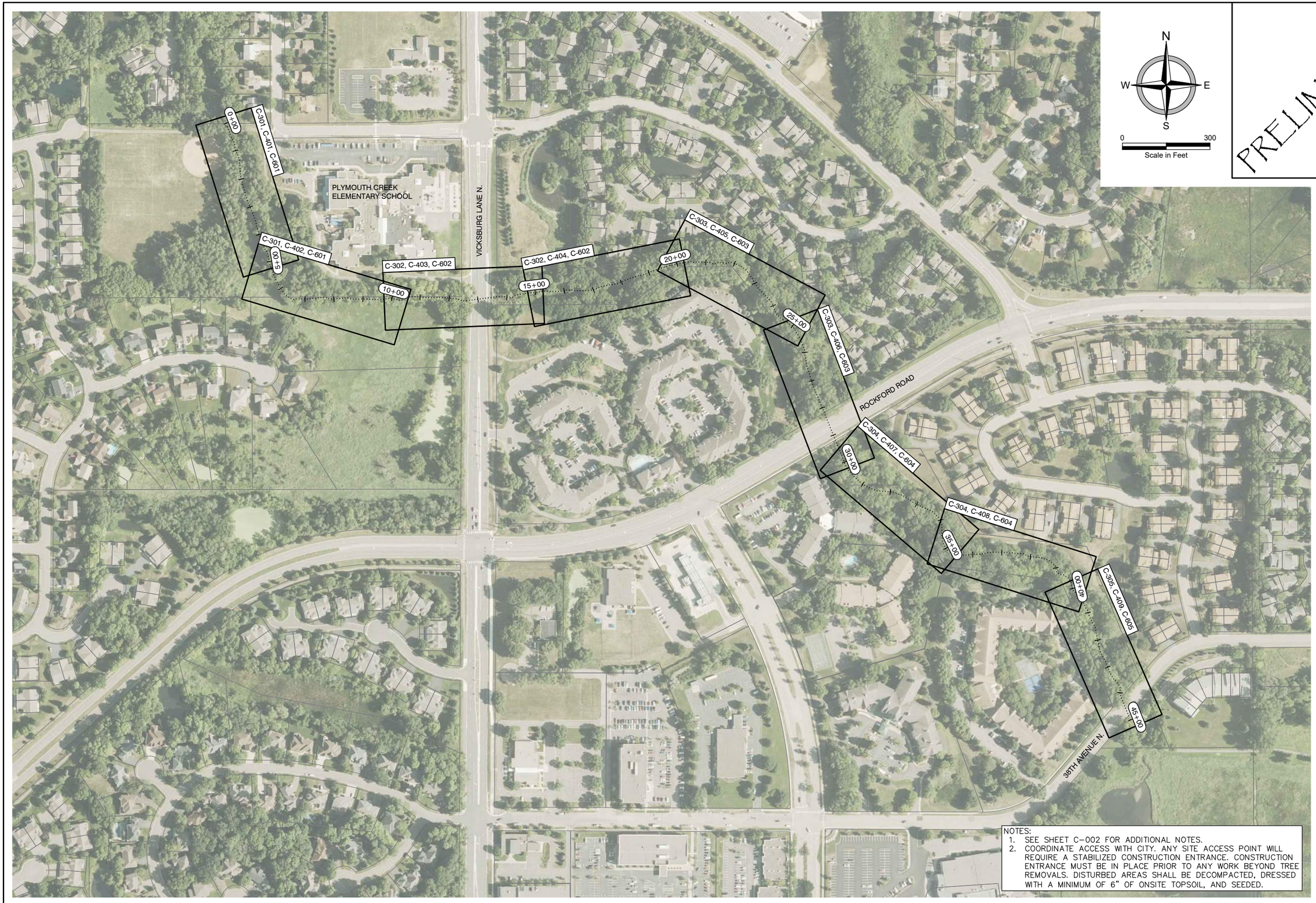
Bassett Creek Watershed Management Commission

CIVIL
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
SWPPP

DATE:	10.01.26
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RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-005

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W
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300
Scale in Feet

PRELIMINARY

NOTES:
1. SEE SHEET C-002 FOR ADDITIONAL NOTES.
2. COORDINATE ACCESS WITH CITY. ANY SITE ACCESS POINT WILL REQUIRE A STABILIZED CONSTRUCTION ENTRANCE. CONSTRUCTION ENTRANCE MUST BE IN PLACE PRIOR TO ANY WORK BEYOND TREE REMOVALS. DISTURBED AREAS SHALL BE DECOMPACTED, DRESSED WITH A MINIMUM OF 6" OF ONSITE TOPSOIL, AND SEEDED.

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City of Plymouth

Bassett Creek Watershed Management Commission

PROJECT LAYOUTS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
GENERAL LAYOUT

DATE:	10.01.26
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PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-101

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PRELIMINARY

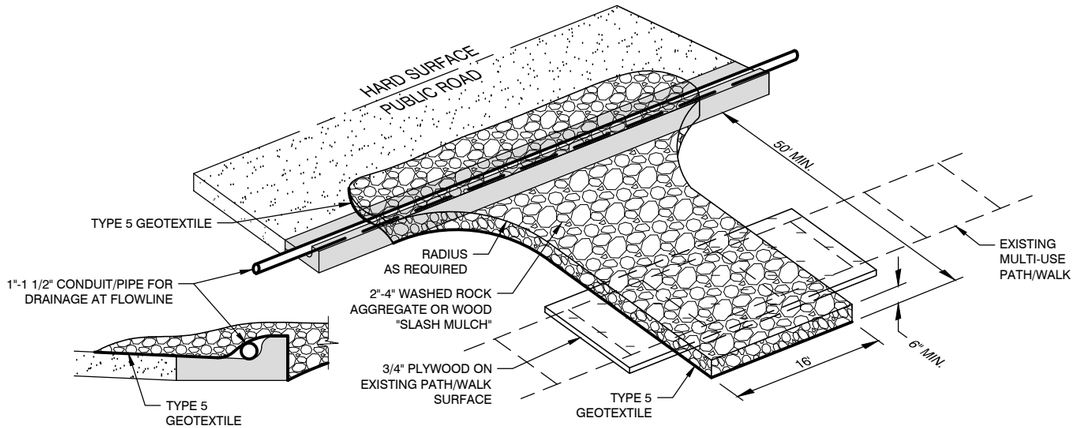
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PROJECT LAYOUTS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED MEANDER LAYOUT

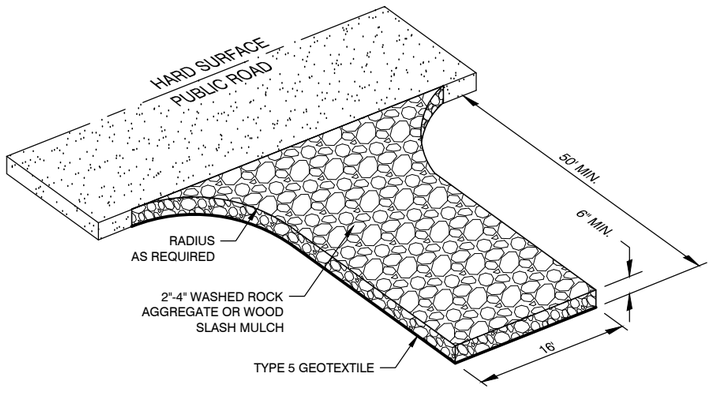
DATE:	10.01.26
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PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-102

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADICI3D\Production\32231_Details.dwg



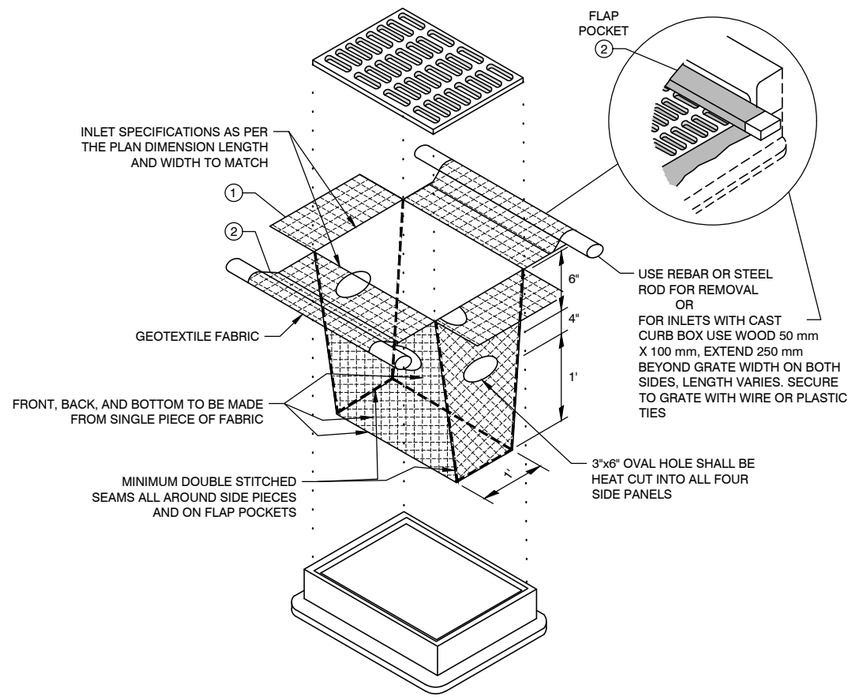
TYPE A - SIDEWALK AND CURB



TYPE B - NO SIDEWALK OR CURB

CONSTRUCTION ENTRANCE

NO SCALE *06.26.25*



NOTES:

1. INLET PROTECTION SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE OWNER.
2. (MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE MINNESOTA DEPARTMENT OF TRANSPORTATION'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.)
3. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

INSTALLATION NOTES:

1. DO NOT INSTALL INLET PROTECTION IN INLETS SHALLOWER THAN 3', MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.
2. TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.
3. THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3" WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.
   A. FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 1' AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
   B. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2"x4".

INLET PROTECTION - CURB BAG

NO SCALE *06.26.25*

PRELIMINARY

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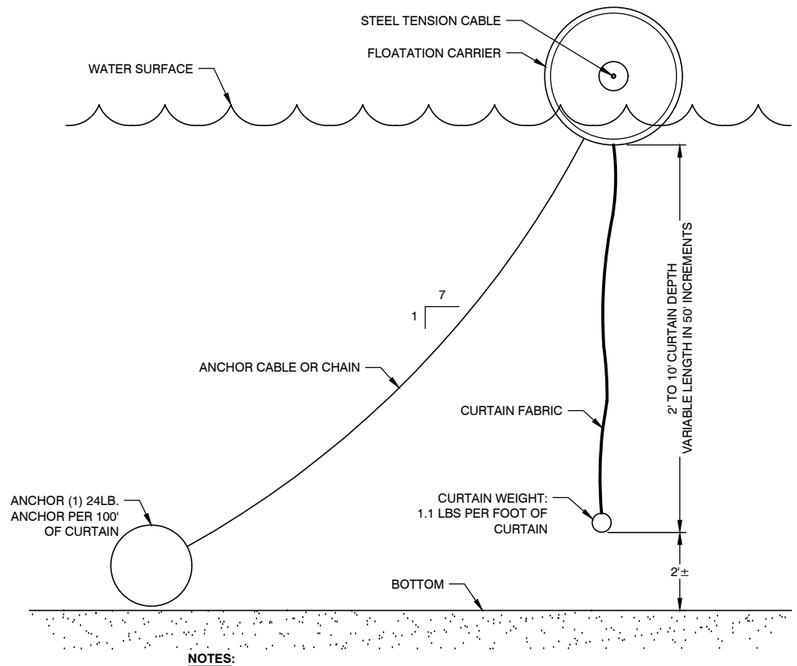
Bassett Creek Watershed Management Commission

DETAILS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
DETAILS

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-201

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CAD\C3D\Production\32231_Details.dwg



NOTES:

1. DOUBLE SILT CURTAINS SHOULD BE SPACED 10' APART
2. CONSTRUCT IN ACCORDANCE WITH (NDDOT SECTION 262) (MnDOT SECTION 2573 AND 3887.)

FLOATING SILT CURTAIN

NO SCALE *06.26.25*

PRELIMINARY

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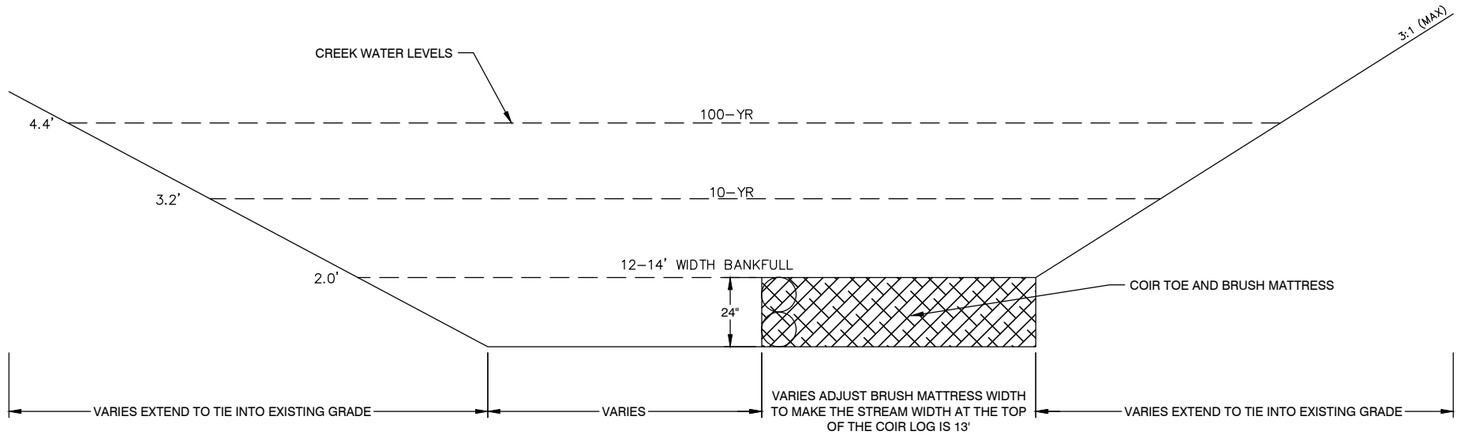
Bassett Creek Watershed Management Commission

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DETAILS

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DRAFTER:	DWA
REVIEWER:	DTE

C-202

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3D\Production\32231_Details.dwg



COIR TOE WITH BRUSH MATTRESS TYPICAL CHANNEL SECTION

NO SCALE

PRELIMINARY

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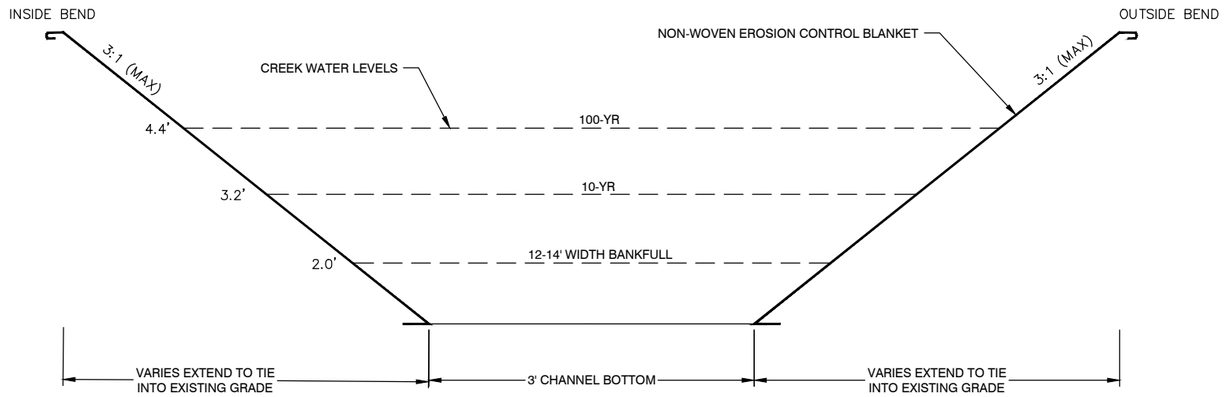
Bassett Creek Watershed Management Commission

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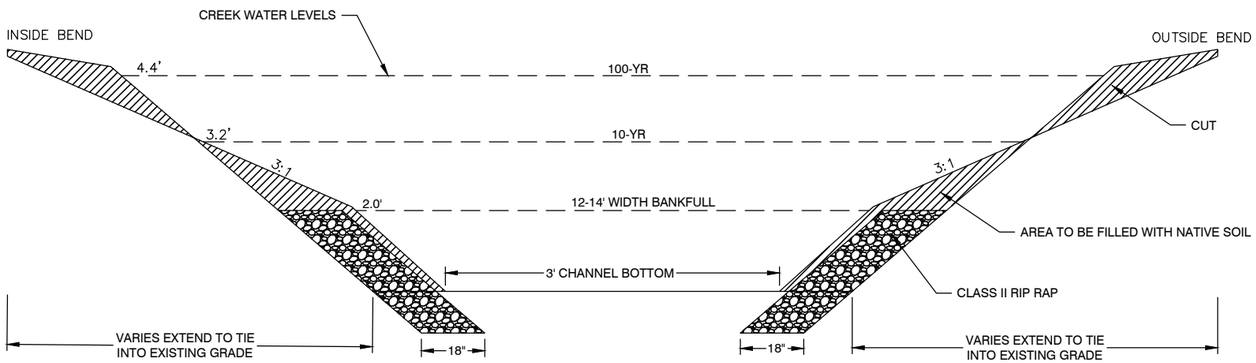
C-203

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject\2026Phase2Design\CAD\C3D\Production\32231_Details.dwg



GRADED BANKS TYPICAL CHANNEL SECTION

NO SCALE



VEGETATED RIPRAP TYPICAL CHANNEL SECTION

NO SCALE

PRELIMINARY

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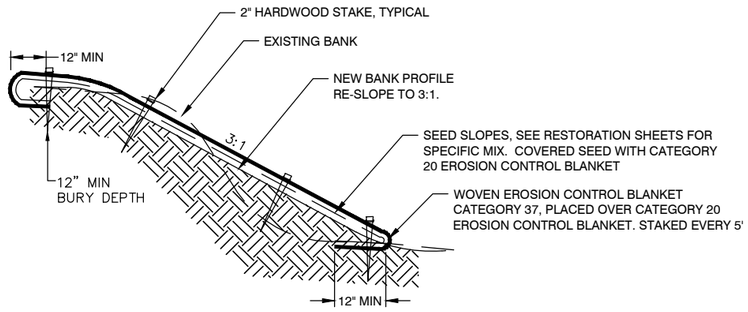
Bassett Creek Watershed Management Commission

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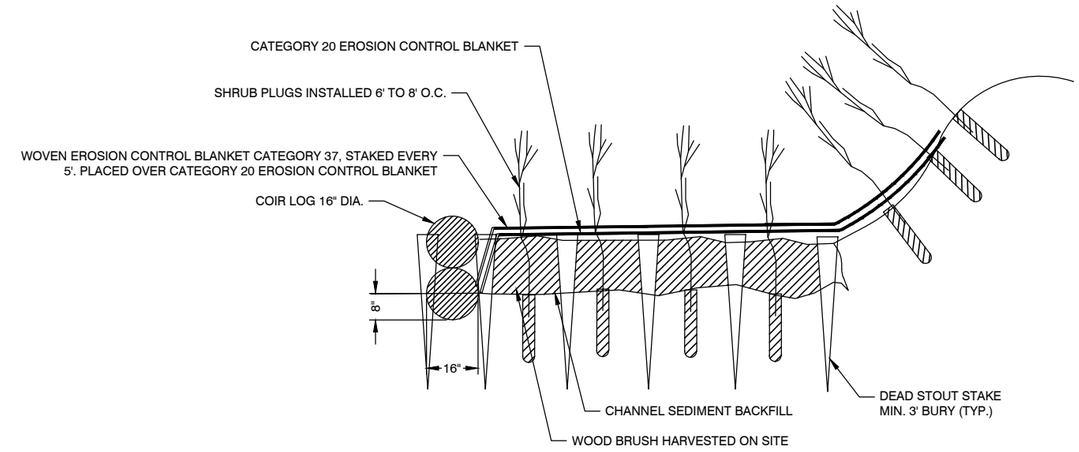
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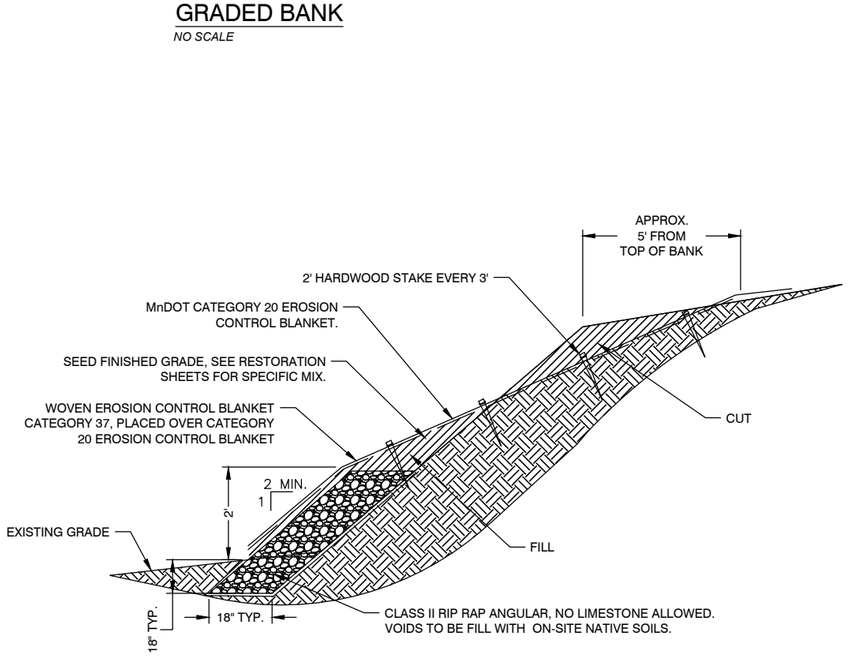


NOTE:
PROVIDE FLOTATION SILT CURTAIN TO CONTAIN SOIL MATERIAL DURING BANK RESLOPING OPERATIONS. FLOTATION SILT CURTAIN SHALL BE MAINTAINED AND RELOCATED AS OPERATIONS OF BANK RESLOPING PROGRESS. FLOTATION SILT CURTAIN SHALL NOT BE RELOCATED UNTIL CURRENT SITE IS STABILIZED.

GRADED BANK

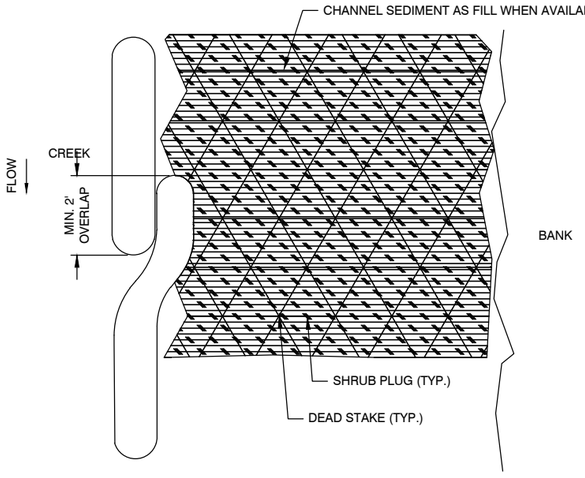
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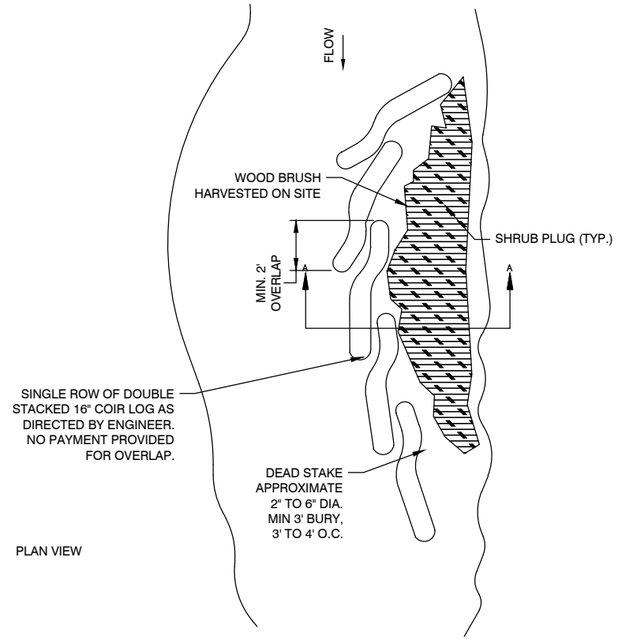




CLASS II VEGETATED RIP RAP TOE DETAIL

NO SCALE





COIR TOE NOTES:

1. PLACE COIR LOG
2. OVERLAY BRANCHES
3. COVER BRANCHES WITH SOIL
4. COVER SOIL WITH EROSION CONTROL BLANKETS.
5. DEAD STAKES MAY BE HARVESTED ON SITE 3' TO 5' O.C. MIN 3' BURY, APPROXIMATE 2"-6" DIAMETER
6. SHRUB PLUGS 6' TO 8' O.C., MIN 2' BURY, MIN 12" ABOVE MATTRESS
7. WHEN STACKING COIR LOGS, IF LOGS NEED TO BE OFFSET FOR STABILITY, OFFSET THE TOP LOG TOWARDS THE BANK.

COIR TOE WITH BRUSH MATTRESS

NO SCALE

PRELIMINARY

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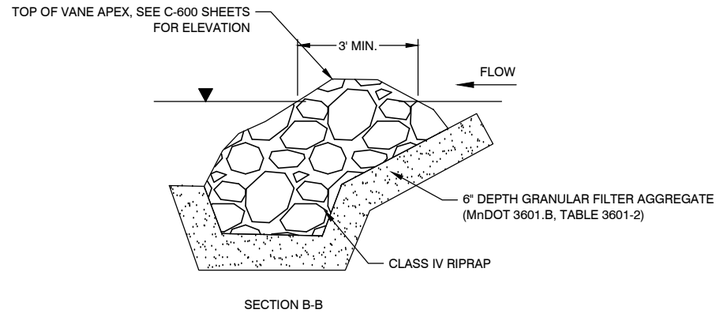
Bassett Creek Watershed Management Commission

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CITY OF PLYMOUTH, MINNESOTA
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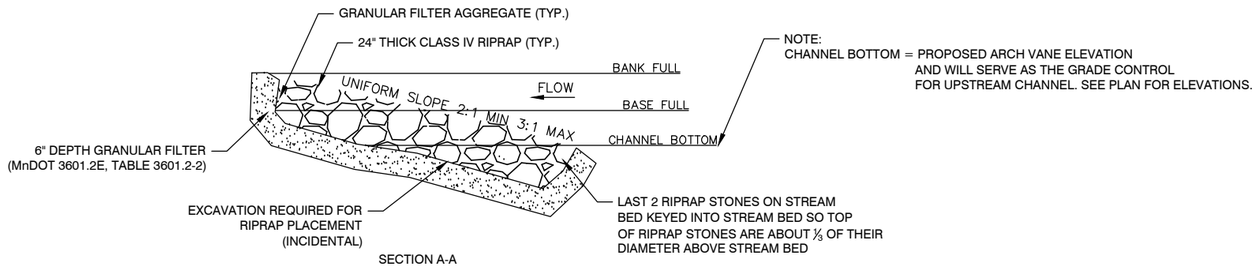
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DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-205

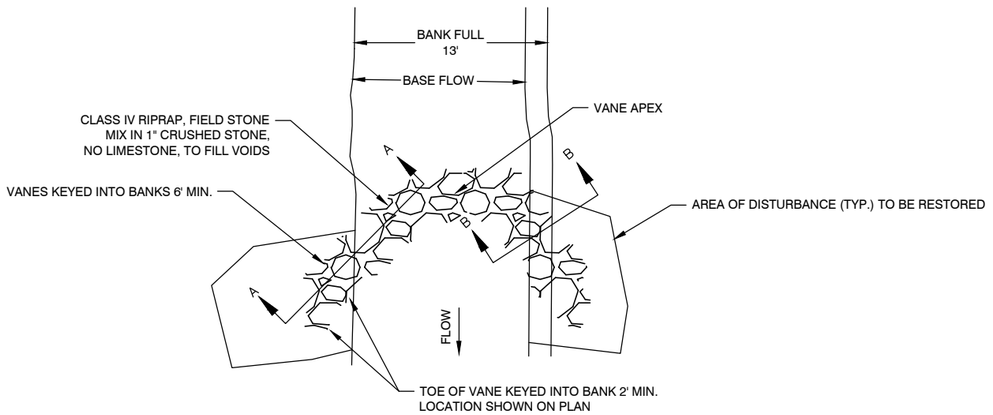
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SECTION B-B



SECTION A-A



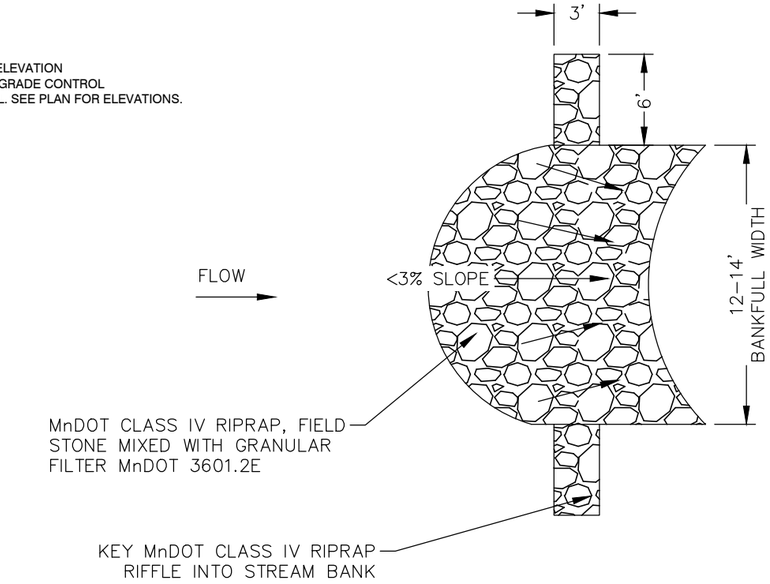
PLAN VIEW

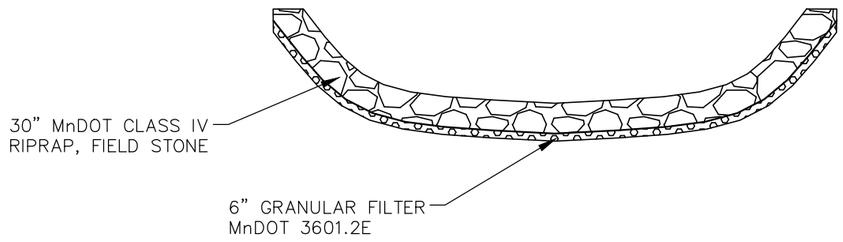
ARCH VANE NOTES:

1. CLASS IV RIPRAP SHALL BE FIELD STONE, NO LIMESTONE ALLOWED.
2. FINAL PLACEMENT OF ARCH VANE AND RIPRAP TO BE FIELD VERIFIED BY ENGINEER.
3. ALL VANES EXTEND UPSTREAM INTO FLOW OF CREEK.
4. EXCAVATED SEDIMENT TO BE PLACED UPSTREAM OF ARCH VANE TO PROMOTE VOID FILLING. DO NOT PLACE SEDIMENT ABOVE TOP OF VANE AND DO NOT EXTEND SEDIMENT PLACEMENT MORE THAN 1' UPSTREAM OF ARCH VANES.

ARCH VANE DETAIL (TYPICAL)

NO SCALE





ROCK RIFFLE

NO SCALE *06.26.25*

NOTES:

1. BOULDERS ARE NOT SHOWN.
2. ENGINEER SHALL INSPECT THE SUBGRADE FOR APPROVAL BEFORE GRANULAR FILTER INSTALLATION. CONTRACTOR IS RESPONSIBLE TO ENSURE THE ENGINEER APPROVES THE SUBGRADE BEFORE PLACING FILL.

PRELIMINARY

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Bassett Creek Watershed Management Commission

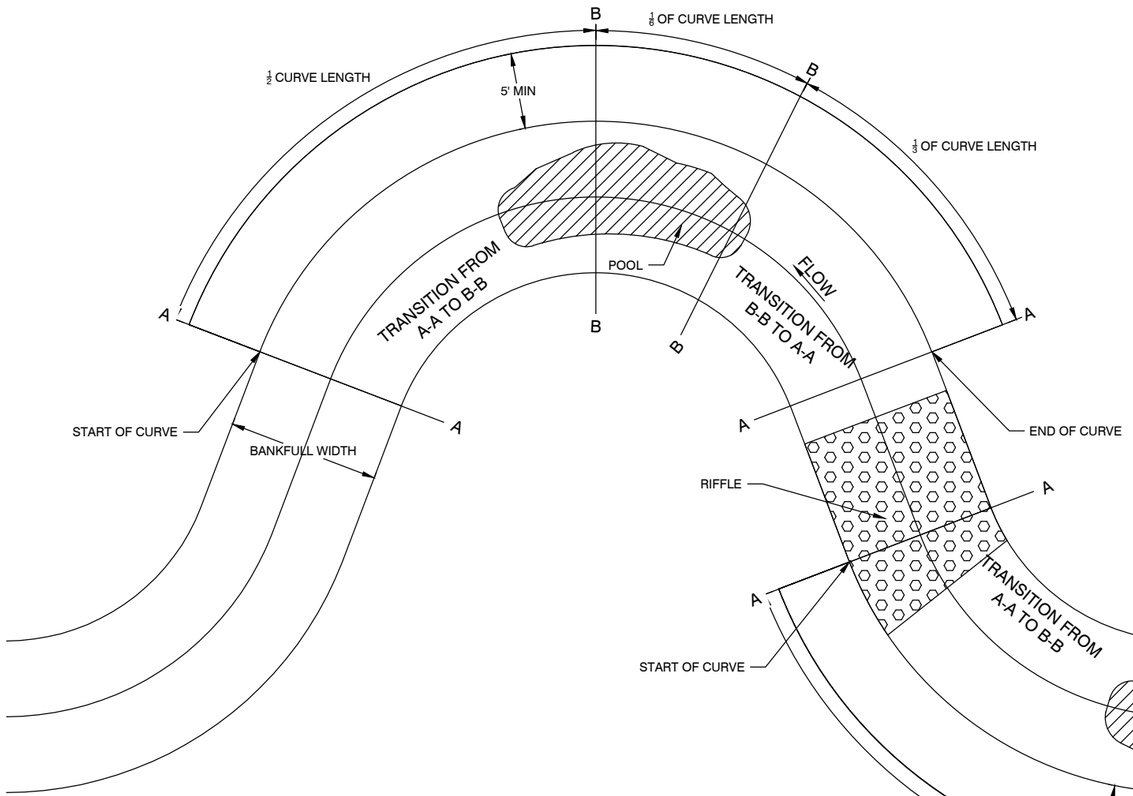
DETAILS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
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CITY OF PLYMOUTH, MINNESOTA
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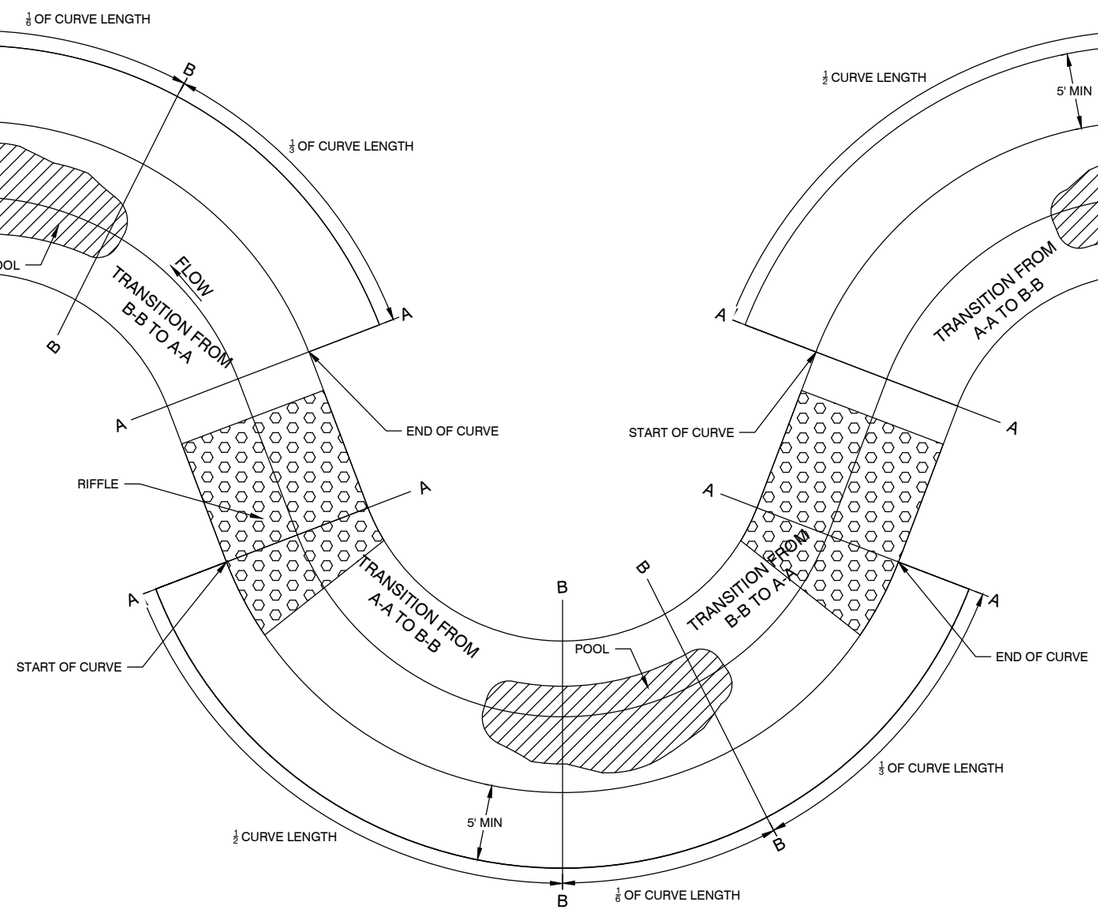
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REVIEWER:	DTE

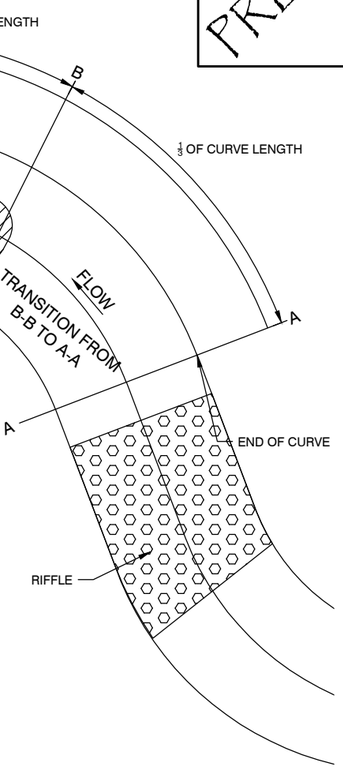
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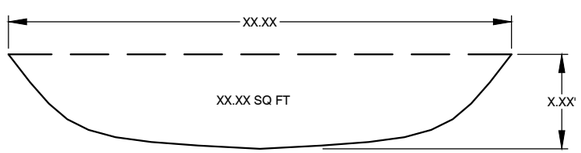
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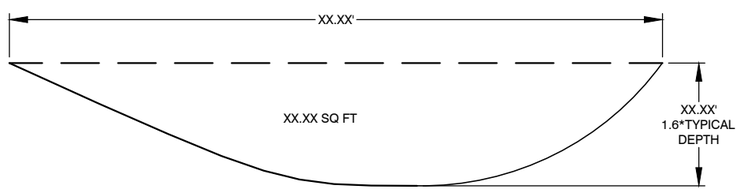




Channel Calculator Riffle Area: XX.XX Sq Ft
Channel Calculator Pool Area: XX.XX Sq Ft



TYPICAL CHANNEL SECTION A-A



TYPICAL POOL SECTION B-B

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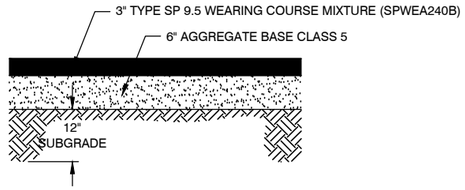
Bassett Creek Watershed Management Commission

DETAILS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
DETAILS

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PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-207

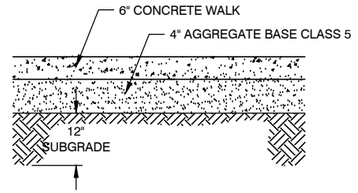
FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CAD\C3D\Production\32231_Details.dwg



NOTES:
1. SUBGRADE TO BE SCARIFIED TO DEPTH SHOWN AND COMPACTED TO 100% STANDARD PROCTOR DENSITY.
2. ASPHALT INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF MNDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION

BITUMINOUS ROADWAY PATCH

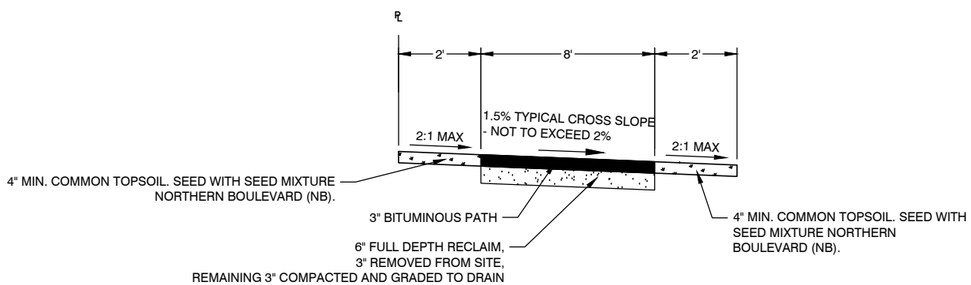
NO SCALE



NOTES:
1. SUBGRADE TO BE SCARIFIED TO A DEPTH OF 12" AND COMPACTED TO 100% STANDARD PROCTOR DENSITY.
2. CONCRETE INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF MNDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. AGGREGATE BASE IS INCIDENTAL TO CONCRETE SIDEWALK.

CONCRETE SIDEWALK

NO SCALE



TYPICAL PATH SECTION

NO SCALE

PRELIMINARY

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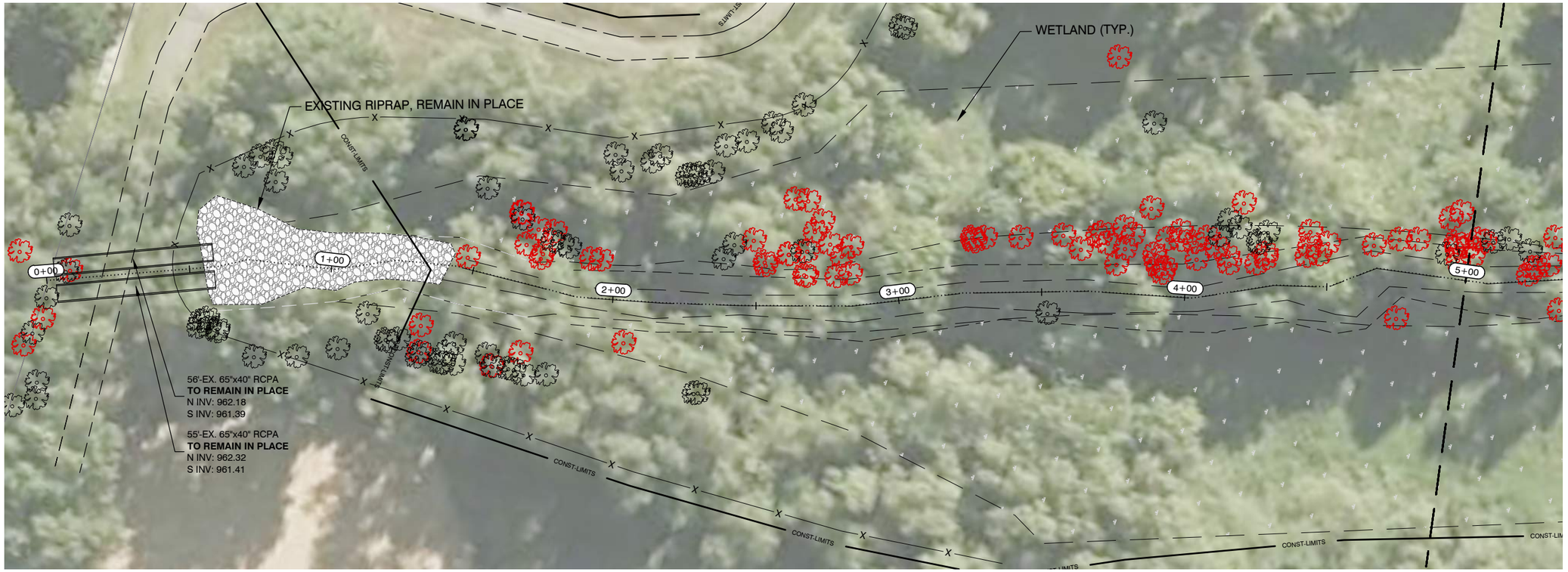
Bassett Creek Watershed Management Commission

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DRAFTER:	DWA
REVIEWER:	DTE

C-208

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADICI3D\Production\32231_Removals.dwg





N
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S

0 40
Scale in Feet

NOTES:
1. TREES LEFT IN PLACE SHALL BE PROTECTED FROM DAMAGE THROUGHOUT DURATION OF CONSTRUCTION.
2. CLEAR AND GRUB INVASIVE SPECIES INCLUDING BUCKTHORN, REED CANARY GRASS, AND BURDOCK.
3. CONTRACTOR RESPONSIBLE TO REMOVE AND CLEAR ANY DEADFALL, DEBRIS, OR OTHER BLOCKAGES WITHIN THE CHANNEL. THIS WORK WILL BE CONSIDERED INCIDENTAL TO OTHER REMOVAL ITEMS.
4. CONTRACTOR TO CLEAR AND GRUB BRUSH WITHIN PROJECT LIMITS AS DIRECTED BY THE ENGINEER.

PRELIMINARY

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Bassett Creek Watershed Management Commission

REMOVALS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
REMOVALS

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DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-301

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N
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S
0 40
Scale in Feet



N
W E
S
0 40
Scale in Feet

NOTES:
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PRELIMINARY

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REMOVALS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
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CITY OF PLYMOUTH, MINNESOTA
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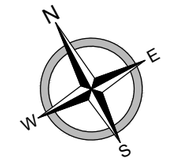
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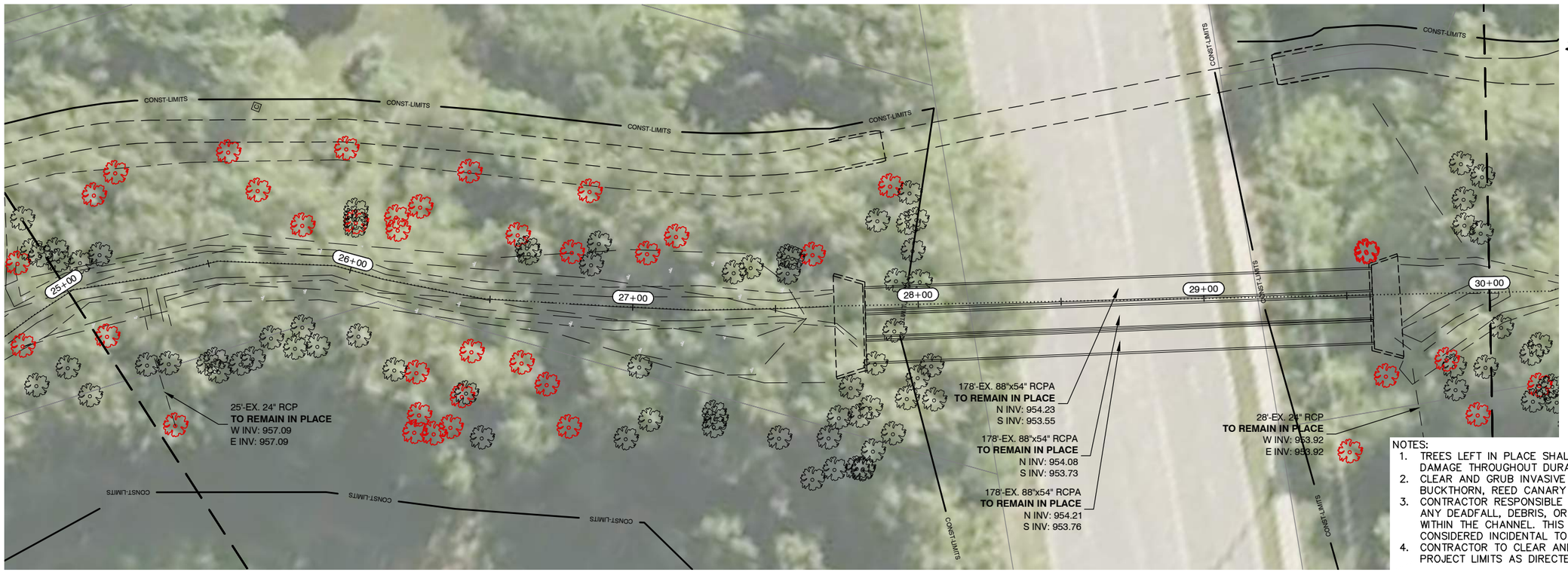
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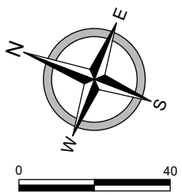
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PRELIMINARY









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PRELIMINARY

N E S W

0 40
Scale in Feet

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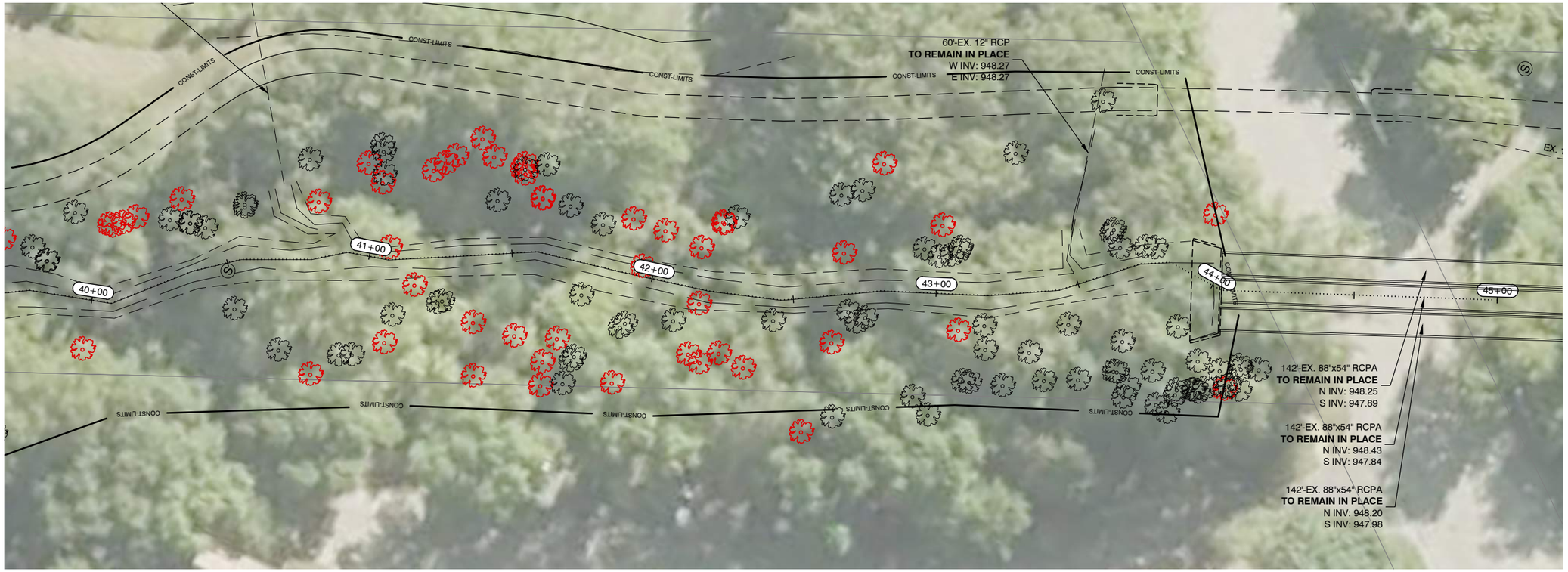
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FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3D\Production\32231_Removals.dwg



PRELIMINARY

N E S W

0 40
Scale in Feet

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Bassett Creek Watershed Management Commission

NOTES:
1. TREES LEFT IN PLACE SHALL BE PROTECTED FROM DAMAGE THROUGHOUT DURATION OF CONSTRUCTION.
2. CLEAR AND GRUB INVASIVE SPECIES INCLUDING BUCKTHORN, REED CANARY GRASS, AND BURDOCK.
3. CONTRACTOR RESPONSIBLE TO REMOVE AND CLEAR ANY DEADFALL, DEBRIS, OR OTHER BLOCKAGES WITHIN THE CHANNEL. THIS WORK WILL BE CONSIDERED INCIDENTAL TO OTHER REMOVAL ITEMS.
4. CONTRACTOR TO CLEAR AND GRUB BRUSH WITHIN PROJECT LIMITS AS DIRECTED BY THE ENGINEER.

REMOVALS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
REMOVALS

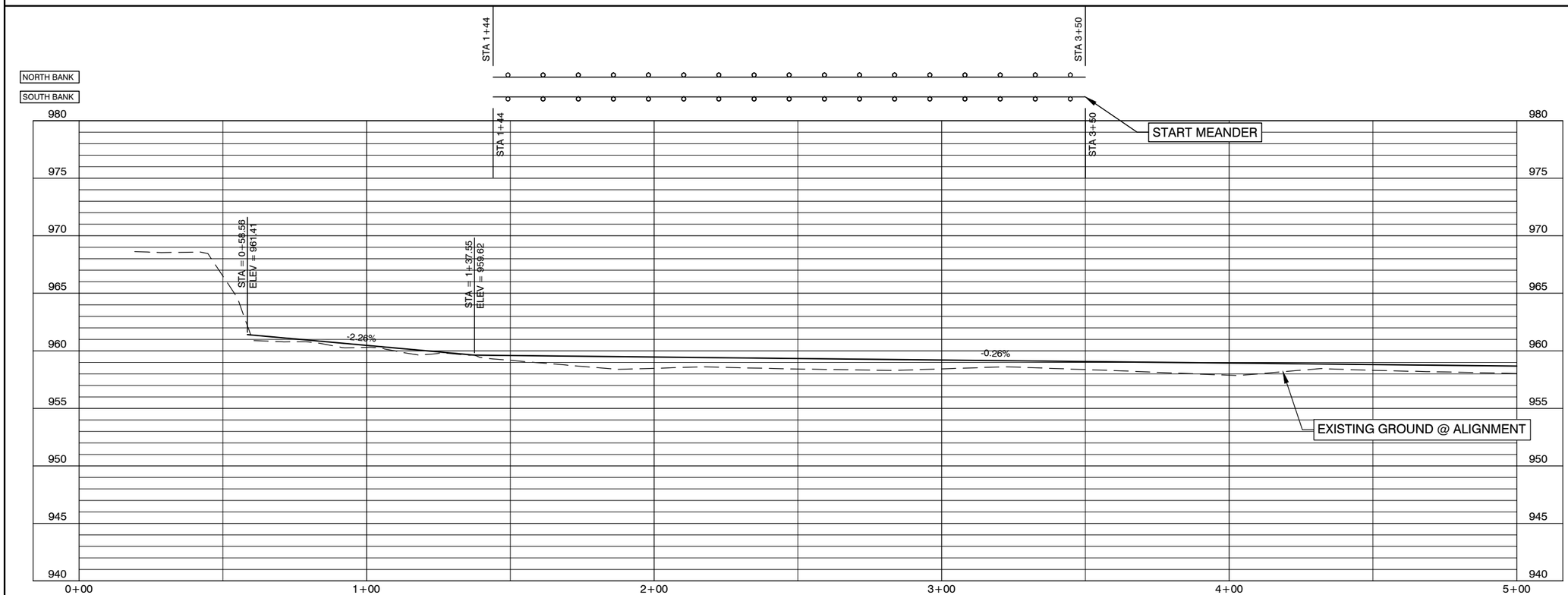
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REV DATE:	----
REV NUM:	----
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PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-305

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3D\Production\32231_Underground.dwg

PRELIMINARY





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City of Plymouth

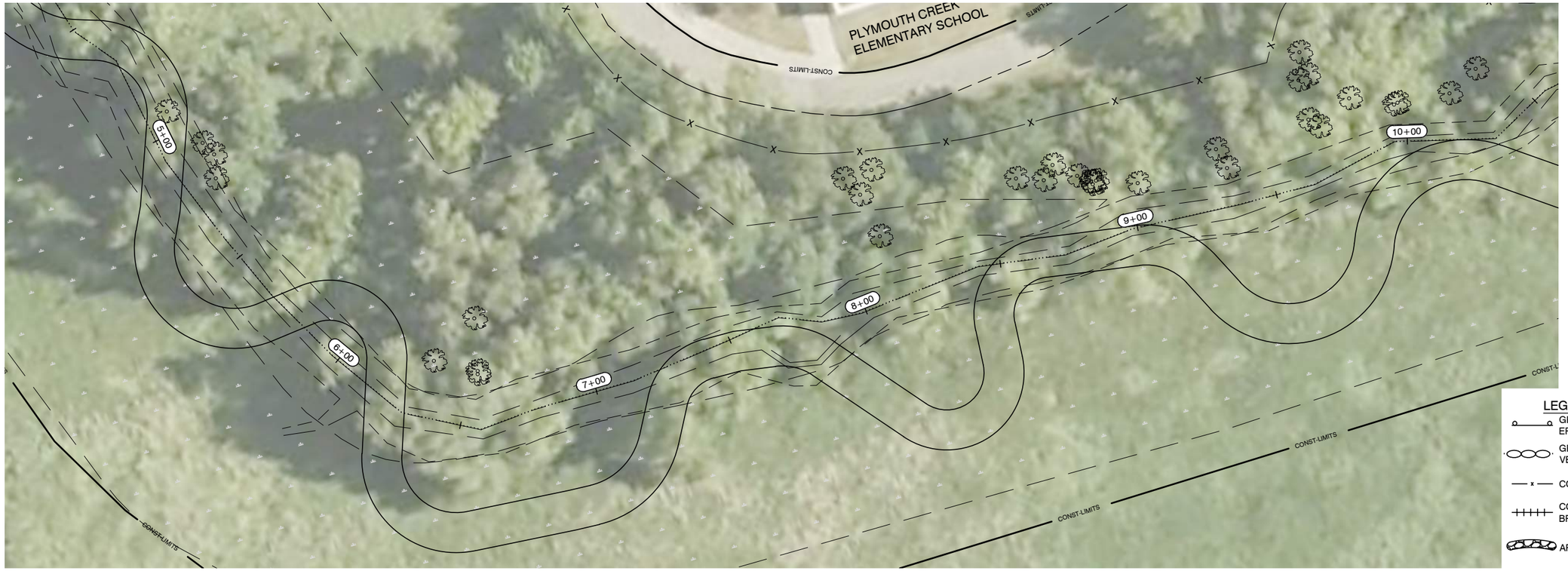
Bassett Creek Watershed Management Commission

UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-401

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3D\Production\32231_Underground.dwg



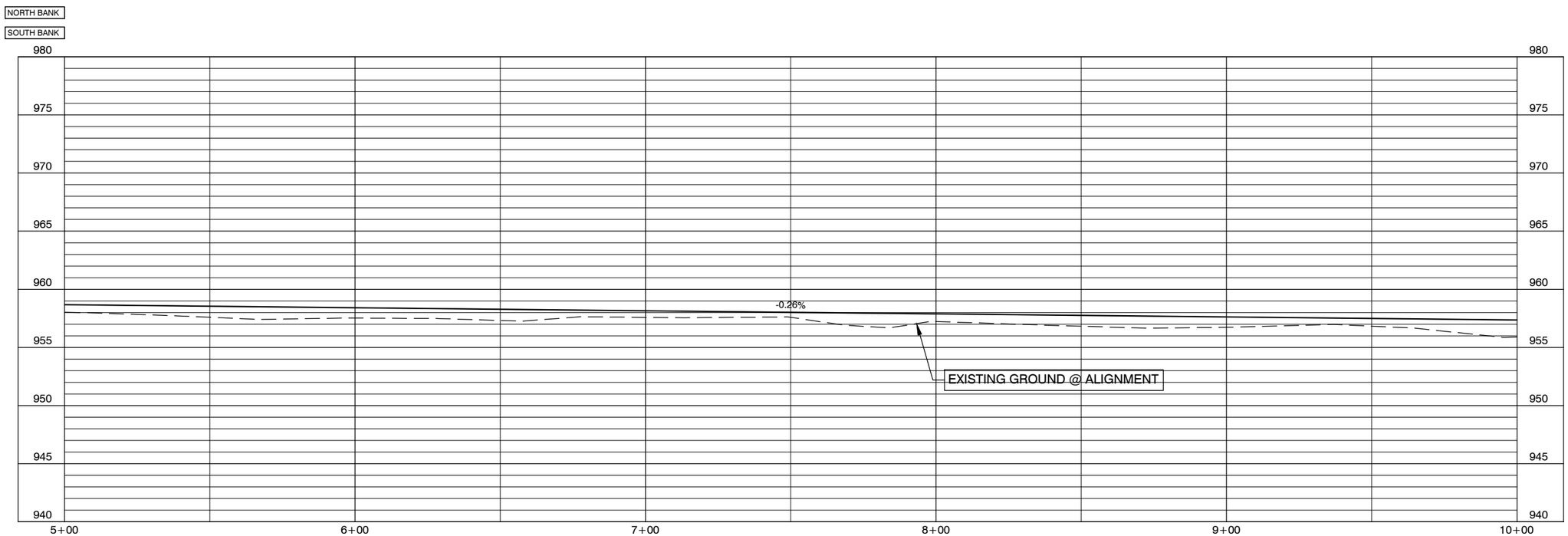
PRELIMINARY

N
W
E
S

0 40
Scale in Feet

LEGEND

- GRADED BANKS WITH EROSION CONTROL BLANKET
- GRADED BANKS WITH VEGETATED RIP RAP
- COIR TOE
- COIR TOE WITH BRUSH MATTRESS
- ARCH VANE



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Bassett Creek Watershed Management Commission

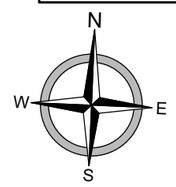
UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
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MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-402

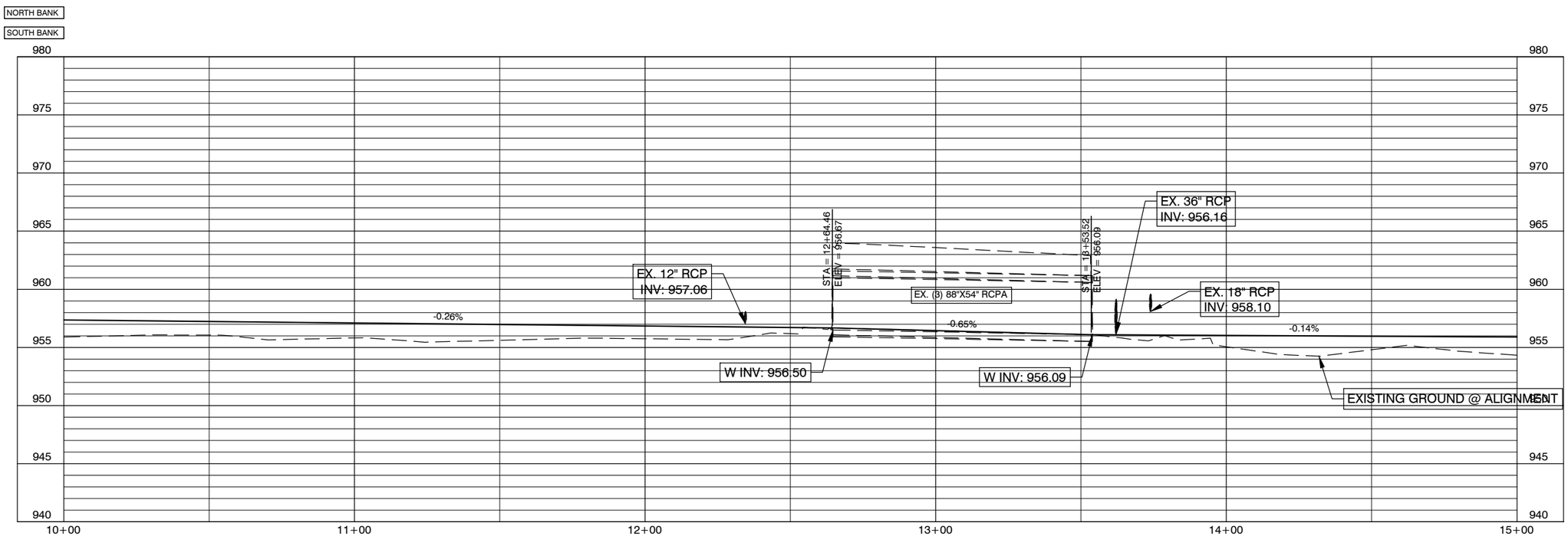
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LEGEND

- GRADED BANKS WITH EROSION CONTROL BLANKET
- GRADED BANKS WITH VEGETATED RIP RAP
- COIR TOE
- COIR TOE WITH BRUSH MATTRESS
- ARCH VANE



PRELIMINARY

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Bassett Creek Watershed Management Commission

UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-403

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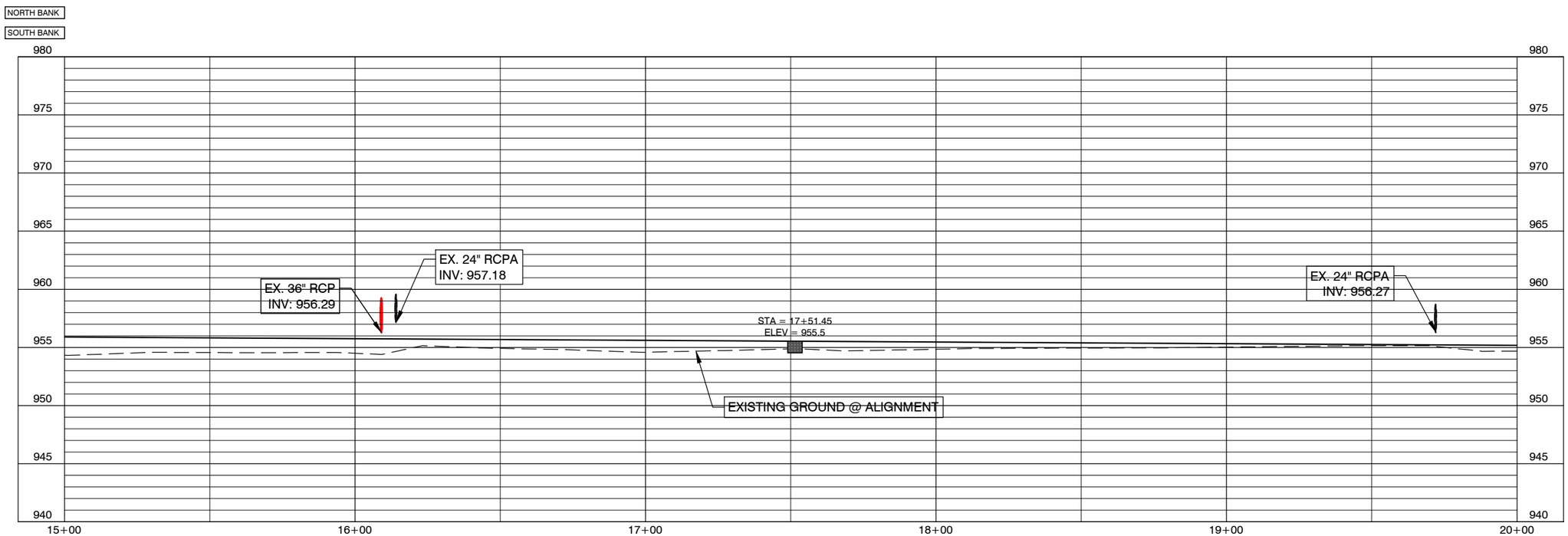
PRELIMINARY



N
W
E
S

0 40
Scale in Feet

LEGEND
- GRADED BANKS WITH EROSION CONTROL BLANKET
- GRADED BANKS WITH VEGETATED RIP RAP
- COIR TOE
- COIR TOE WITH BRUSH MATTRESS
- ARCH VANE



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Bassett Creek Watershed Management Commission

UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-404

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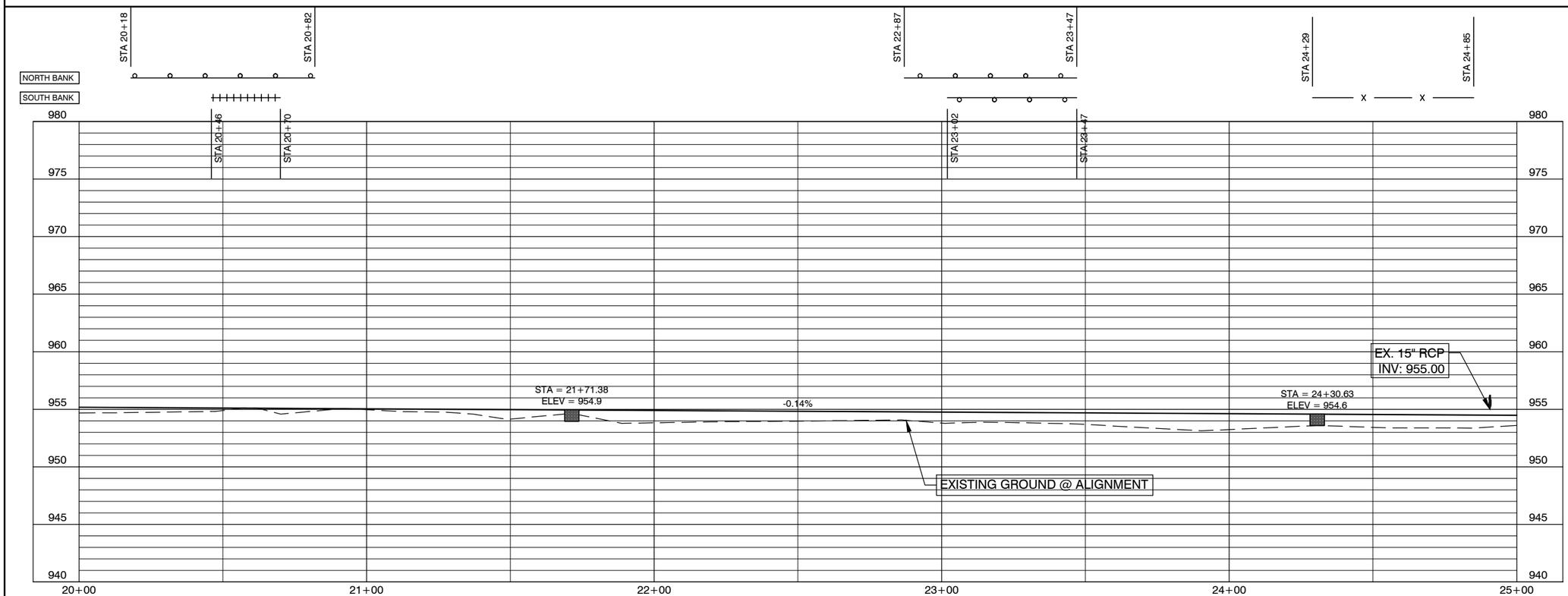


PRELIMINARY

N
E
S
W

0 40
Scale in Feet

LEGEND
- GRADED BANKS WITH EROSION CONTROL BLANKET
- GRADED BANKS WITH VEGETATED RIP RAP
- COIR TOE
- COIR TOE WITH BRUSH MATTRESS
- ARCH VANE



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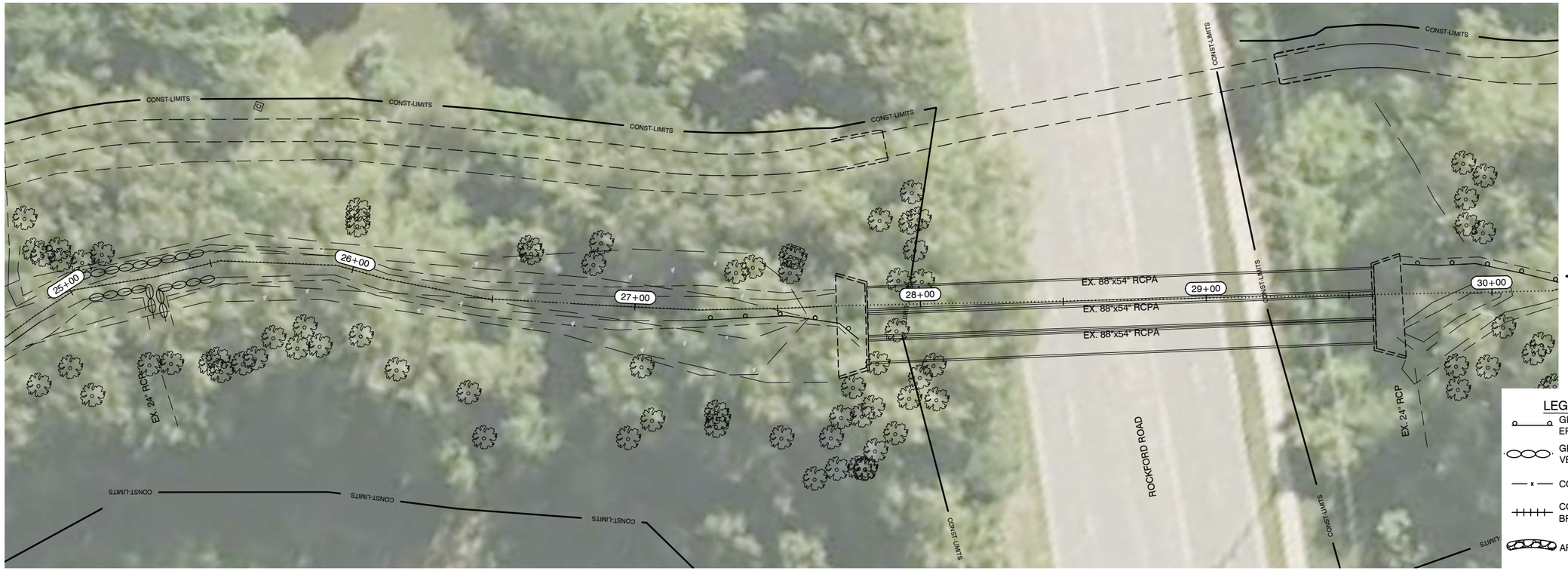
Bassett Creek Watershed Management Commission

UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

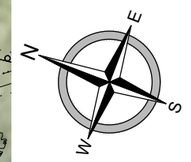
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DRAFTER:	DWA
REVIEWER:	DTE

C-405

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3D\Production\32231_Underground.dwg

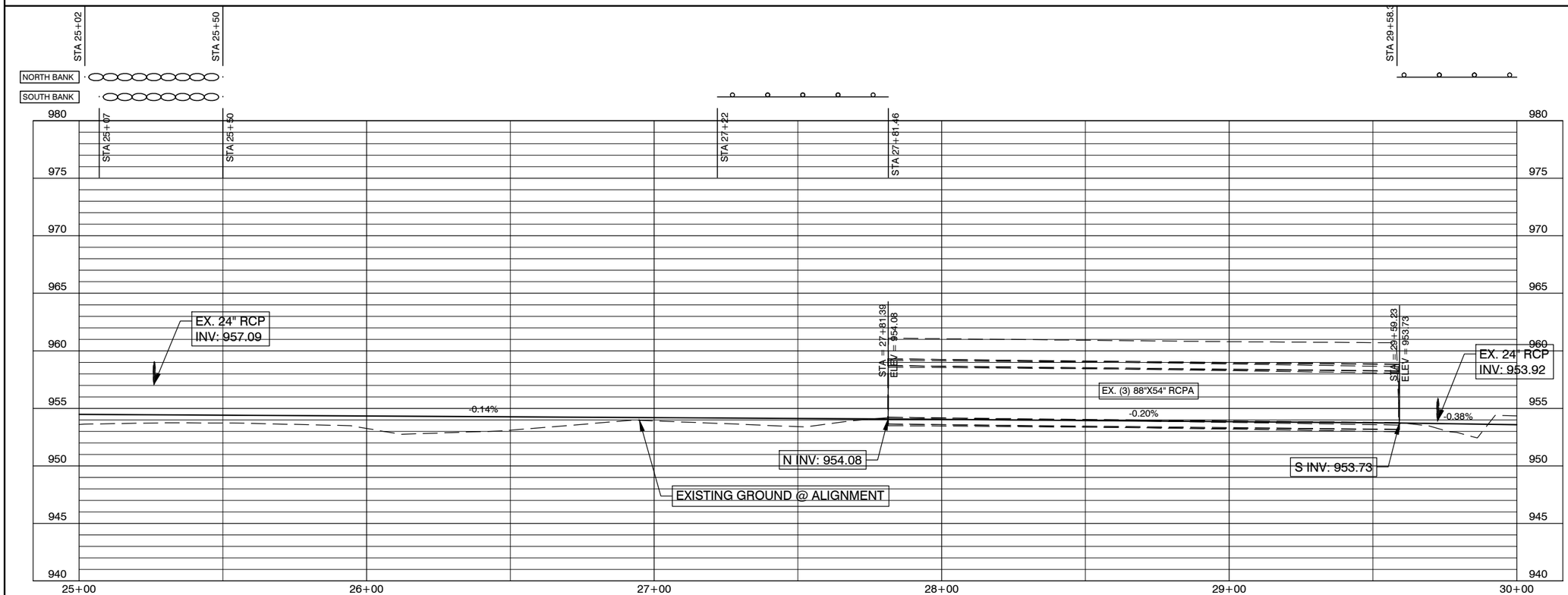


PRELIMINARY



LEGEND

- GRADED BANKS WITH EROSION CONTROL BLANKET
- GRADED BANKS WITH VEGETATED RIP RAP
- COIR TOE
- COIR TOE WITH BRUSH MATTRESS
- ARCH VANE



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UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
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PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-406

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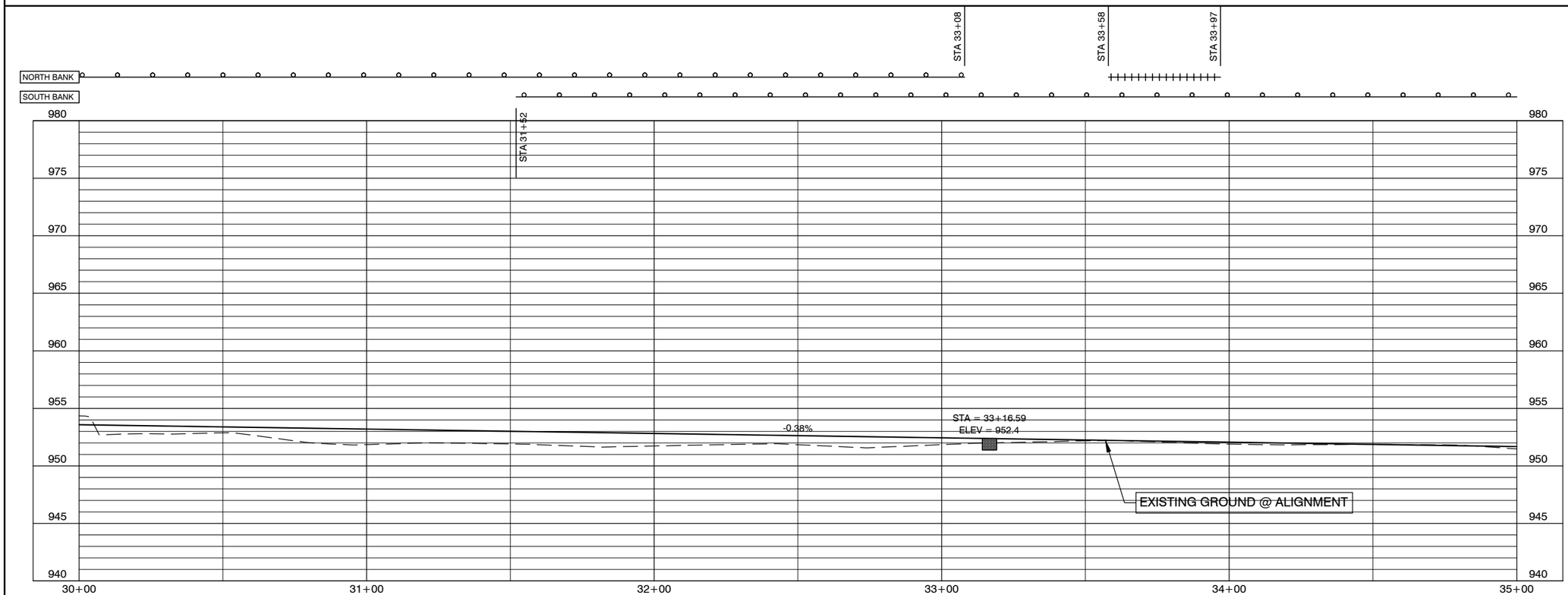
PRELIMINARY

N E S W

0 40
Scale in Feet

LEGEND

- GRADED BANKS WITH EROSION CONTROL BLANKET
- GRADED BANKS WITH VEGETATED RIP RAP
- COIR TOE
- COIR TOE WITH BRUSH MATTRESS
- ARCH VANE



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UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

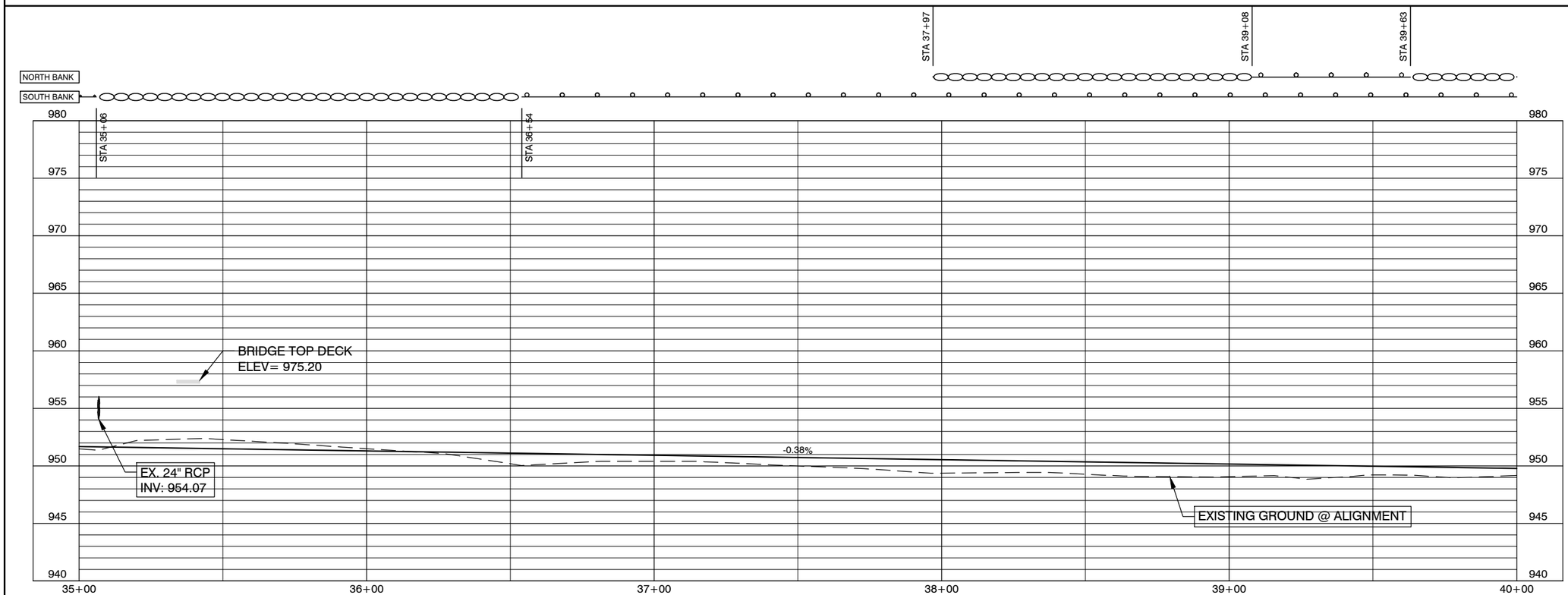
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MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-407

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3D\Production\32231_Underground.dwg

PRELIMINARY





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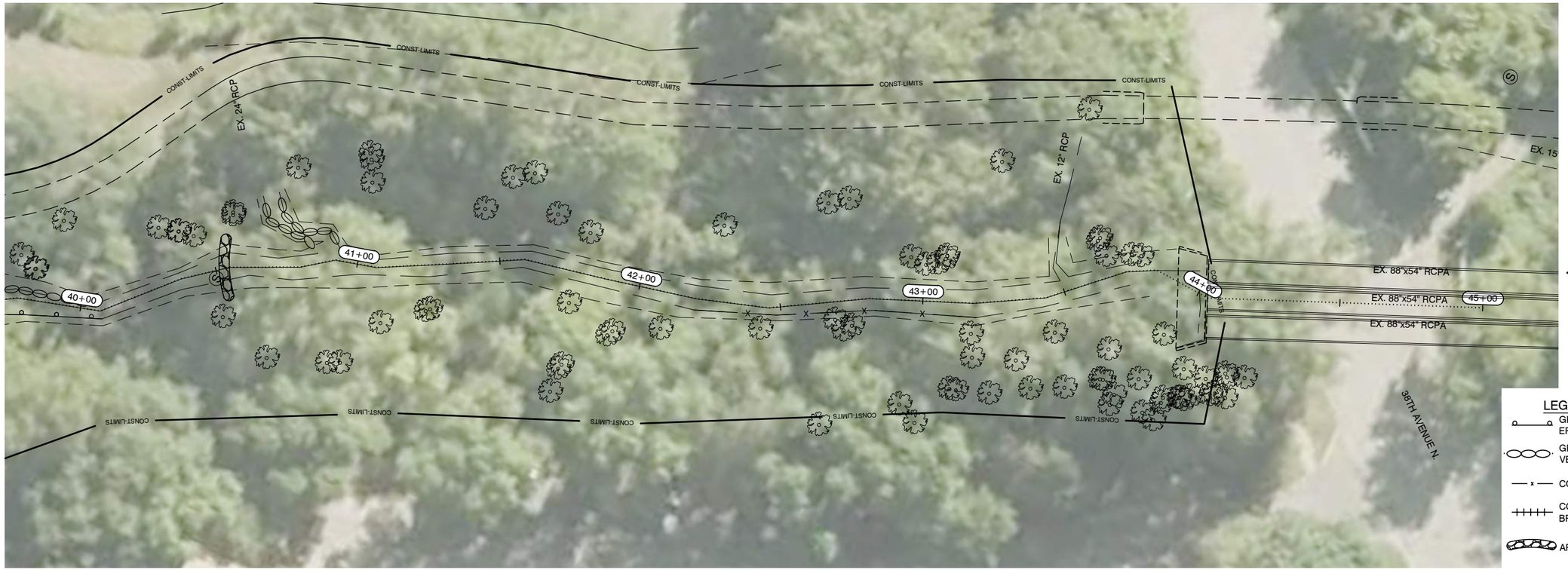
Bassett Creek Watershed Management Commission

UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

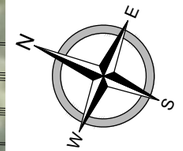
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PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-408

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADC3D\Production\32231_Underground.dwg



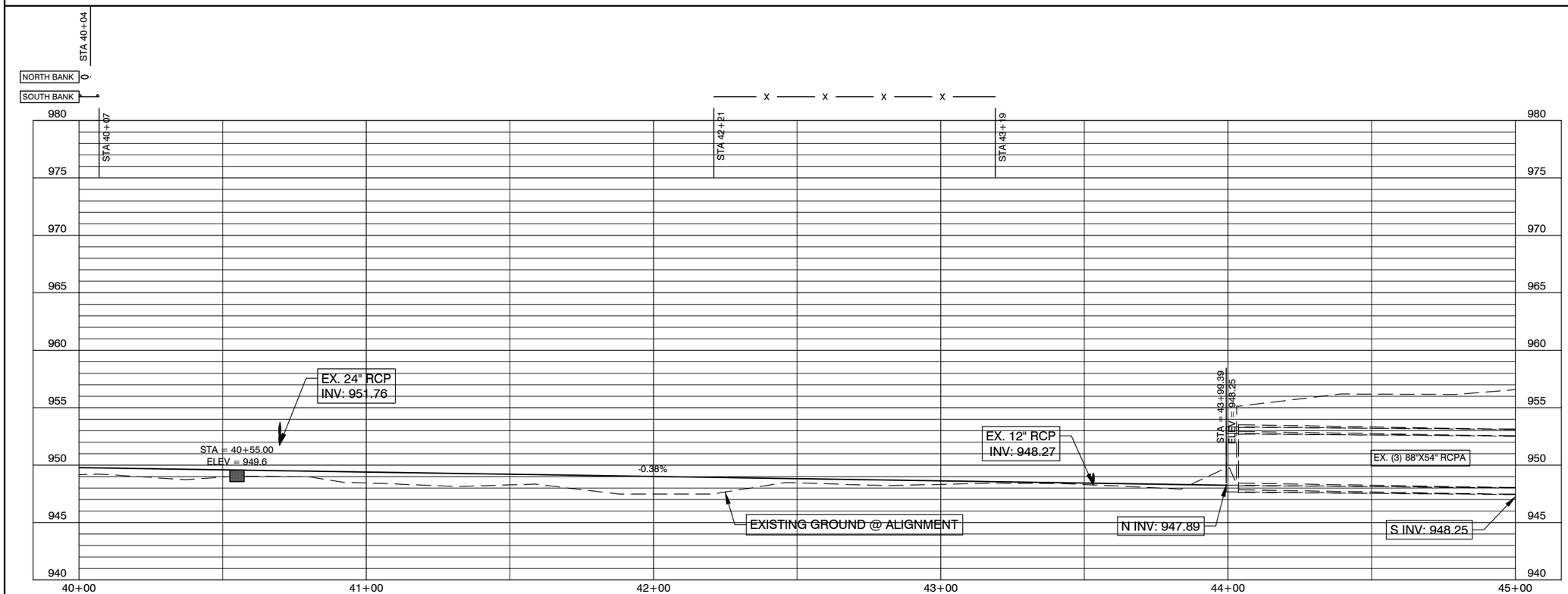
PRELIMINARY



0 40
Scale in Feet

LEGEND

- GRADED BANKS WITH EROSION CONTROL BLANKET
- GRADED BANKS WITH VEGETATED RIP RAP
- COIR TOE
- COIR TOE WITH BRUSH MATTRESS
- ARCH VANE



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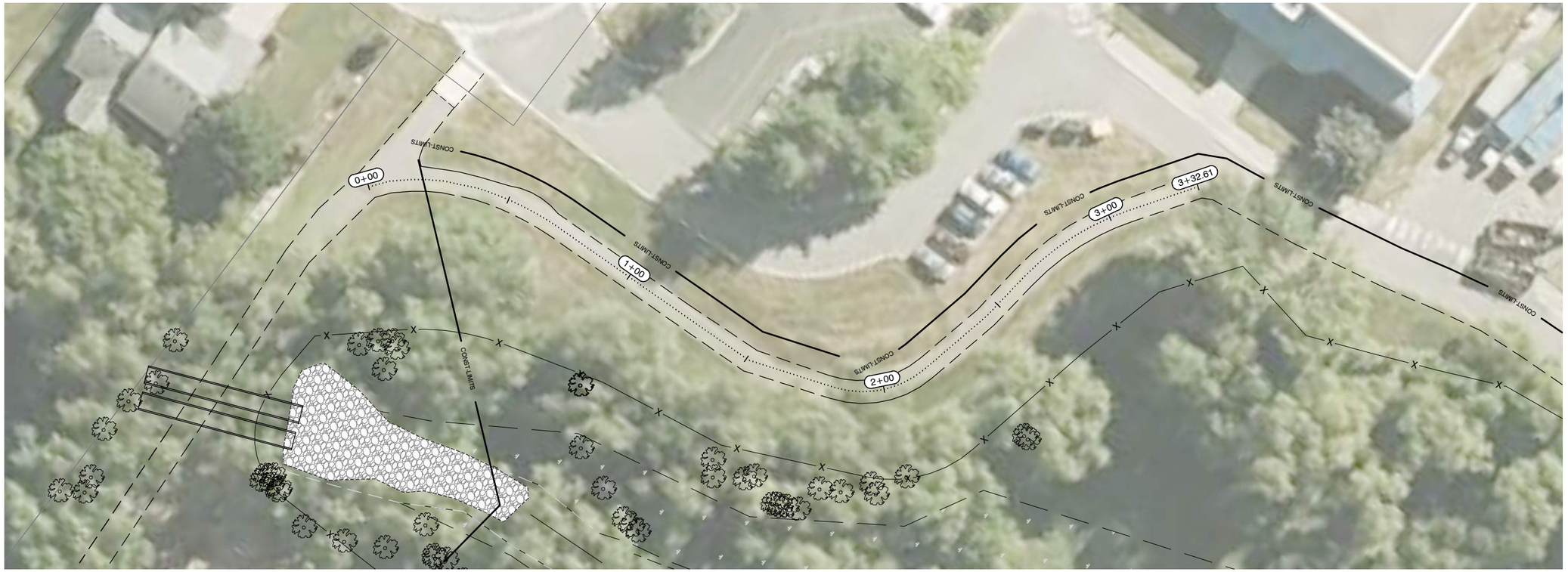
Bassett Creek Watershed Management Commission

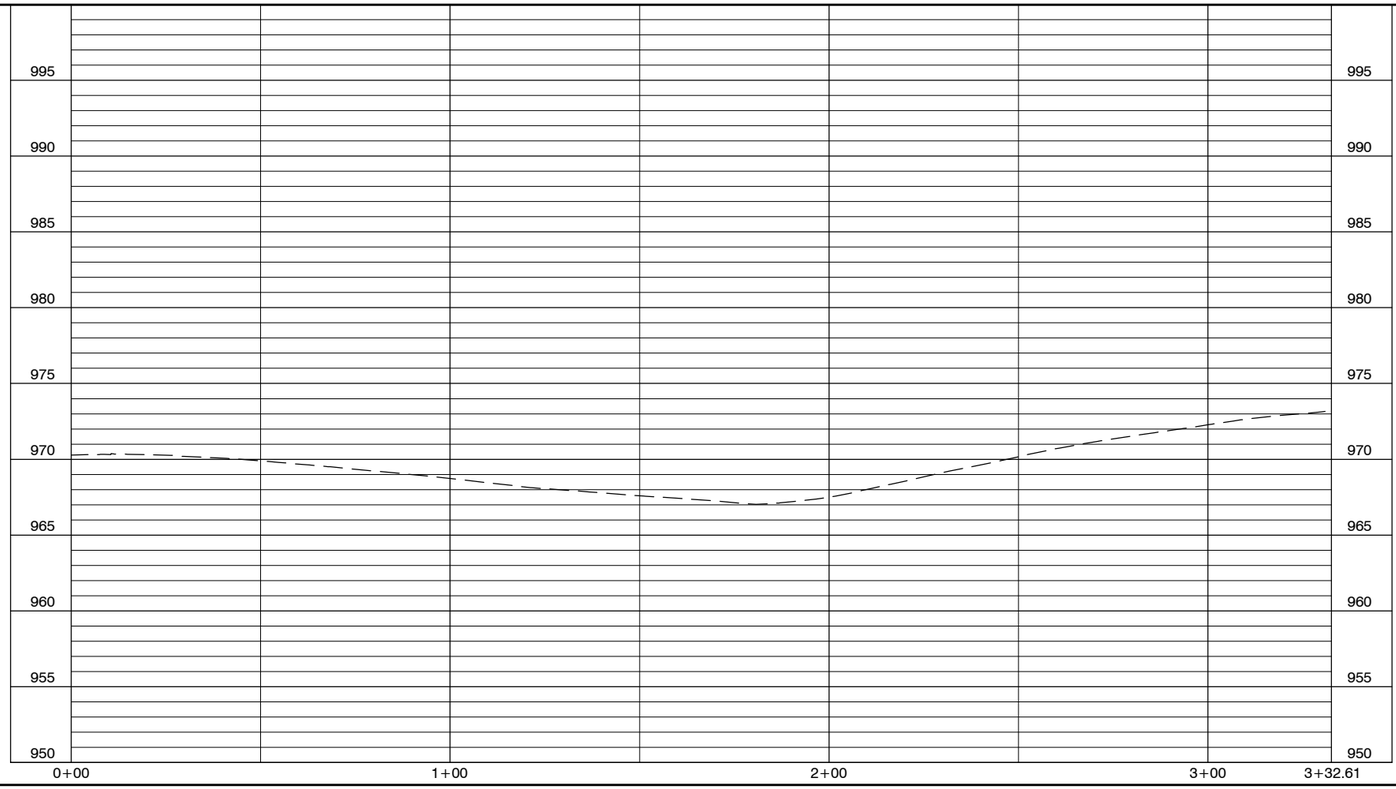
UNDERGROUND
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED CONDITIONS

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-409

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3DIProduction\32231_Roadway.dwg





PRELIMINARY



0 40
Scale in Feet

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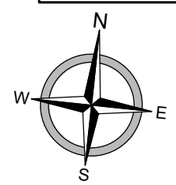
ROADWAY
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED PATH NO. 1

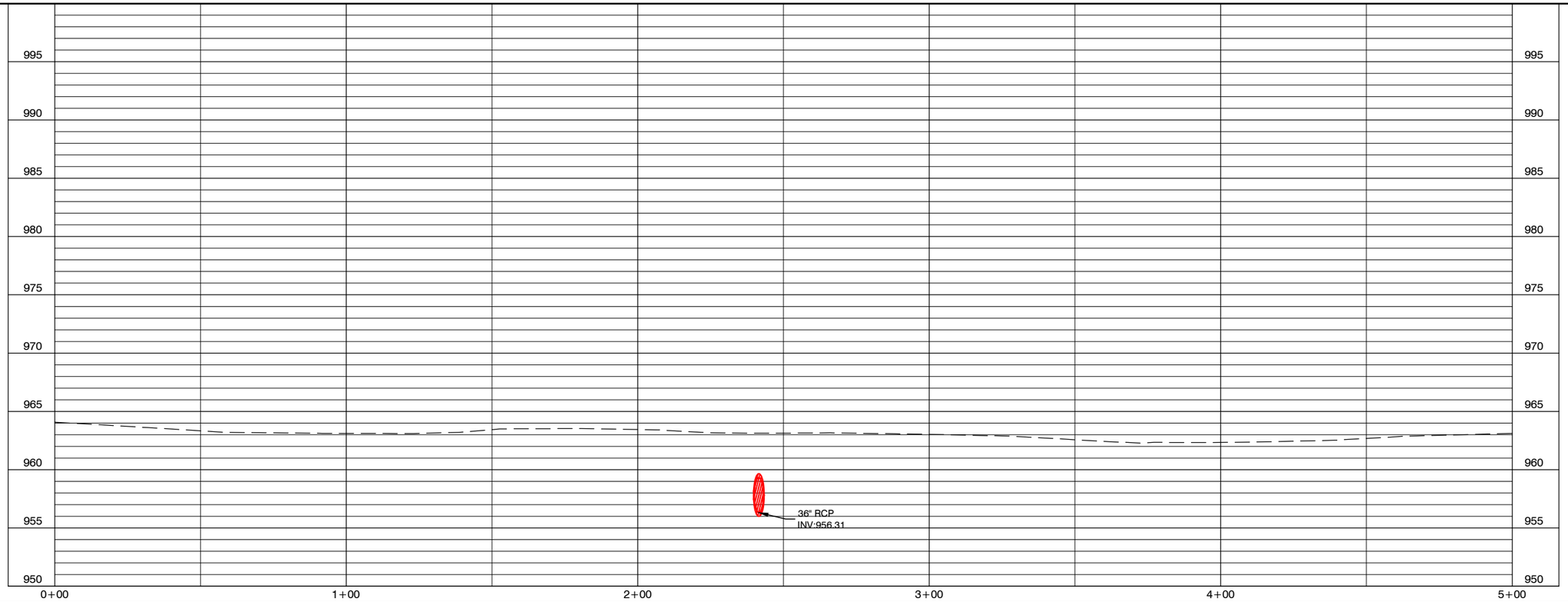
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PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-501

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CAD\C3D\Production\32231_Roadway.dwg







PRELIMINARY

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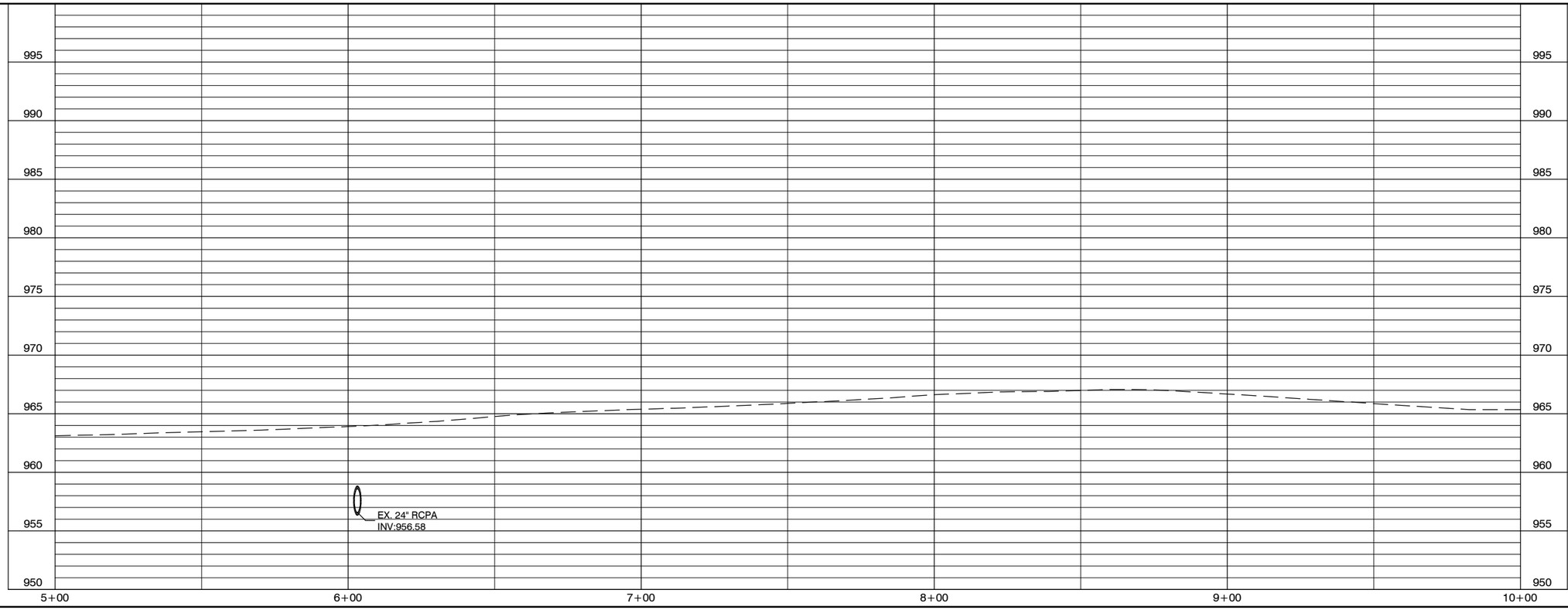
ROADWAY
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED PATH NO. 2

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-502

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CAD\C3D\Production\32231_Roadway.dwg





PRELIMINARY

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0 40
Scale in Feet

moore engineering, inc.
a Vistal company

ROADWAY
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED PATH NO. 2

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-503

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CAD\C3D\Production\32231_Roadway.dwg



PRELIMINARY

N E S W

0 40
Scale in Feet



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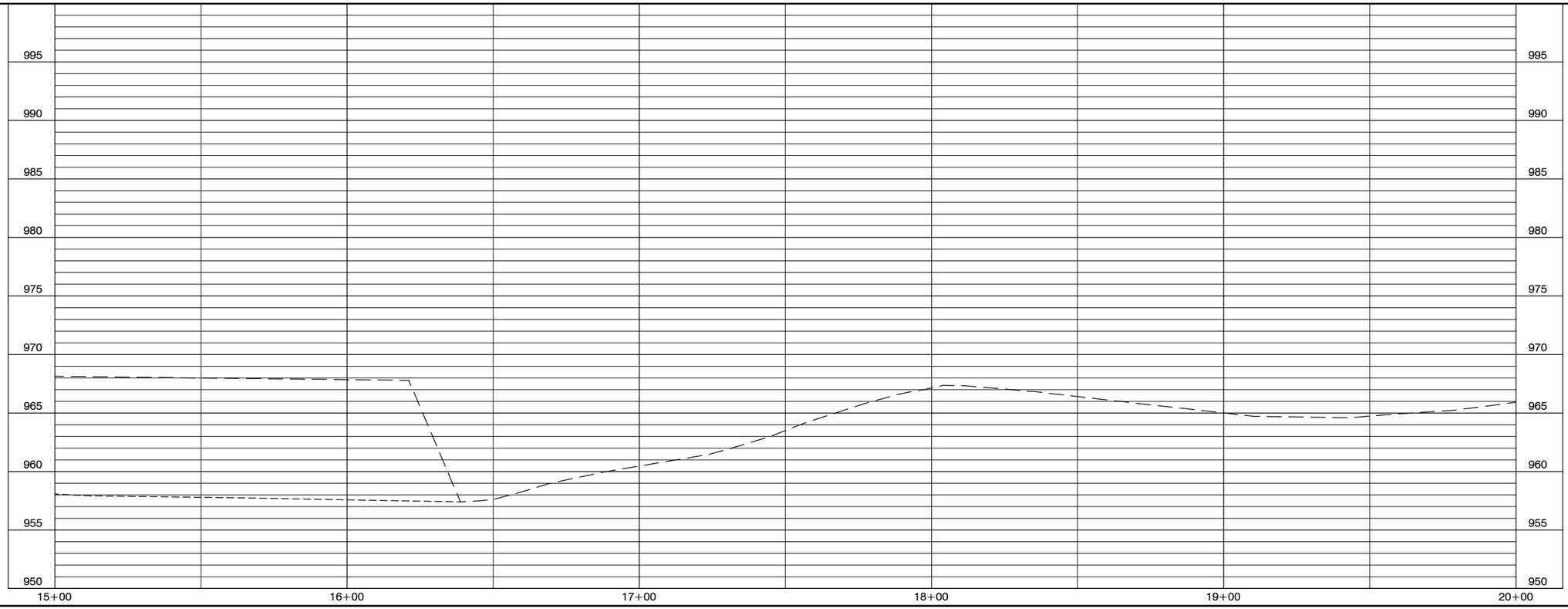
ROADWAY
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED PATH NO. 2

DATE:	10.01.26
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-504

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CAD\C3D\Production\32231_Roadway.dwg





PRELIMINARY



0 40
Scale in Feet

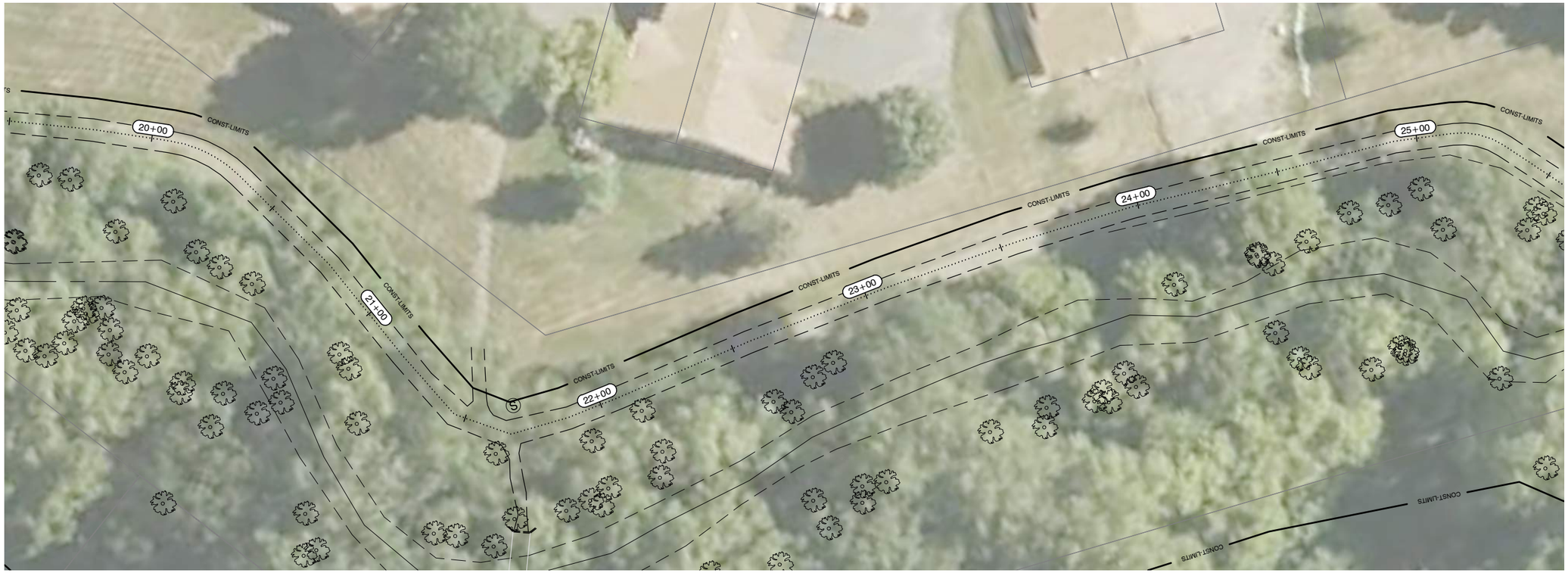
moore engineering, inc.
a Vistal company

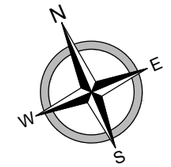
ROADWAY
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED PATH NO. 2

DATE:	10.01.26
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PROJECT No.	32231
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-505

FILE LOCATION: Q:\Projects\32000\32200\32231 StreamRestorationProject2026Phase2Design\CADIC3D\Production\32231_Roadway.dwg





0 40

Scale in Feet



PRELIMINARY

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ROADWAY
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED PATH NO. 2

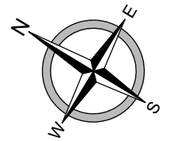
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DESIGNER:	QDS
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REVIEWER:	DTE

C-506

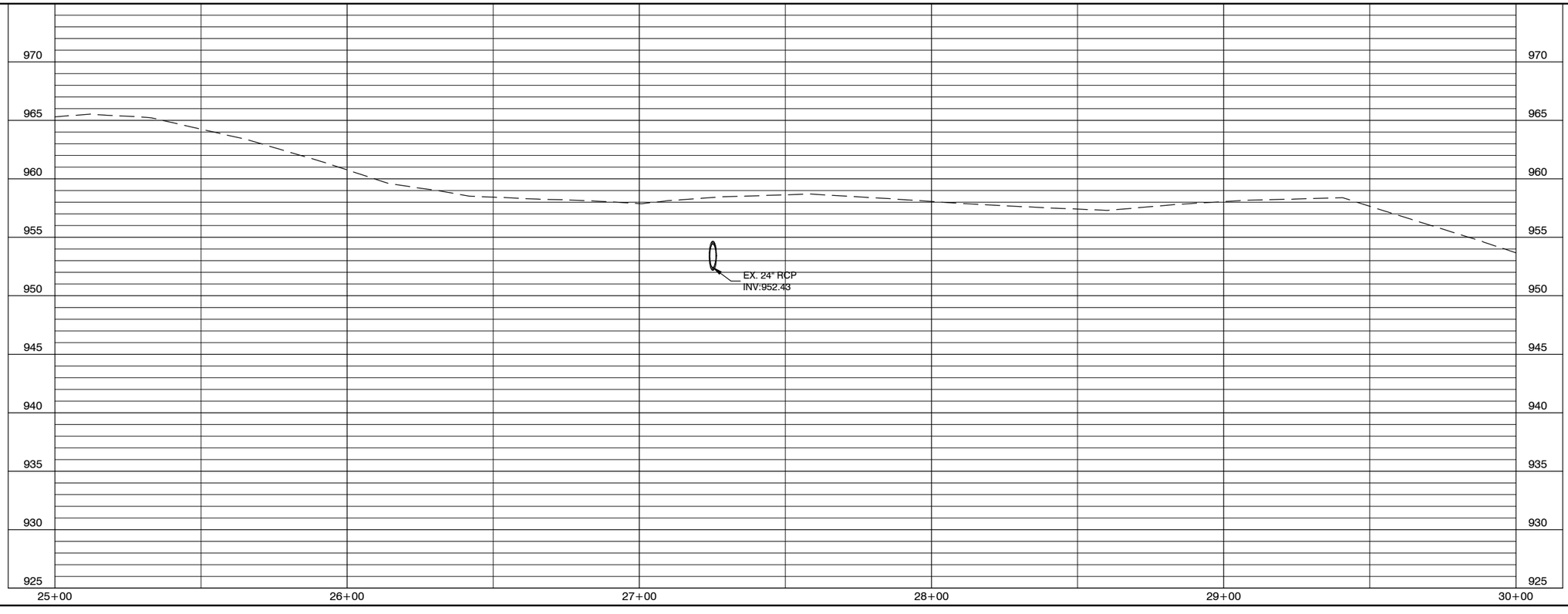
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PRELIMINARY



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Scale in Feet



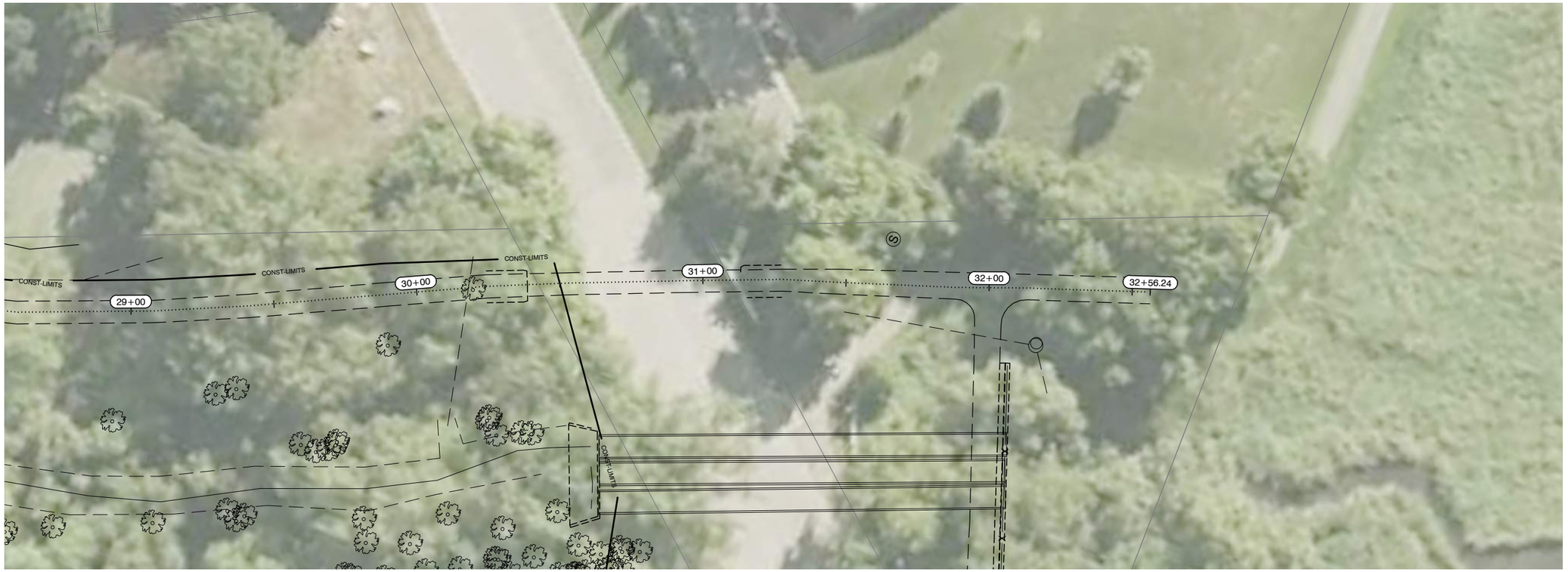
moore engineering, inc.
a Vistal company

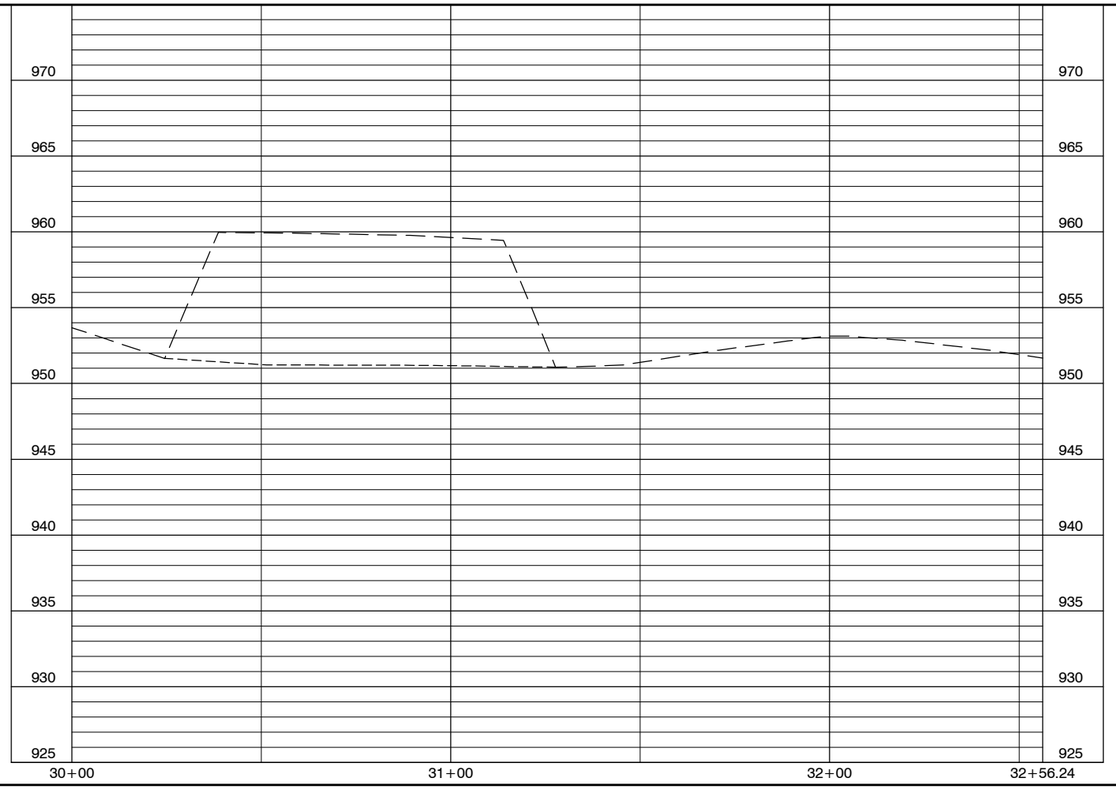
ROADWAY
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
PROPOSED PATH NO. 2

DATE:	10.01.26
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DESIGNER:	QDS
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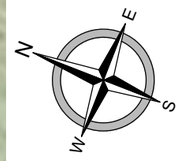
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PRELIMINARY



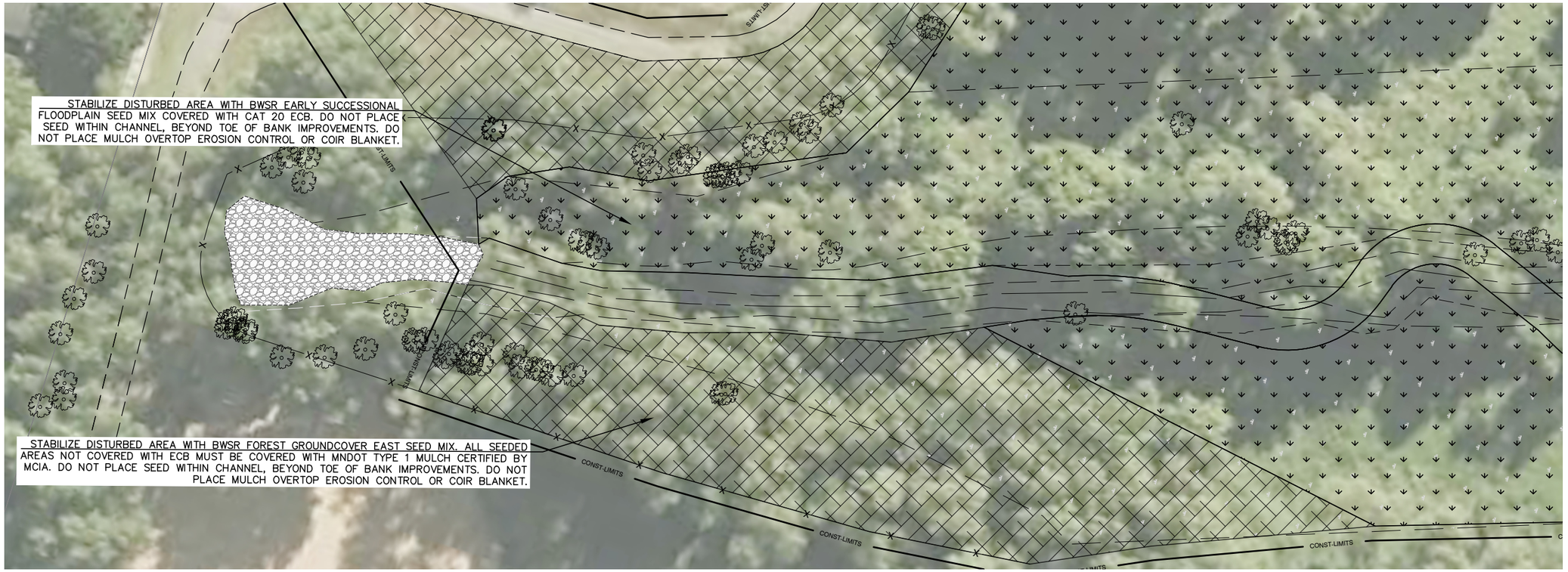
moore
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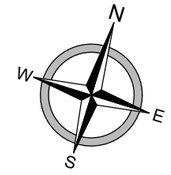
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CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
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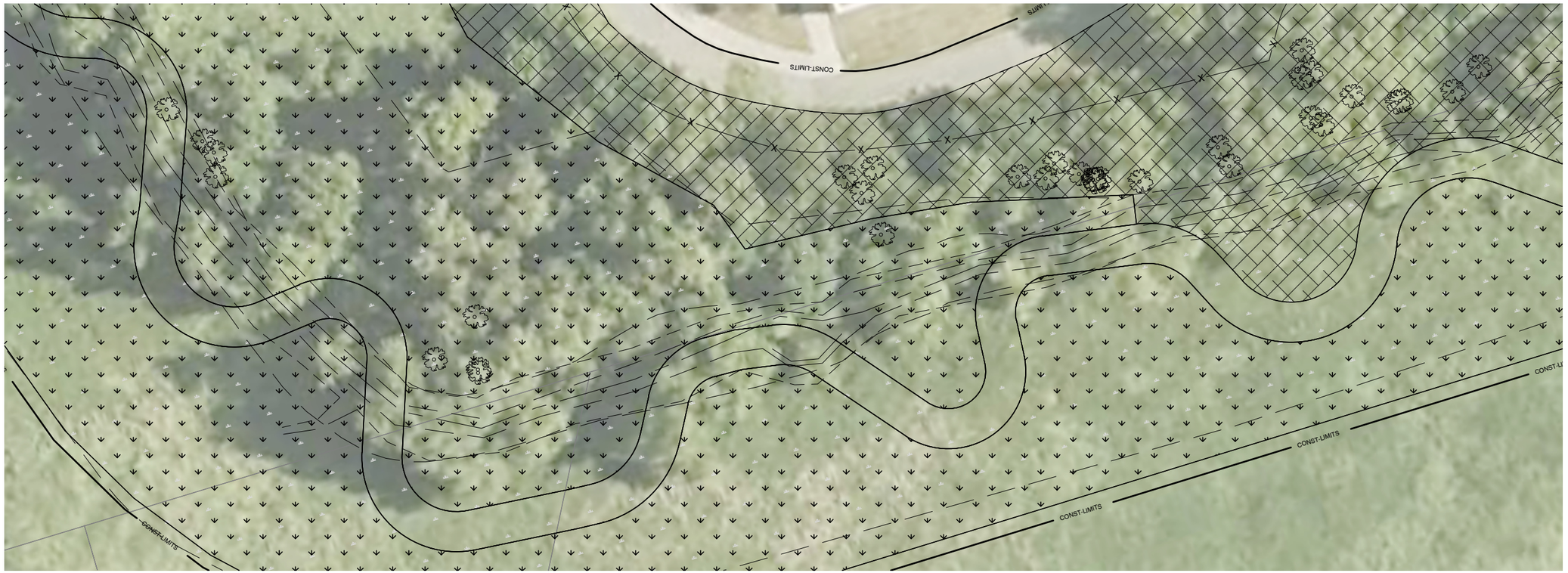
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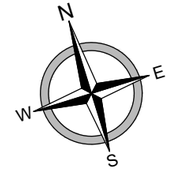
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City of Plymouth

Bassett Creek Watershed Management Commission

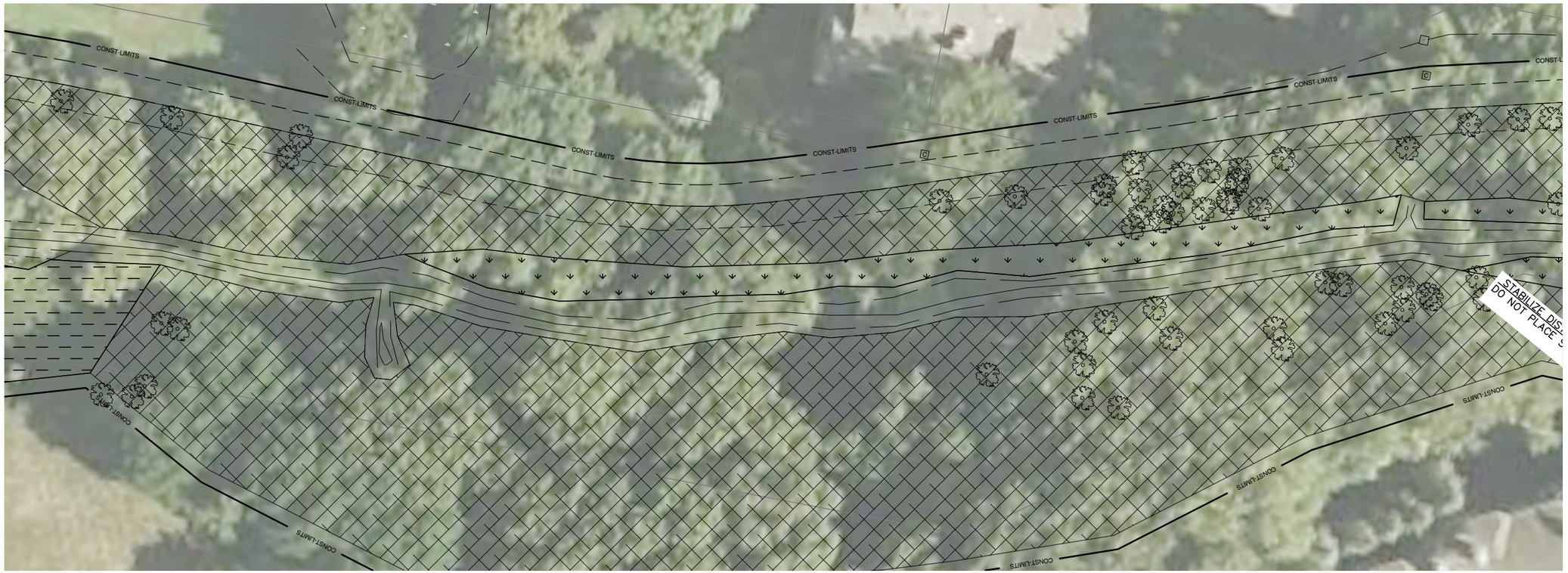
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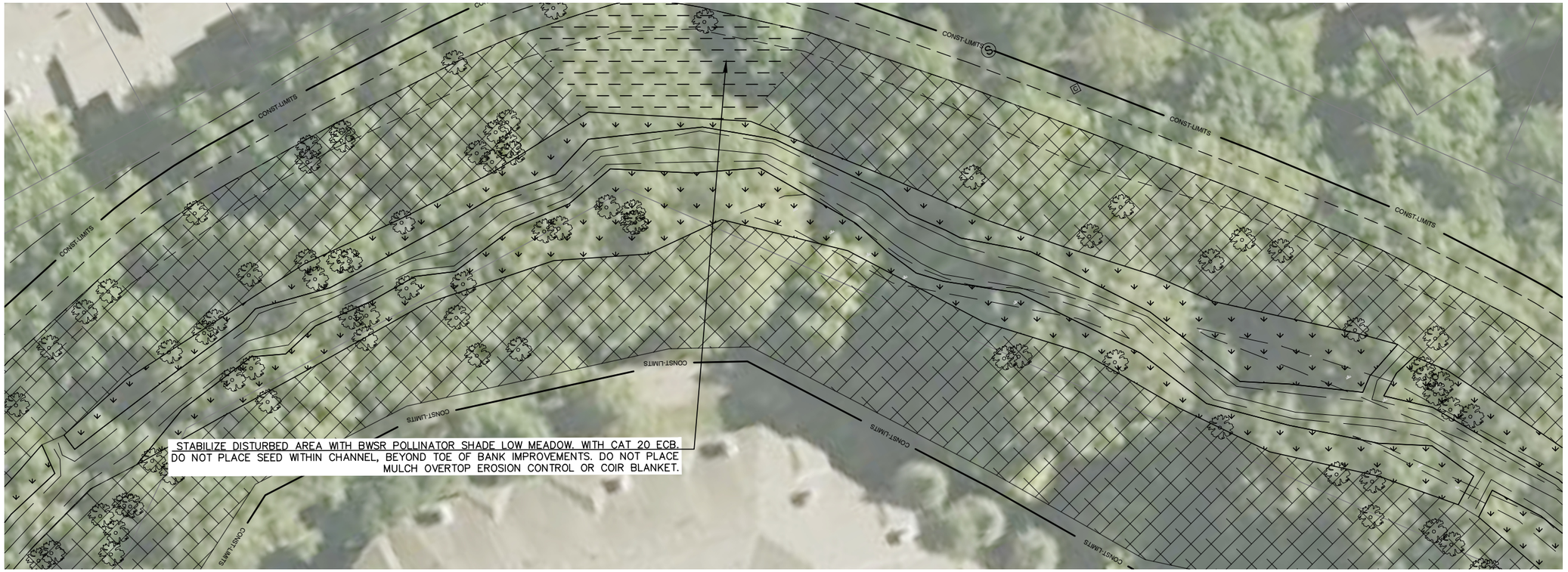
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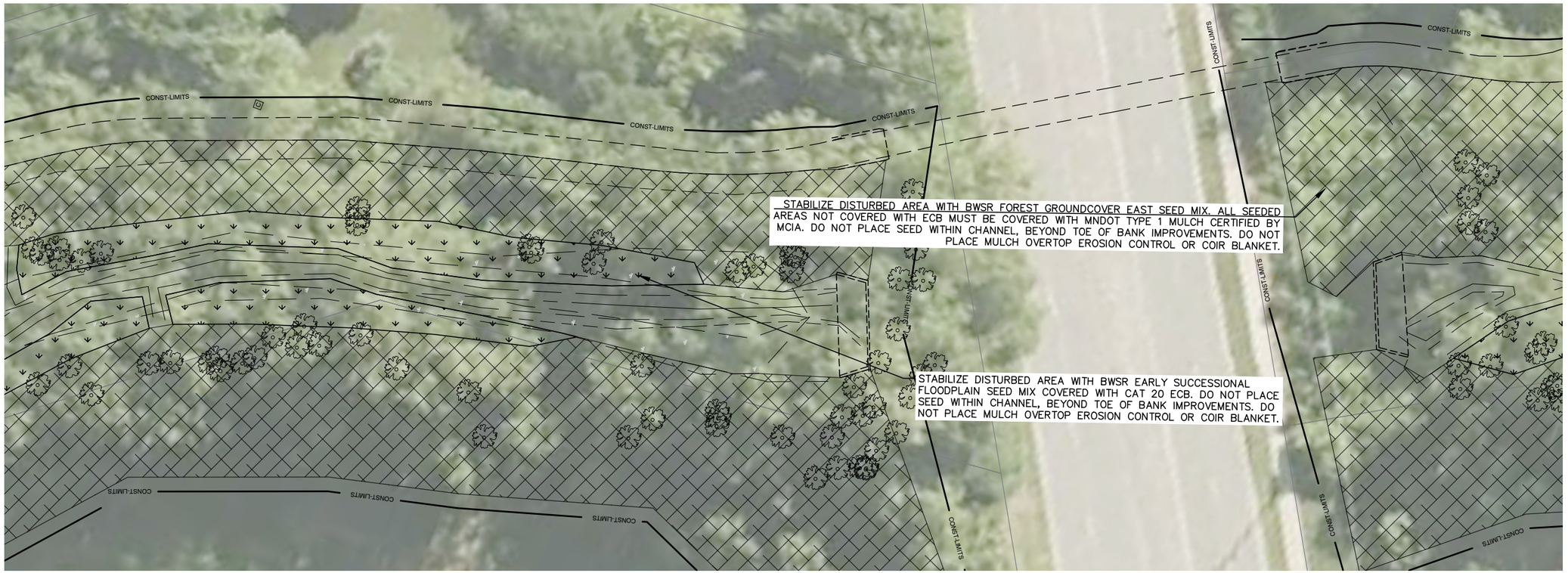
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City of Plymouth

Bassett Creek Watershed Management Commission

SITE PLANS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
VEGETATION ESTABLISHMENT PLAN

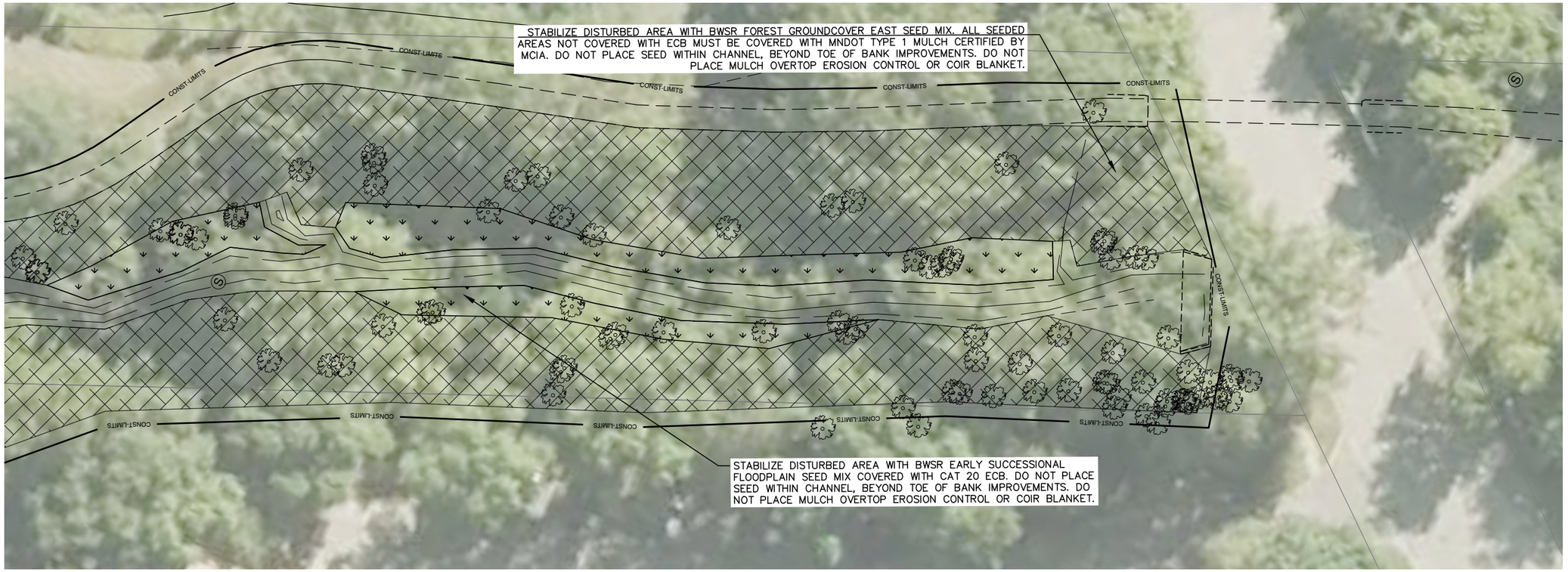
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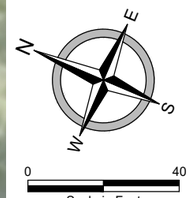
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City of Plymouth

Bassett Creek Watershed Management Commission

SITE PLANS
PLYMOUTH CREEK STREAM RESTORATION PHASE 2
CITY PROJECT NO. WR25001
CITY OF PLYMOUTH, MINNESOTA
VEGETATION ESTABLISHMENT PLAN

DATE:	10.01.26
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DRAFTER:	DWA
REVIEWER:	DTE

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Attachment B
60% Engineer's Opinion of Cost

PLYMOUTH CREEK RESTORATION
CITY OF PLYMOUTH
OPINION OF PROBABLE COST

moore engineering, inc.

ITEM NO.	SPEC NO.	ITEM DESCRIPTION	UNIT	PROJECT TOTAL	UNIT COST	TOTAL PROJECT COST
1	01100	MOBILIZATION	LS	1	$ 36,000	$ 36,000
2	01400	ROCK EXIT TO CONSTRUCTION SITE	EA	5	$ 1,200	$ 6,000
3	01400	FLOTATION SILT CURTAIN	LF	50	$ 50	$ 2,500
4	01600	TRAFFIC CONTROL	LS	1	$ 5,000	$ 5,000
5	02000	REMOVE STORM PIPE (ALL TYPES AND SIZES)	LF	48	$ 50	$ 2,400
6	02000	FULL DEPTH RECLAMATION	SY	3020	$ 5	$ 15,100
7	02010	CLEARING	TREE	604	$ 275	$ 166,100
8	02010	GRUBBING	TREE	604	$ 150	$ 90,600
9	02300	36" RCP STORM SEWER	LF	48	$ 200	$ 9,600
10	02300	36" APRON	EA	2	$ 2,000	$ 4,000
11	02400	COMMON EXCAVATION (P)	CY	1280	$ 30	$ 38,400
12	02400	COMMON EMBANKMENT (P)	CY	1280	$ 50	$ 64,000
13	02410	BITUMINOUS TRAIL	SY	3020	$ 25	$ 75,500
14	02900	SEEDING BSWR FOREST GROUNDCOVER EAST	AC	7.3	$ 9,000	$ 65,700
15	02900	SEEDING EARLY SUCCESSIONAL FLOODPLAIN	AC	3.1	$ 9,000	$ 27,900
16	02901	SEEDING POLLINATOR SHADE LOW MEADOW	AC	0.4	$ 10,000	$ 4,000
17	02900	SEEDING RESIDENTIAL TURFGRASS (RT)	AC	0.4	$ 7,000	$ 2,800
18	312213	STAGING AREA RESTORATION	EA	3	$ 2,500	$ 7,500
19	312213	BANK GRADING	LF	1753	$ 25	$ 43,825
20	312500	COIR LOG - 16"	LF	154	$ 50	$ 7,700
21	312500	BRUSH MATTRESS	SY	25	$ 50	$ 1,250
22	313716.13	BANK GRADING WITH VEGETATED RIPRAP (CLASS II, NO LIMESTONE ALLOWED)	LF	541	$ 70	$ 37,870
23	313716.13	RIPRAP (ARCH VANE AND ROCK RIFFLE) (CLASS IV, NO LIMESTONE ALLOWED)	CY	160	$ 175	$ 28,000
					CONSTRUCTION TOTAL	$ 741,745
					CONTINGENCY (25%)	$ 185,440
					TOTAL	$ 927,185

Attachment C
Wetland Delineation Report



Plymouth Creek
Aquatic Resources Report

Plymouth, MN

moore
engineering, inc.

Prepared By:
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Prepared For:
City of Plymouth
3400 Plymouth Boulevard
Plymouth MN 55447

September 11, 2025

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Figure 4 – Soil Survey Data
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Appendix B – USACE Data Sheets
Appendix C – Site Photos
Appendix D – Historic Photos
Appendix E – Yuma Lane Plan Sheet

I. INTRODUCTION

The City of Plymouth is proposing a streambank restoration project within and along portions of Plymouth Creek. The project will include streambed stabilization and erosion control using riprap and vegetation. Work will mostly occur within the streambed, but wetlands were delineated to ensure they will not be impacted. The project area includes a 150-ft corridor surrounding Plymouth Creek from Dunkirk Lane to 38th Ave N (See Figure 1). It is located in Sections 16 & 17 of Township 118N, Range 22W.

Wetlands are defined in the Federal Register (1982) as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

An area must have three elements present to be delineated as a wetland:

1) Greater than 50% dominance of hydrophytic plant species.
2) Hydric soil substrate.
3) Wetland hydrology during the growing season

II. BACKGROUND INFORMATION

2.1 Desktop Analysis

Moore Engineering reviewed U.S. Geological Survey (USGS) topographic maps, U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) soil survey data, and U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) for the project area prior to performing the wetland delineation onsite. Findings of this desktop analysis are described below.

National Wetland Inventory Map

The USFWS National Wetlands Inventory showed multiple wetlands and wetland complexes within the project area. These included a PEM1Cd/PUBH complex, a PUBH/PABH/PEM1Ad/PFO1Ad complex, a PUBHx/PEM1C complex, along with singular PABH, PUBHx, PABHx, and PFO1Ad wetlands.

Public Waters Inventory Map

The Minnesota Department of Natural Resources (MNDNR) Public Waters Inventory (PWI) showed DNR Public Watercourse M-057 (Bassett Creek) flowing through the project area. It also showed Public Water Wetland 27-060-100 (Unnamed) and Public Lake 27-010-102 (Turtle Lake) approximately 1000-ft west and north of the project area, respectively. The National Hydrography Dataset showed a Stream/River within the project area that corresponded to Bassett Creek.

Soil Survey Map

The NRCS Web Soil Survey was reviewed for relevant soil information for the project area (Figure 4). Table 1 below provides a summary of soil map units present in the project area and their respective hydric ratings.

Table 1: Summary of Mapped Soils on Site*

Map Unit Symbol	Map Unit Name	Hydric Rating (%)
L9A	Minnetonka silty clay loam, 0 to 2 percent slopes	100
L22C2	Lester loam, 6 to 10 percent slopes, moderately eroded	2
L22D2	Lester loam, 10 to 16 percent slopes, moderately eroded	0
L22E	Lester loam, 10 to 22 percent slopes	0
L26B	Shorewood silty clay loam, 3 to 6 percent slopes	5
L26C2	Shorewood silty clay loam, 6 to 12 percent slopes, eroded	5
L36A	Hamel, overwash-Hamel complex, 0 to 3 percent slopes	45
L37B	Angus loam, 2 to 6 percent slopes	5
L41D2	Lester-Kilkenny complex, 10 to 16 percent slopes, moderately eroded	5
L49A	Klossner soils, depressional, 0 to 1 percent slopes	100
L50A	Muskego and Houghton soils, 0 to 1 percent slopes	100
L61C2	Lester-Metea complex, 6 to 12 percent slopes, eroded	3
L132A	Hamel-Glencoe complex, 0 to 2 percent slopes	90
U1A	Urban land-Udorthents, wet substratum, complex, 0 to 2 percent slopes	0

* Soil map units are composed of one or more distinct soil series, each of which is rated as hydric or not hydric. The hydric rating indicates the predicted areal percentage of hydric soil series within each map unit.

III. METHODS

3.1 Level 2 Field Delineation (Onsite)

Wetlands were delineated on site according to the USACE 1987 Wetland Delineation Manual ('87 Manual) and the USACE 2010 Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region (Version 2.0). Wetlands were delineated with a sub-meter accurate handheld GPS unit (Trimble R1 GNSS receiver and tablet, or similar device). Onsite wetland delineation results are described in Section 4.1. Onsite investigation focused on areas of suspected wetlands, NWI features in the project area, and verification of offsite review areas, if needed, or if field conditions appeared to differ from observed offsite conclusions. Wetlands were marked with pink pin-flags in the field.

3.2 Precipitation Analysis

An analysis of antecedent precipitation conditions using the U.S Army Corps of Engineers Antecedent Precipitation Data Tool was performed for the site visit. This analysis indicated that precipitation leading up to the site visit was above the normal range (Appendix A).

IV. RESULTS

4.1 Onsite Results

Ten wetlands (Table 4) were delineated onsite. Wetland features have been named to reflect the continuity of each basin, because certain wetlands were part of the same complex but were divided by Plymouth Creek. After a review of historic images, Wetlands 2, 3 and 5 were determined to have been incidentally created (Appendix D).

Table 4: Features within the Project Area

Wetland ID	Cowardin Type	Acreage onsite
1	PEM1A	0.03
2*	PUBHx	0.10
3*	PUBHx/PEM1D	0.14
4	PEM1Cx/ PEM1Dx	0.08
5*	PUBHx	0.11
6	PEM1Dxd	0.38
7A	PEM1Dd	1.50
7B	PEM1Dd/ PFO1Ad	0.73
8	PEM1Dd	0.13
9	PEM1C/PEM1D	0.04
10A	PEM1Ad	0.04
10B	PEM1Ad	0.06
10C	PEM1Ad	0.03

*These wetlands were incidentally created

Wetland 1 was a PEM1A seasonally flooded depression that was dominated by reed canary grass. It was a slight depression offset from Plymouth Creek that featured distinctly different vegetation than the upland forested areas surrounding it. Other vegetation observed within the wetland included blue vervain, lake sedge, Pennsylvania smartweed, stinging nettle, giant goldenrod, curly dock and Canada thistle. Adjacent upland to the north consisted of manicured Kentucky bluegrass. The east and west sides of the wetland were upland forest dominated by common buckthorn shrubs.

Wetland 1 was delineated based on topographical changes and a shift from hydrophytic plant communities to upland plant communities. It was not identified by the NWI and was

mapped on hydric soils (Hamel-Glencoe complex) according to the soil survey. A nearby landowner said the depression was caused by heavy machinery being stored there during the construction of the nearby homes in the 1990s. Due to Wetland 1 being mapped on hydric soils and its proximity to Plymouth Creek, it was determined to be wetland.

Conversations with nearby landowners uncovered that there was heavy machinery stored in that area during the construction of nearby homes, forming a concave landscape. Moore would like to leave discussions open to this wetland being potentially incidental.

Wetland 2 was a PUBHx excavated deep water wetland. It was entirely open water and lined with riprap. There was a fountain in the middle of the wetland and a large culvert present that connected to Plymouth Creek. Wetland 2 is clearly excavated and maintained so it was included in the historic review as Area A. It is mapped as a PABHx wetland on the NWI and partially mapped on hydric soils (Hamel-Glencoe complex) according to the soil survey.

Wetland 2 was included in the historic aerial review as Area A. Available photos date back to 1947 and do not show consistent wetland signatures. It appears to be historic farmland before being excavated during the construction of nearby homes. It was likely drained by Plymouth Creek to the north, lacking wetland hydrology. Therefore, Wetland 2 was determined to be incidentally created and not regulated by the wetland conservation act (WCA).

Wetland 3 was a PUBHx/PEM1D excavated deep water wetland with a wet meadow fringe. It was almost entirely open water, with a fringe dominated by reed canary grass and black willow trees. Wetland 3 appears to have been altered by human action in some capacity, so it was included in the historic review as Area B. It is mapped as a PUBHx wetland on the NWI and is mapped on hydric soils (Minnetonka silty clay loam) according to the soil survey.

Wetland 3 was included in the historic aerial review as Area B. Many of the historic conditions that apply to Wetland 2 also apply to Wetland 3. It was likely drained by Plymouth Creek and does not show consistent wetland signatures. Therefore, Wetland 3 was determined to be incidentally created and not regulated by WCA.

Wetland 4 was a PEM1Cx/PEM1Dx shallow marsh and wet meadow wetland. The interior shallow marsh was partially open water with duckweed. It also featured hybrid cattail and reed canary grass. The wet meadow fringe was primarily reed canary grass, with jewelweed, giant goldenrod, lake sedge, smartweed, red-osier dogwood, and common buckthorn also present. The adjacent upland within the project area was primarily common buckthorn, with Virginia creeper and boxelder trees also present. The upland was a slight rise between Wetland 4 and Plymouth Creek.

Wetland 4 was delineated based on topographical changes and a shift from hydrophytic plant communities to upland plant communities. It was identified on the NWI as a PEM1C wetland and was mapped on hydric soils (Hamel-Glencoe soils) according to the soil survey.

Wetland 4 was excavated as part of onsite mitigation for the nearby Yuma Lane development in 2000. It was built to connect to a natural wetland which is out of the bounds of the Plymouth Creek project. Moore would like to leave discussions open to this

wetland being potentially incidental.

Wetland 5 was a PUBHx excavated deep water wetland that was entirely open water. It appears to have been excavated so it was included in the historic review as Area C. It is mapped as a PUBHx wetland on the NWI and is located within non-hydric soils (Shorewood silty clay loam) according to the soil survey.

Wetland 5 was included in the historic aerial review as Area C. Historic photos show that Wetland 5 was likely upland until its excavation in 2000 as part of the Yuma Lane development. Therefore, Wetland 5 was determined to be incidentally created and not regulated by WCA.

Wetland 6 was a PEM1Cxd wet meadow wetland that fringed Plymouth Creek. It was within a flat area where the creek split into a few different directions. The wetland was dominated by reed canary grass, but also featured broadleaf arrowhead, jewelweed, red-osier dogwood, and joe-pye weed. Much of the wetland was inundated during the site visit, which occurred during wetter than normal conditions. Adjacent upland was located on a forested hillslope. Common buckthorn was the dominant plant, but the upland also featured Virginia creeper, motherwort, Canada thistle, green ash trees, and boxelder trees.

Wetland 6 was delineated based on topographical changes and a shift from hydrophytic plant communities to upland plant communities. It was identified as a PABH wetland on the NWI and mapped on both hydric and non-hydric soils according to the soil survey (Hamel-Glencoe complex and Shorewood silty clay loam). Wetland 6 is within a depression where Plymouth Creek loses its bank and splits into a few different streams.

Wetland 6 was included in the historic aerial review as Area D. It was clearly excavated but showed wetland signatures in the majority of aerial photos. Therefore, it was determined to be regulated under WCA.

Wetlands 7A and 7B were part of a PEM1Dd/PFO1A wetland complex that was split by Plymouth Creek. The wet meadow portion was expansive and dominated by reed canary grass. Other species observed included stinging nettle, Canada thistle, Pennsylvania smartweed, lake sedge, common burdock, jewelweed, and bittersweet nightshade. The forested wetland was dominated by common buckthorn, green ash trees, boxelder trees, and black willow trees. Wetland lined either side of Plymouth Creek.

Wetlands 7B and 7B were delineated based on topographical changes and a shift from hydrophytic plant communities to upland plant communities. The wetland complex was identified as a PEM1Ad/PFO1Ad wetland complex on the NWI and was mapped on hydric soils (Klossner soils) according to the soil survey. It continued offsite to the north and south.

Wetland 8 was a PEM1Dd wet meadow wetland fringing a flattened-out section of Plymouth Creek. It was dominated by reed canary grass, but also featured sandbar willow, stinging nettle, Pennsylvania smartweed, wild cucumber, and riverbank grape. Adjacent upland was littered with poison ivy, along with Virginia creeper, green ash trees, boxelder trees, Canada thistle and cottonwood trees.

Wetland 8 was located within a depression surrounding Plymouth creek. The area surrounding the creek flattened out and expanded more compared to other areas of the

creek. The wetland was not identified on the NWI and was mapped on hydric soils (Muskego & Houghton) according to the soil survey.

Wetland 9 was a PEM1C/PEM1D shallow marsh and wet meadow wetland. It was dominated by cattail within its deepest portions and was fringed by a reed canary grass meadow. Other plants observed included lesser clearweed, stinging nettle, and green ash shrubs. Offsite, wetland 9 became more of a deepwater marsh primarily consisting of open water. The wetland sloped up to a paved trail and an upland consisting of boxelder trees, Virginia creeper, and common buckthorn shrubs.

Wetland 9 was delineated based on topographical changes and a shift from hydrophytic plant communities to upland plant communities. It was identified as a PEM1Cd/PUBH/PFO1A wetland complex on the NWI and was mapped on hydric soils (Muskego & Houghton soils) according to the soil survey. Wetland 9 continued offsite to the north.

Wetlands 10A, 10B, and 10C were part of a PEM1A wetland complex that was split up by Plymouth Creek. They were located within a flat area where the creek bed lowered, offering more opportunity for seasonal flooding of the surrounding banks. These wetlands were primarily unvegetated but had areas featuring clumps of reed canary grass and wood nettle. The adjacent upland sloped upwards and was dominated by common buckthorn shrubs.

Wetlands 10A, 10B, and 10C were delineated mainly based on topographical changes and a lack of vegetation. The lack of vegetation pointed to seasonal flooding that didn't allow plants to grow consistently. The area was not identified on the NWI and was mapped on hydric soils (Muskego and Houghton soils) according to the soil survey.

V. REFERENCES

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FIGURES

Figure 1 – Project Site Location
Figure 2 – National Wetland Inventory Wetlands
Figure 3 – Public Waters Inventory
Figure 4 – Soil Hydric Rating
Figure 5 – Delineated Aquatic Resources

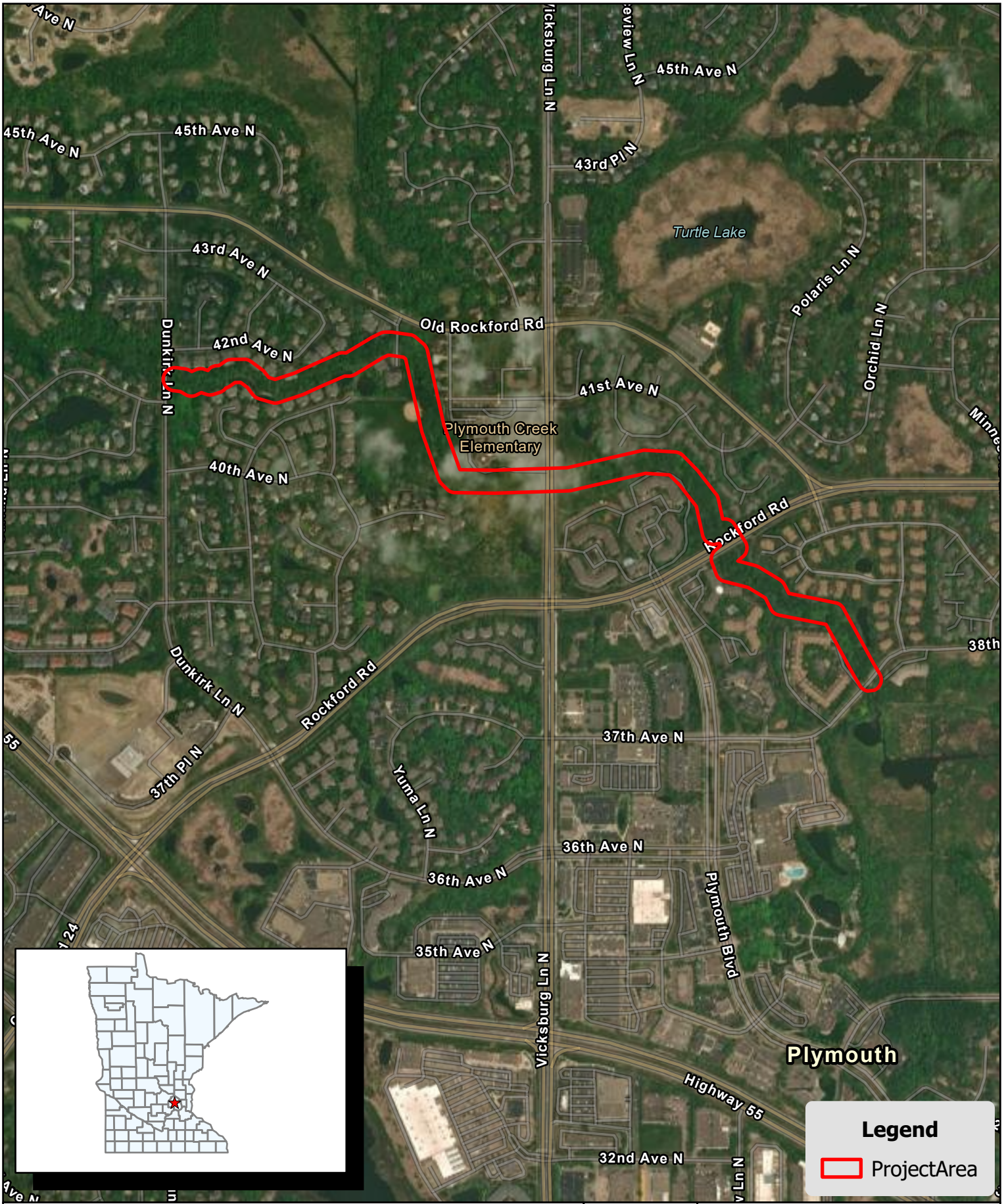


Figure 1- Site Location Map
Plymouth Creek
Plymouth, Minnesota

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moore engineering, inc.

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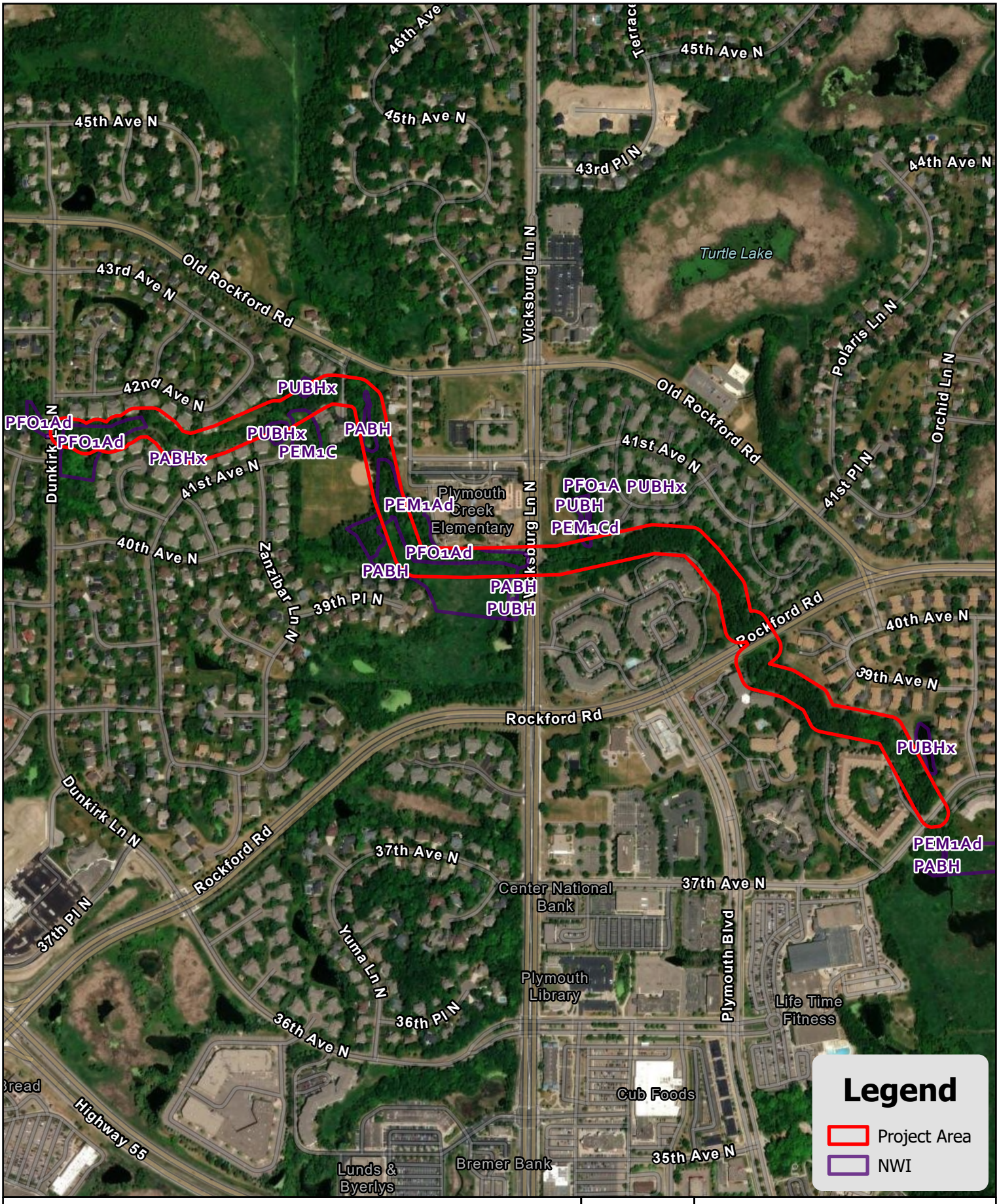


Figure 2- National Wetlands Inventory
Plymouth Creek
City of Plymouth, Minnesota

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moore engineering, inc.

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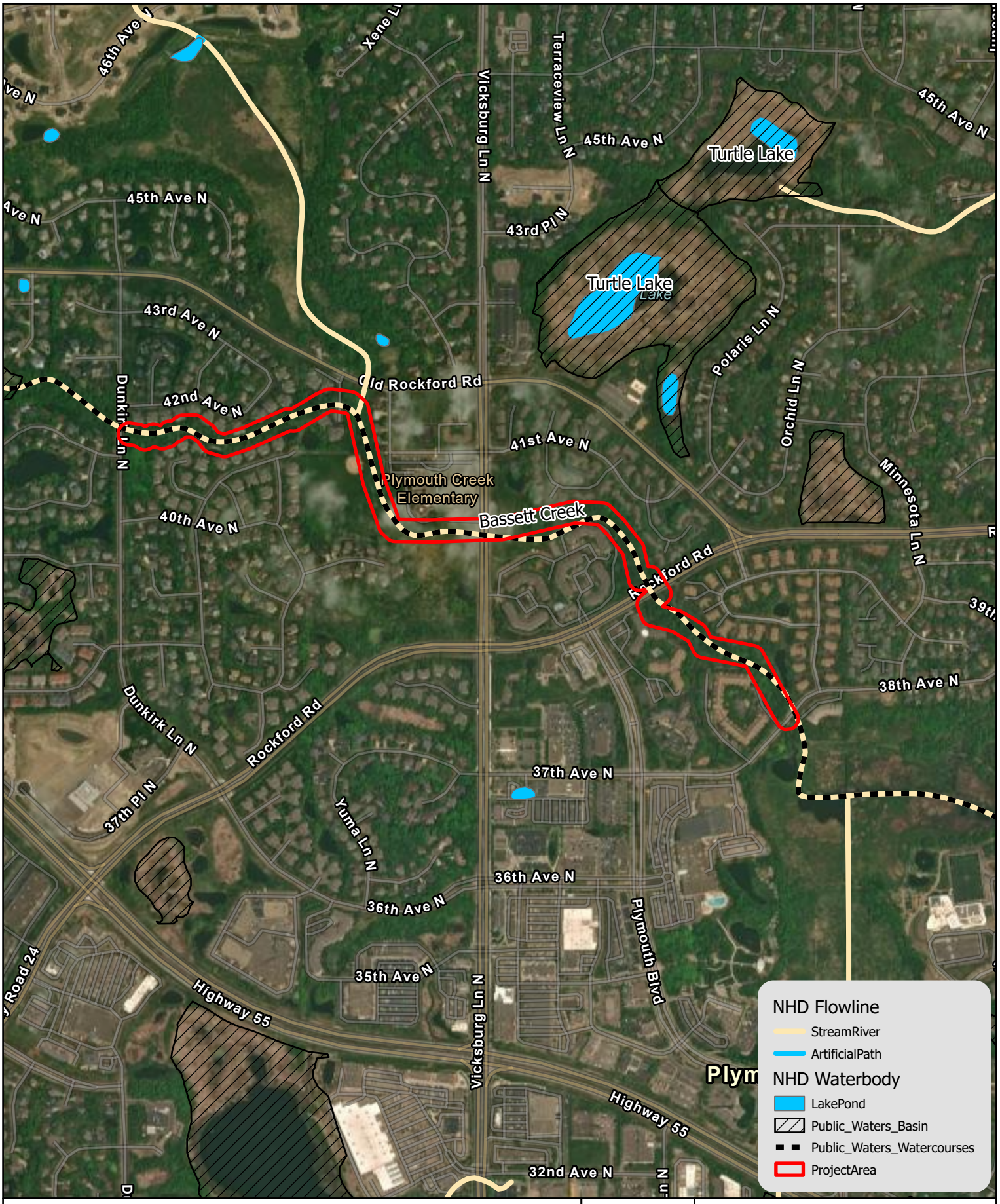


Figure 3- Water Resources
Plymouth Creek
Plymouth, Minnesota

0 750 1,500 US Feet

N W E S

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Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
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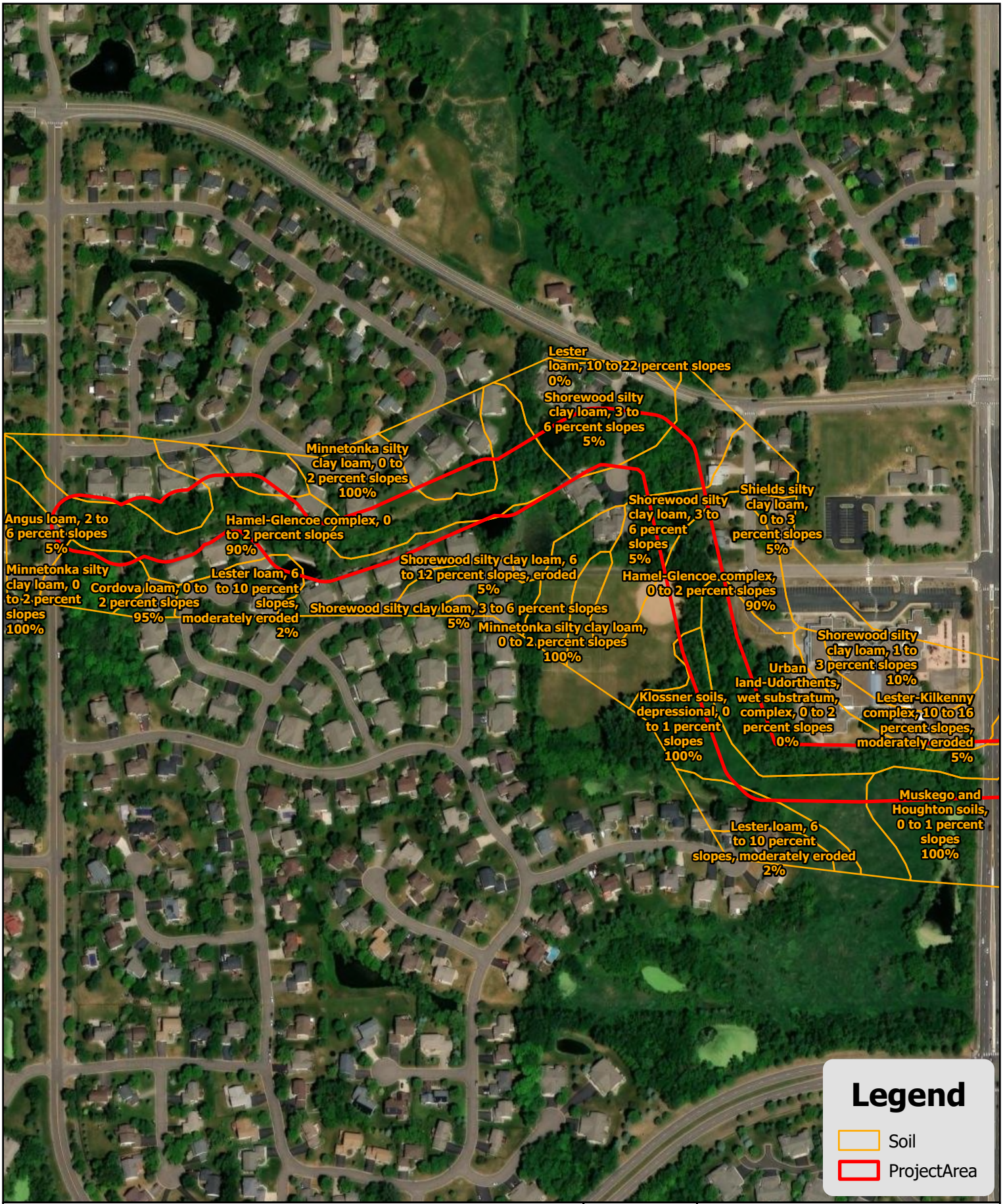


Figure 4a- SSURGO Soil Map Units
Plymouth Creek
City of Plymouth, Minnesota

0 300 600 US Feet

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Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
Q:\Projects\30000\30400\30495 StreamRestorationPlymouth\GIS\APRX\WetlandCollectionTemplate\EnvironmentalTemplate.aprx

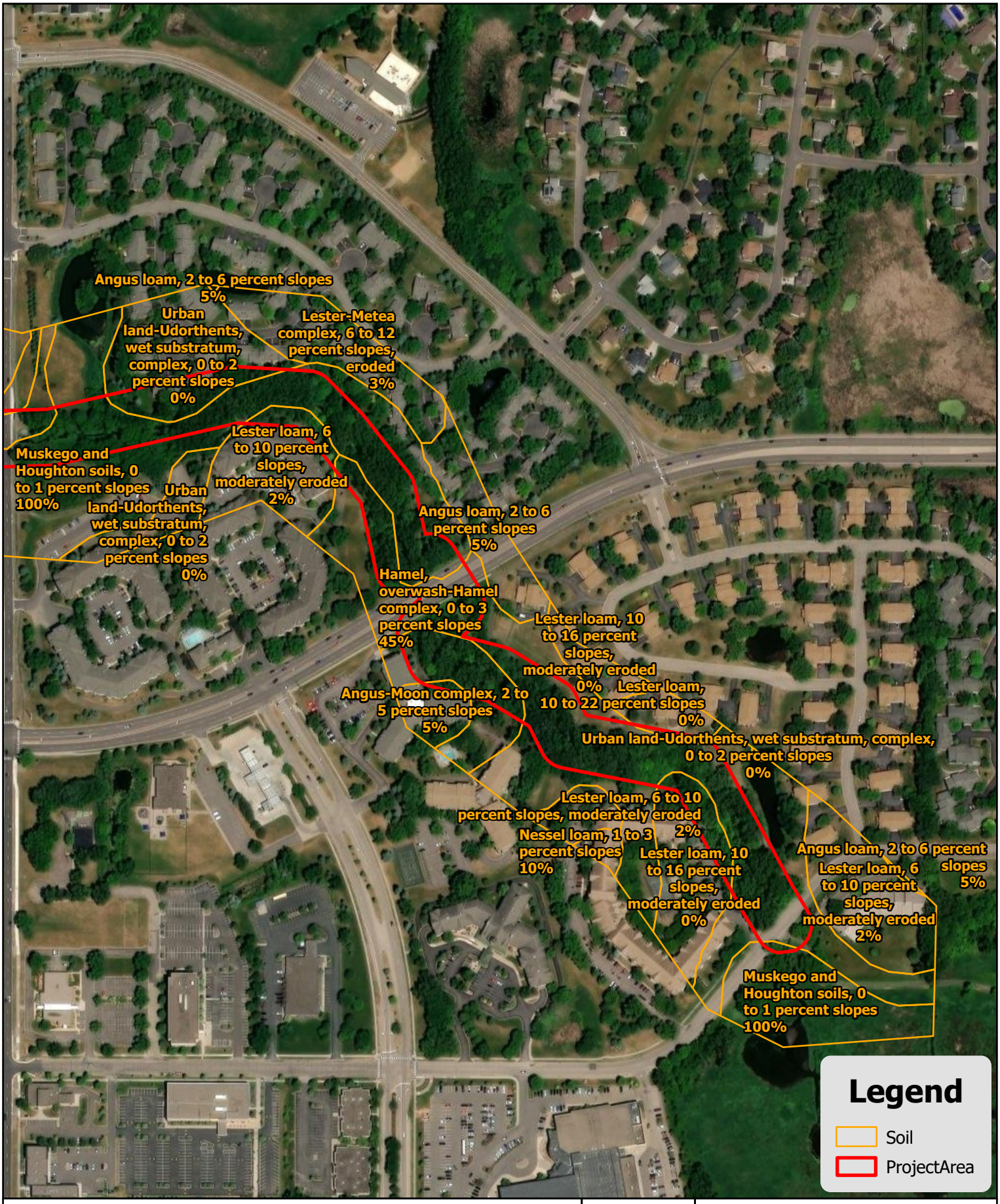


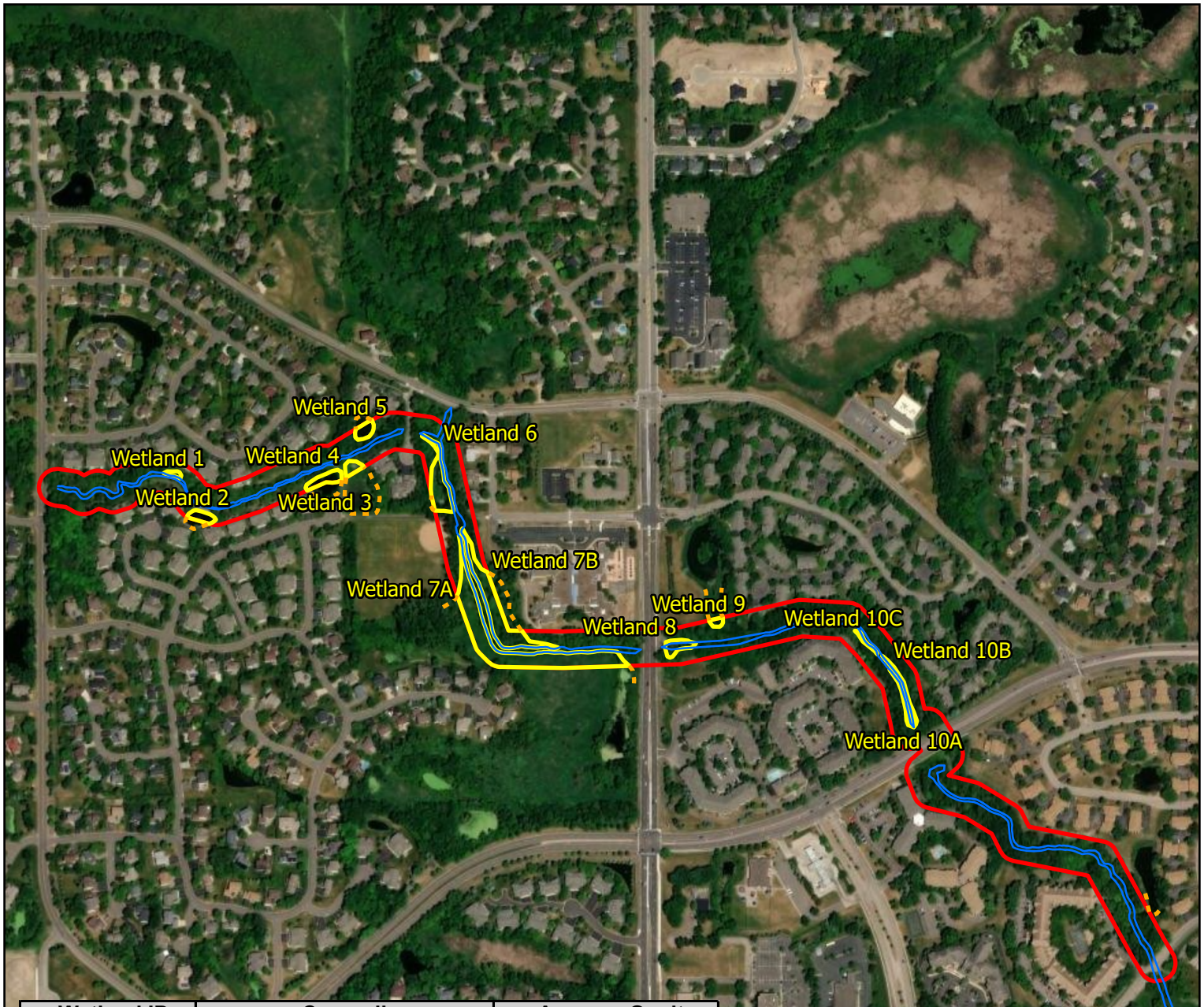
Figure 4b- SSURGO Soil Map Units
Plymouth Creek
City of Plymouth, Minnesota

0 300 600 US Feet

N W E S

moore engineering, inc.

Created By: MA Date Created: 08/18/25 Date Saved: 08/18/25 Date Exported: 08/18/25
Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
Q:\Projects\30000\30400\30495 StreamRestorationPlymouth\GIS\APRX\WetlandCollectionTemplate\EnvironmentalTemplate.aprx



Wetland ID	Cowardin	Acreage Onsite
1	PEM1A	0.03
2**	PUBHx	0.1
3**	PUBHx/PEM1D	0.14
4	PEM1C/PEM1D	0.08
5**	PUBHx	0.11
6	PEM1Dxd	0.38
7A	PEM1Dd	1.5
7B	PEM1Dd/PFO1Ad	0.73
8	PEM1Dd	0.13
9	PEM1C/PEM1D	0.04
10A	PEM1Ad	0.04
10B	PEM1Ad	0.06
10C	PEM1Ad	0.03
**Excavated wetlands and not regulated under WCA.		

Legend

- OffsiteWetlandLine
- PlymouthCreek
- WetlandBoundaries
- ProjectArea

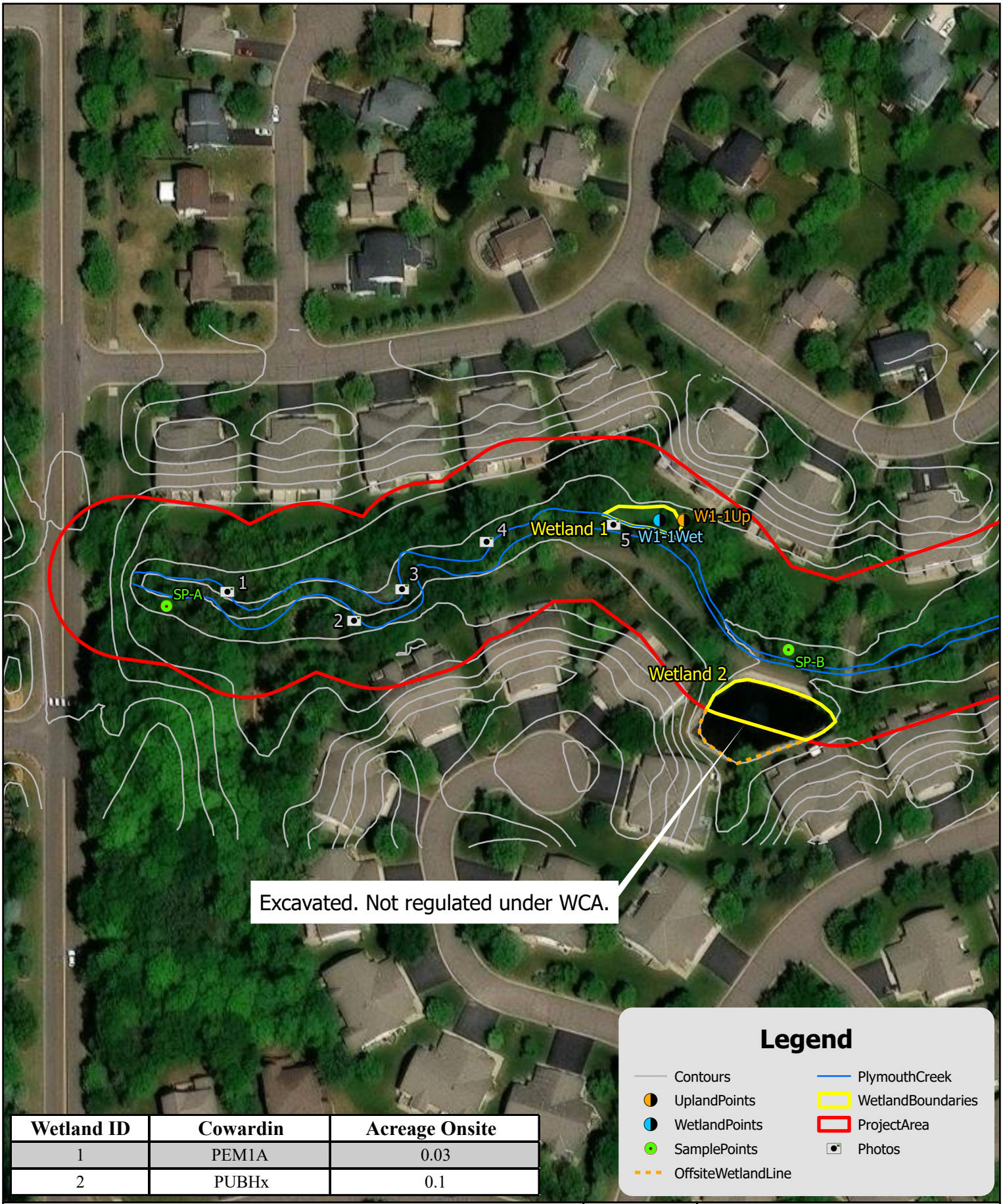
Figure 5 - Delineated Features Overview
Plymouth Creek
Plymouth, Minnesota

0 250 500 US Feet

N W E S

moore engineering, inc.

Created By: MA Date Created: 08/18/25 Date Saved: 08/18/25 Date Exported: 08/18/25
Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
Q:\Projects\30000\30400\30495 StreamRestorationPlymouth\GIS\APRX\WetlandCollectionTemplate\EnvironmentalTemplate.aprx



Wetland ID	Cowardin	Acreage Onsite
1	PEM1A	0.03
2	PUBHx	0.1

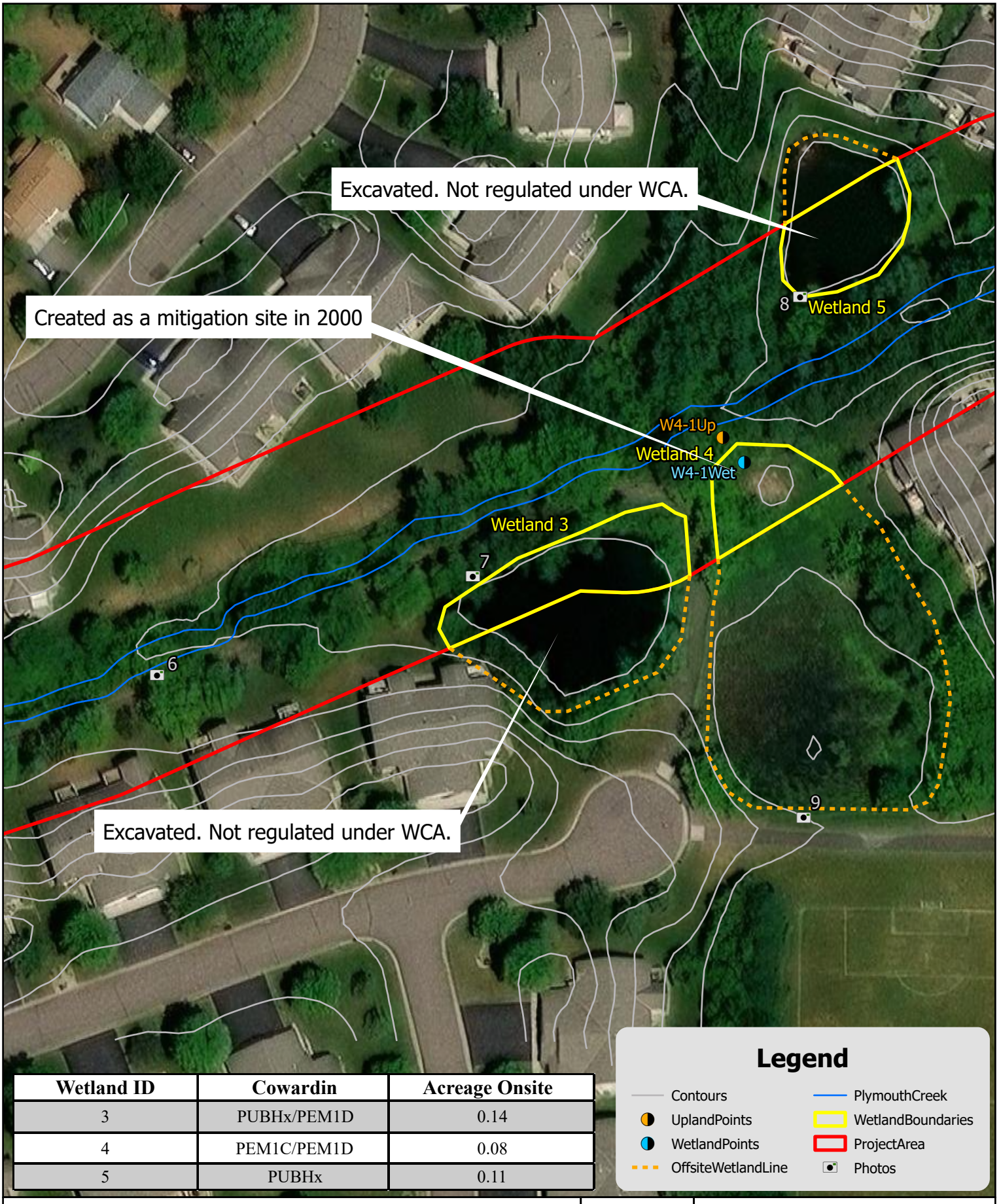
Figure 5A - Delineated Features
Plymouth Creek
Plymouth, Minnesota

0 250 500 US Feet

N W E S

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Created By: MA Date Created: 08/18/25 Date Saved: 08/18/25 Date Exported: 08/18/25
Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
Q:\Projects\30000\30400\30495 StreamRestorationPlymouth\GIS\APRX\WetlandCollectionTemplate\EnvironmentalTemplate.aprx



Wetland ID	Cowardin	Acreage Onsite
3	PUBHx/PEM1D	0.14
4	PEM1C/PEM1D	0.08
5	PUBHx	0.11

Legend

- Contours
- UplandPoints
- WetlandPoints
- OffsiteWetlandLine
- PlymouthCreek
- WetlandBoundaries
- ProjectArea
- Photos

Figure 5B - Delineated Features
Plymouth Creek
Plymouth, Minnesota

0 250 500 US Feet

N W E S

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Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
Q:\Projects\30000\30400\30495 StreamRestorationPlymouth\GIS\APRX\WetlandCollectionTemplate\EnvironmentalTemplate.aprx

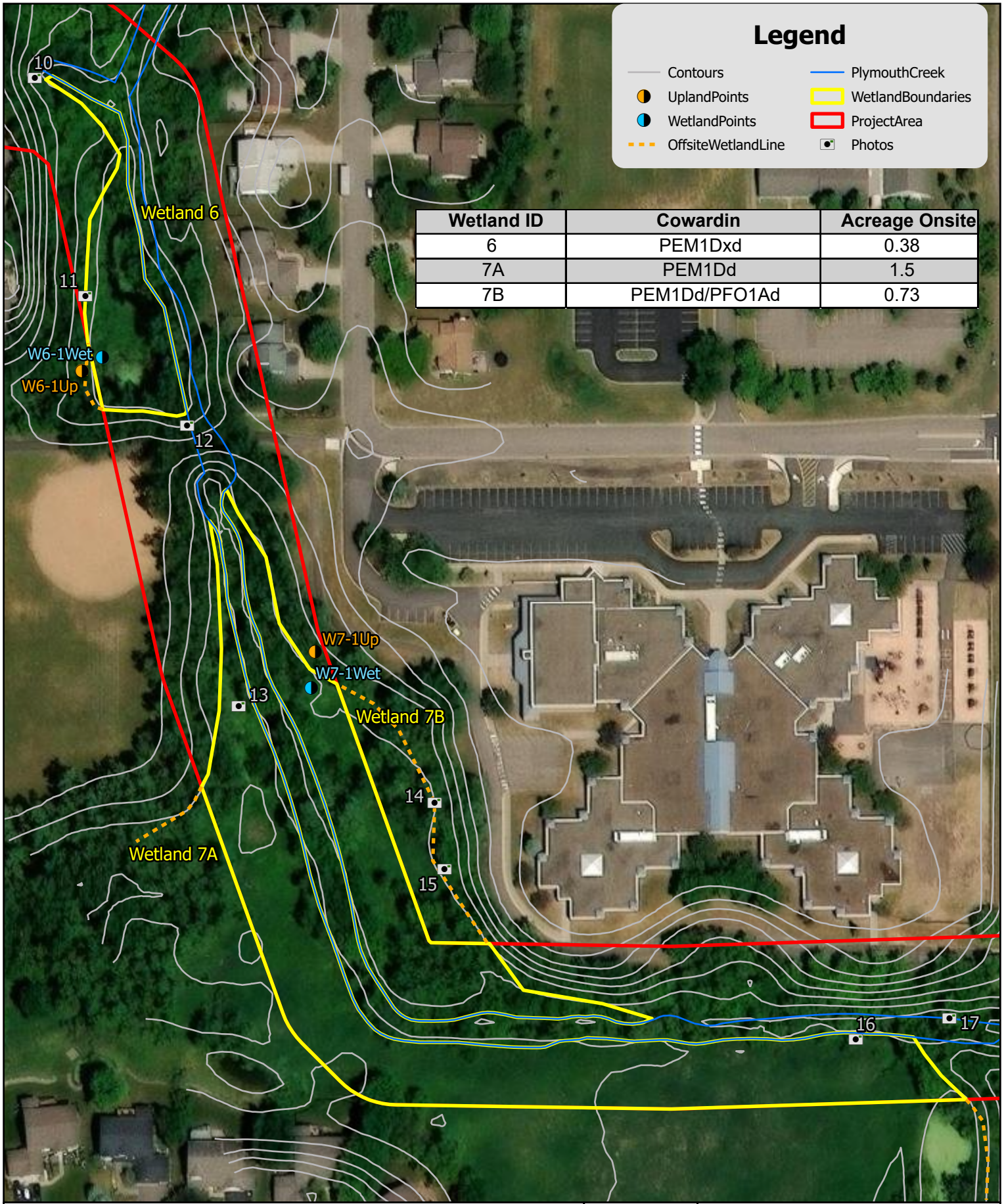


Figure 5C - Delineated Features
Plymouth Creek
Plymouth, Minnesota

0 250 500 US Feet

N W E S

moore engineering, inc.

Created By: MA Date Created: 08/18/25 Date Saved: 08/18/25 Date Exported: 08/18/25
Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
Q:\Projects\30000\30400\30495 StreamRestorationPlymouth\GIS\APRX\WetlandCollectionTemplate\EnvironmentalTemplate.aprx

Wetland ID	Cowardin	Acreage Onsite
8	PEM1Dd	0.13
9	PEM1C/PEM1D	0.04

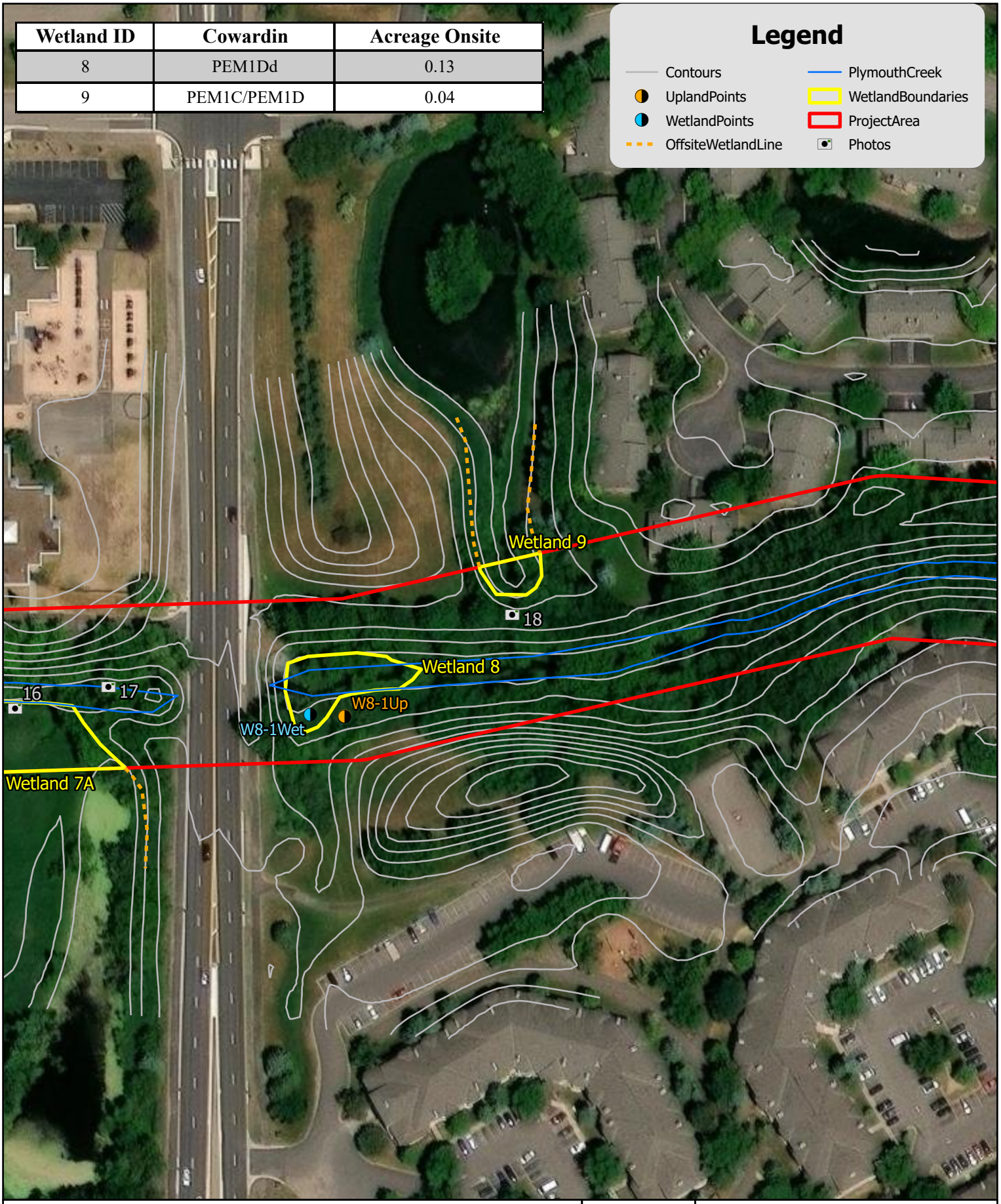


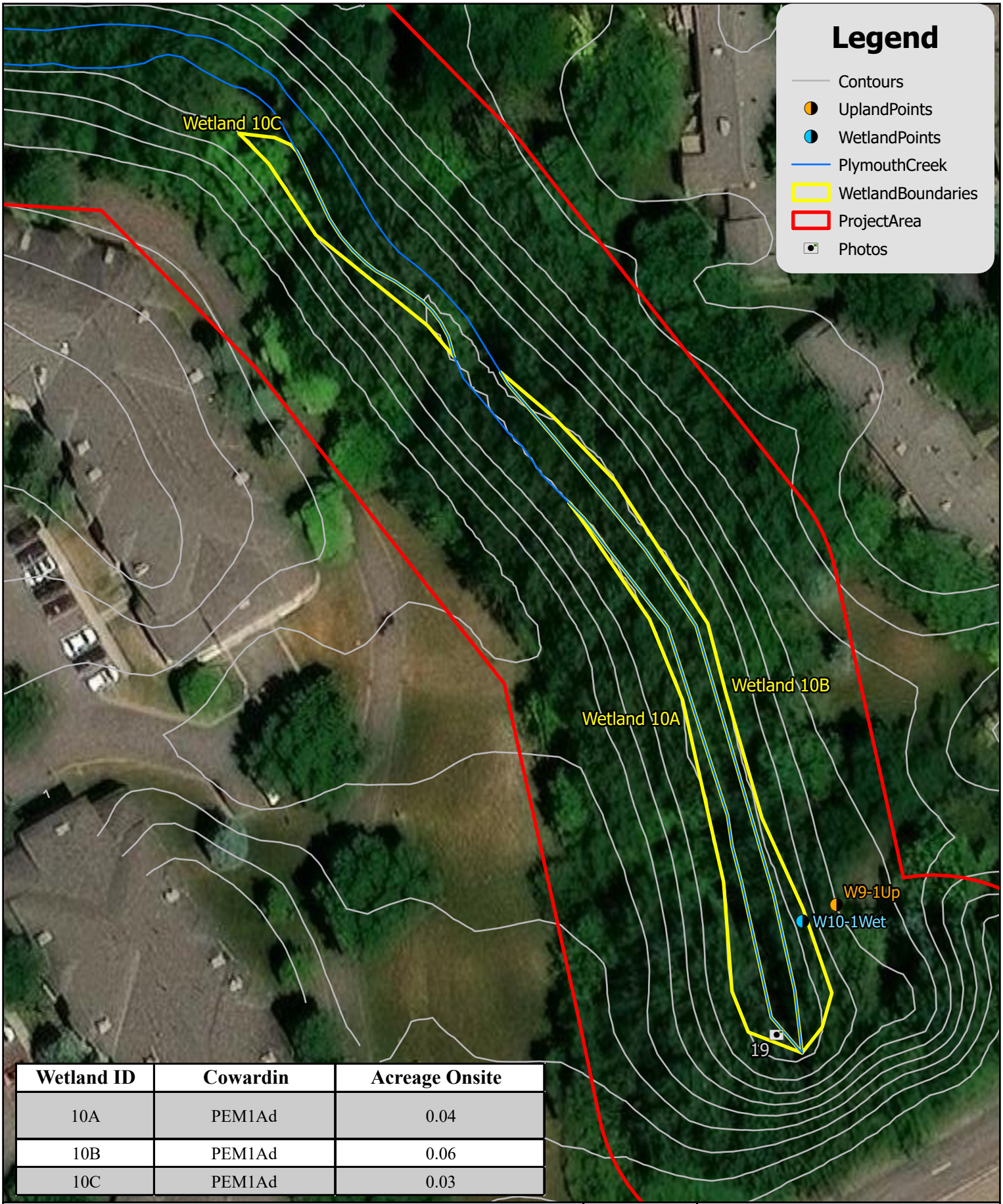
Figure 5D - Delineated Features
Plymouth Creek
Plymouth, Minnesota

0 250 500 US Feet

N W E S

moore engineering, inc.

Created By: MA Date Created: 08/18/25 Date Saved: 08/18/25 Date Exported: 08/18/25
Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
Q:\Projects\30000\30400\30495 StreamRestorationPlymouth\GIS\APRX\WetlandCollectionTemplate\EnvironmentalTemplate.aprx



Wetland ID	Cowardin	Acreage Onsite
10A	PEM1Ad	0.04
10B	PEM1Ad	0.06
10C	PEM1Ad	0.03

Figure 5E - Delineated Features
Plymouth Creek
Plymouth, Minnesota

0 250 500 US Feet

N W E S

moore engineering, inc.

Created By: MA Date Created: 08/18/25 Date Saved: 08/18/25 Date Exported: 08/18/25
Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
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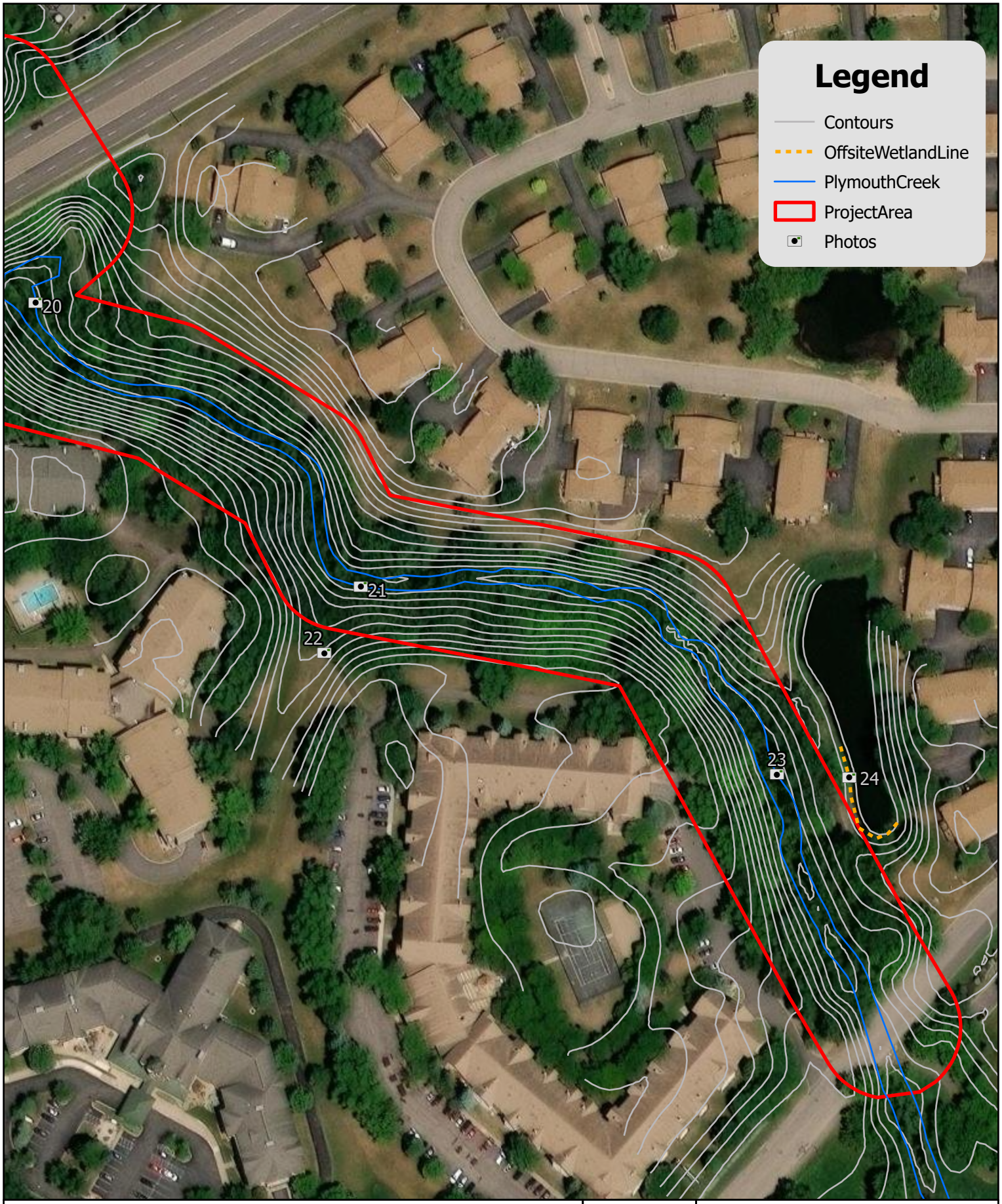


Figure 5F - Delineated Features
Plymouth Creek
Plymouth, Minnesota

0 250 500 US Feet

N W E S

moore engineering, inc.

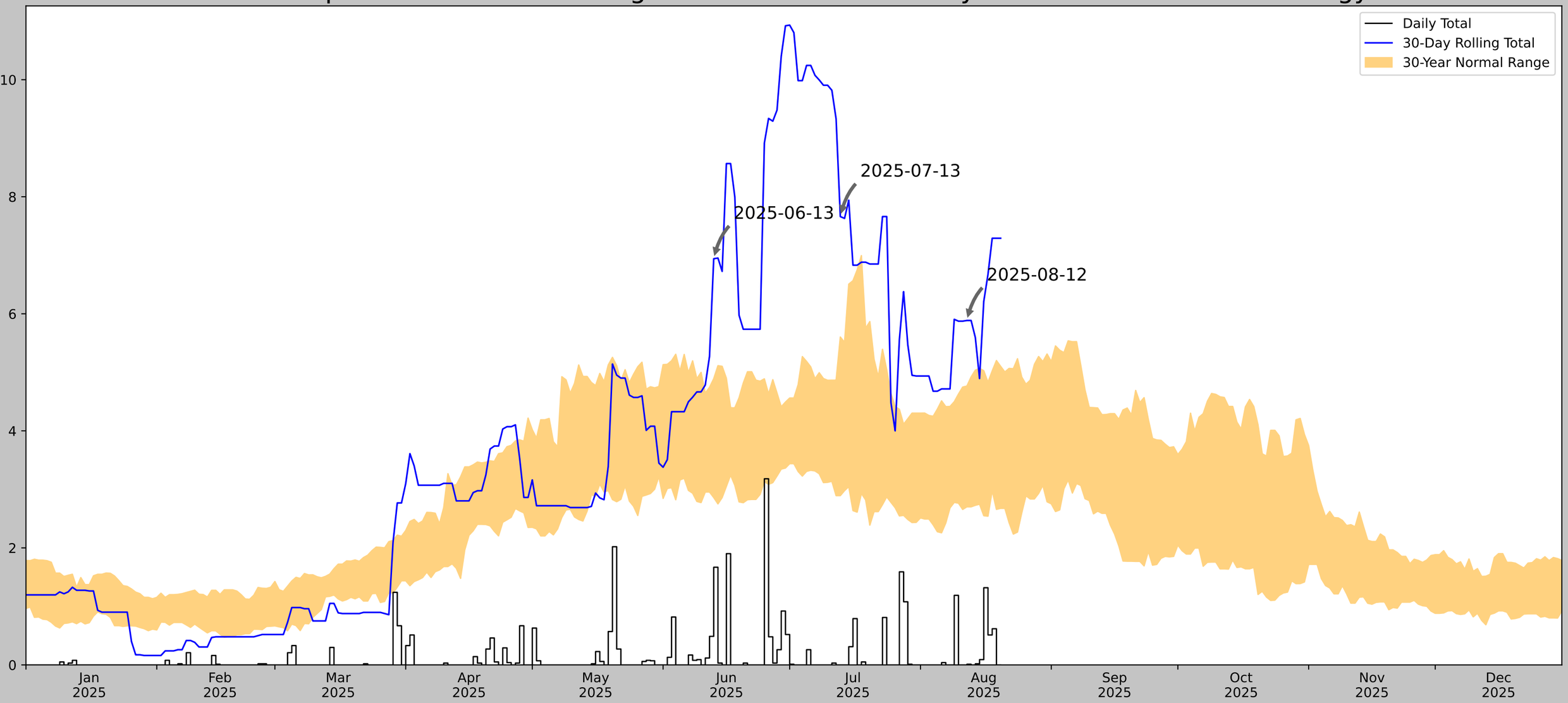
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Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
Q:\Projects\30000\30400\30495 StreamRestorationPlymouth\GIS\APRX\WetlandCollectionTemplate\EnvironmentalTemplate.aprx

APPENDICES

Appendix A – Site Visit Precipitation
Appendix B – USACE Data Sheets
Appendix C – Site Photos
Appendix D – Historic Aerials
Appendix E – Yuma Lane Plan Sheet

Appendix A – Site Visit Precipitation

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.03, -93.483
Observation Date	2025-08-12
Elevation (ft)	975.152
Drought Index (PDSI)	Incipient drought (2025-07)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-08-12	2.701181	4.765354	5.885827	Wet	3	3	9
2025-07-13	2.892126	5.603937	7.661418	Wet	3	2	6
2025-06-13	2.859449	4.892126	6.940945	Wet	3	1	3
Result							Wetter than Normal - 18

Figures and tables made by the
Antecedent Precipitation Tool
Version 2.9

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and
Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
NEW HOPE	45.01, -93.3792	910.105	5.254	65.047	2.706	11085	88
GOLDEN VALLEY 1.0 NW	45.0007, -93.3733	888.123	0.704	21.982	0.332	0	2
MINNEAPOLIS 3.3 SW	44.9289, -93.3163	913.058	6.392	2.953	2.895	7	0
LOWER ST ANTHONY FALLS	44.9786, -93.2469	753.937	6.819	156.168	4.133	255	0
U OF MN ST PAUL	44.9903, -93.18	970.144	9.827	60.039	5.012	6	0

Appendix B – USACE Data Sheets

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025

Applicant/Owner: City of Plymouth | State: MN | Sampling Point: SP-A

Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None

Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84

Soil Map Unit Name: Hamel-Glencoe complex (Hydric) | NWI Classification: PFO1Ad

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N
Hydric soil present?	N
Indicators of wetland hydrology present?	N

Is the sampled area within a wetland? N

If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: ____)			
1 *Tilia americana*	25	Y	FACU
2 *Acer negundo*	10	Y	FAC
3 *Ulmus americana*	5	N	FACW
4			
5			
	40	= Total Cover	
Sapling/Shrub stratum (Plot size: ____)			
1 *Rhamnus cathartica*	10	Y	FAC
2			
3			
4			
5			
	10	= Total Cover	
Herb stratum (Plot size: ____)			
1 *Ribes cynosbati*	10	Y	FAC
2 *Parthenocissus quinquefolia*	10	Y	FACU
3 *Hackelia virginiana*	10	Y	FACU
4 *Galium aparine*	10	Y	FACU
5 *Arisaema triphyllum*	10	Y	FACW
6			
7			
8			
9			
10			
	50	= Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

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

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	30	x 3 =	90
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column totals	100 (A)		340 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: SP-A

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-15	10YR 2/1	100					Loam	
15-22	10YR 2/1	95	10YR 4/2	5	D	M	Clay loam	
22-30	10YR 4/2	95	10YR 6/2	5	D	M	Clay loam	
30-38	10YR 6/2	100					Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table is visible within Plymouth Creek approximately four feet lower than sample point.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025
Applicant/Owner: City of Plymouth | State: MN | Sampling Point: SP-B
Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None
Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84
Soil Map Unit Name: Hamel-Glencoe complex (Hydric) | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?	N	**Is the sampled area within a wetland?**	N
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: ____)			
1 *Fraxinus pennsylvanica*	10	Y	FACW
2			
3			
4			
5			
	10	= Total Cover	
Sapling/Shrub stratum (Plot size: ____)			
1 *Rhamnus cathartica*	10	Y	FAC
2			
3			
4			
5			
	10	= Total Cover	
Herb stratum (Plot size: ____)			
1 *Ribes americanum*	10	Y	FACW
2 *Solidago canadensis*	10	Y	FACU
3 *Arctium minus*	10	Y	FACU
4 *Galium aparine*	10	Y	FACU
5 *Eutrochium maculatum*	10	Y	OBL
6 *Solanum dulcamara*	10	Y	FAC
7			
8			
9			
10			
	60	= Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across all Strata: 8 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 62.50% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10	
FACW species	20	x 2 =	40	
FAC species	20	x 3 =	60	
FACU species	30	x 4 =	120	
UPL species	0	x 5 =	0	
Column totals	80	(A)	230	(B)

Prevalence Index = B/A = 2.88

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: SP-B

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-15	10YR 3/1	100					Clay loam	
15-30	10YR 3/1	90	10YR 5/2	10	D	M	Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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?	Yes ___	No ___	Depth (inches): ___		
Water table present?	Yes ___	No ___	Depth (inches): ___		
Saturation present? (includes capillary fringe)	Yes ___	No ___	Depth (inches): ___		

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table is visible within Plymouth Creek approximately three feet lower than sample point.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025
Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W1-1Up
Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Linear
Slope (%): 2 to 4 | Lat: - | Long: - | Datum: WGS84
Soil Map Unit Name: Hamel-Glencoe complex (Hydric) | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	N	
Hydric soil present?	N	**Is the sampled area within a wetland?** N
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: ____)			
1 *Tilia americana*	10	Y	FACU
2 *Fraxinus pennsylvanica*	5	Y	FACW
3			
4			
5			
	15	= Total Cover	
Sapling/Shrub stratum (Plot size: ____)			
1 *Rhamnus cathartica*	65	Y	FAC
2			
3			
4			
5			
	65	= Total Cover	
Herb stratum (Plot size: ____)			
1 *Ribes cynosbati*	10	Y	FAC
2 *Parthenocissus quinquefolia*	5	Y	FACU
3 *Solidago canadensis*	5	Y	FACU
4			
5			
6			
7			
8			
9			
10			
	20	= Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across all Strata: 6 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	75	x 3 =	225
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column totals	100 (A)		315 (B)

Prevalence Index = B/A = 3.15

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

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

Sloped up from Wetland 1 into wooded section dominated by buckthorn.

SOIL

Sampling Point: W1-1Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR 3/1	100					Loam	
10-16	10YR 3/1	95	10YR 5/2	5	D	M	Clay loam	
16-24	10YR 5/2	100					Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025

Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W1-1Wet

Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 0 to 2 | Lat: - | Long: - | Datum: WGS84

Soil Map Unit Name: Hamel-Glencoe complex (Hydric) | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y
Hydric soil present?	Y
Indicators of wetland hydrology present?	Y
Is the sampled area within a wetland?	Y
If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: ____)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size: ____)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size: ____)			
1 *Phalaris arundinacea*	25	Y	FACW
2 *Persicaria amphibia*	20	Y	OBL
3 *Impatiens capensis*	10	N	FACW
4 *Verbena hastata*	10	N	FACW
5 *Rumex crispus*	10	N	FAC
6			
7			
8			
9			
10			
	75 = Total Cover		
Woody vine stratum (Plot size: ____)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	20	x 1 =	20
FACW species	45	x 2 =	90
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	75 (A)		140 (B)

Prevalence Index = B/A = 1.87

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W1-1Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-6	10YR 3/1	100					Clay loam	
6-20	10YR 4/2	95	10YR 4/6	5	C	M	Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Slight depression offset from creek.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025

Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W4-1Up

Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None

Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84

Soil Map Unit Name: Hamel-Glencoe complex (Hydric) | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y
Hydric soil present?	Y
Indicators of wetland hydrology present?	N
Is the sampled area within a wetland?	N
If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Fraxinus pennsylvanica*	10	Y	FACW
2 *Acer negundo*	5	Y	FAC
3 *Populus tremuloides*	5	Y	FAC
4			
5			
	20	= Total Cover	

Sapling/Shrub stratum (Plot size:)			
1 *Rhamnus cathartica*	45	Y	FAC
2			
3			
4			
5			
	45	= Total Cover	

Herb stratum (Plot size:)			
1 *Parthenocissus quinquefolia*	10	Y	FACU
2			
3			
4			
5			
6			
7			
8			
9			
10			
	10	= Total Cover	

Woody vine stratum (Plot size:)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	55	x 3 =	165
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	75 (A)		225 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W4-1Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10YR 2/1	100					Clay loam	
12-20	10YR 2/1	95	10YR 4/1	5	D	M	Clay loam	
20-28	10YR 4/1	95	10YR 4/6	5	C	M	Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X 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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Slight rise between Wetland 2 and Plymouth Creek that seperates the wetland.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025

Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W4-1Wet

Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None

Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84

Soil Map Unit Name: Hamel-Glencoe complex (Hydric) | NWI Classification: PEM1C

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y		
Hydric soil present?	Y	**Is the sampled area within a wetland?**	Y
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size:)			
1 *Cornus sericea*	20	Y	FACW
2 *Rhamnus cathartica*	5	Y	FAC
3			
4			
5			
	25	= Total Cover	
Herb stratum (Plot size:)			
1 *Phalaris arundinacea*	20	Y	FACW
2 *Typha X glauca*	10	Y	OBL
3 *Persicaria pensylvanica*	5	N	FACW
4			
5			
6			
7			
8			
9			
10			
	35	= Total Cover	
Woody vine stratum (Plot size:)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10
FACW species	45	x 2 =	90
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	60 (A)		115 (B)

Prevalence Index = B/A = 1.92

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W4-1Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR 2/1	100					Clay loam	
10-16	10YR 2/1	90	10YR 4/1	10	D	M	Clay loam	
16-26	10YR 4/1	95	10YR 4/6	5	C	M	Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X 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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	18
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	18

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025
Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W6-1Up
Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W
Landform (hillslope, terrace, etc.): Hillslopes | Local relief (concave, convex, none): Concave
Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84
Soil Map Unit Name: Shorewood silty clay loam (non-hydric) | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	N		
Hydric soil present?	N	**Is the sampled area within a wetland?**	N
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size:)			
1 *Rhamnus cathartica*	35	Y	FAC
2			
3			
4			
5			
	35	= Total Cover	

Herb stratum (Plot size:)			
1 *Cirsium arvense*	10	Y	FACU
2 *Hackelia virginiana*	10	Y	FACU
3 *Rhamnus cathartica*	10	Y	FAC
4 *Parthenocissus quinquefolia*	5	N	FACU
5 *Phalaris arundinacea*	5	N	FACW
6 *Urtica dioica*	5	N	FACW
7			
8			
9			
10			
	45	= Total Cover	

Woody vine stratum (Plot size:)			
1			
2			
	0	= Total Cover	

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:

OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	45	x 3 =	135	
FACU species	25	x 4 =	100	
UPL species	0	x 5 =	0	
Column totals	80	(A)	255	(B)

Prevalence Index = B/A = 3.19

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: W6-1Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR 2/2	100					Loam	
10-16	10YR 2/2	95	10YR 4/2	5	D	M	Loam	
16-24	10YR 4/2	100						

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

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025
Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W6-1Wet
Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W
Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave
Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84
Soil Map Unit Name: Shorewood silty clay loam (non-hydric) | NWI Classification: PABH
Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?	Y	**Is the sampled area within a wetland?**	Y
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size:)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size:)			
1 *Phalaris arundinacea*	85	Y	FACW
2 *Persicaria pensylvanica*	5	N	FACW
3 *Sagittaria latifolia*	5	N	OBL
4			
5			
6			
7			
8			
9			
10			
	95	= Total Cover	

Woody vine stratum (Plot size:)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across all Strata: 1 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	5	x 1 =	5
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	95 (A)		185 (B)

Prevalence Index = B/A = 1.95

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W6-1Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-8	10YR 2/1	100					Mucky loam	
8-20	10YR 4/1	95	10YR 4/6	5	C	M	Mucky loam	

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

Hydric Soil Indicators:

- ___ Histisol (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)
- X Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	6
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	6

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025

Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W7-1Up

Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None

Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84

Soil Map Unit Name: Hamel-Glencoe complex (Hydric) | NWI Classification: PFO1Ad

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N
Hydric soil present?	Y
Indicators of wetland hydrology present?	N

Is the sampled area within a wetland? N

If yes, optional wetland site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

	Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species	Indicator Staus
1	*Fraxinus pennsylvanica*	10	Y	FACW
2	*Acer negundo*	10	Y	FAC
3				
4				
5				
		20	= Total Cover	
	Sapling/Shrub stratum (Plot size: ____)			
1	*Rhamnus cathartica*	25	Y	FAC
2				
3				
4				
5				
		25	= Total Cover	
	Herb stratum (Plot size: ____)			
1	*Arctium minus*	15	Y	FACU
2	*Leonurus cardiaca*	10	Y	UPL
3	*Parthenocissus quinquefolia*	10	Y	FACU
4				
5				
6				
7				
8				
9				
10				
		35	= Total Cover	
	Woody vine stratum (Plot size: ____)			
1				
2				
		0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

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

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	35	x 3 =	105
FACU species	25	x 4 =	100
UPL species	10	x 5 =	50
Column totals	80 (A)		275 (B)

Prevalence Index = B/A = 3.44

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: W7-1Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-8	10YR 2/1	100					Loam	
8-18	10YR 2/1	95	10YR 4/2	5	D	M	Clay loam	
18-22	10YR 4/2	90	10YR 4/6	10	C	M	Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X 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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sloped up from wetland.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025

Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W7-1Wet

Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 0 to 2 | Lat: - | Long: - | Datum: WGS84

Soil Map Unit Name: Hamel-Glencoe complex (Hydric) | NWI Classification: PFO1Ad

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y
Hydric soil present?	Y
Indicators of wetland hydrology present?	Y
Is the sampled area within a wetland?	Y
If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Staus
Tree Stratum (Plot size: ____)			
1 *Fraxinus americana*	10	Y	FACU
2			
3			
4			
5			
	10 = Total Cover		
Sapling/Shrub stratum (Plot size: ____)			
1 *Rhamnus cathartica*	10	Y	FAC
2			
3			
4			
5			
	10 = Total Cover		
Herb stratum (Plot size: ____)			
1 *Phalaris arundinacea*	80	Y	FACW
2 *Urtica dioica*	5	N	FACW
3 *Cirsium arvense*	5	N	FACU
4			
5			
6			
7			
8			
9			
10			
	90 = Total Cover		
Woody vine stratum (Plot size: ____)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	85	x 2 =	170
FAC species	10	x 3 =	30
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column totals	110 (A)		260 (B)

Prevalence Index = B/A = 2.36

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** W7-1Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-6	10YR 2/1	100					Loam	
6-15	10YR 2/1	95	10YR 4/2	5	D	M	Clay loam	
15-20	10YR 4/2	90	10YR 4/6	10	C	M	Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X 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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

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

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025
Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W8-1Up
Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W
Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Linear
Slope (%): 3 to 5 | Lat: - | Long: - | Datum: WGS84
Soil Map Unit Name: Muskego and Houghton soils (Hydric) | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances"
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?	N	**Is the sampled area within a wetland?**	N
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size:)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size:)			
1 *Toxicodendron rydbergii*	20	Y	FAC
2 *Cirsium arvense*	15	Y	FACU
3 *Phalaris arundinacea*	10	Y	FACW
4 *Convolvulus arvensis*	5	N	UPL
5			
6			
7			
8			
9			
10			
	50 = Total Cover		
Woody vine stratum (Plot size:)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across all Strata: 3 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	20	x 3 =	60	
FACU species	15	x 4 =	60	
UPL species	5	x 5 =	25	
Column totals	50	(A)	165	(B)

Prevalence Index = B/A = 3.30

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W8-1Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10YR 3/2	100					Loam	
12-20	10YR 3/3	90	10YR 4/2	10	D	M	Loam	

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

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025

Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W8-1Wet

Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84

Soil Map Unit Name: Muskego and Houghton Soils (Hydric) | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? ____

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?	Y	**Is the sampled area within a wetland?**	Y
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: ____)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: ____)			
1 *Phalaris arundinacea*	65	Y	FACW
2 *Urtica dioica*	15	N	FACW
3 *Persicaria pensylvanica*	10	N	FACW
4			
5			
6			
7			
8			
9			
10			
	90	= Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	90 (A)		180 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W8-1Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-8	10YR 3/1	95	10YR 4/6	5	C	M	Loam	
8-15	10YR 4/2	85	10YR 4/6	15	C	M	Loam	

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

Hydric Soil Indicators:

- ___ Histisol (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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025
Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W10-1Up
Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None
Slope (%): 2 to 5 | Lat: - | Long: - | Datum: WGS84
Soil Map Unit Name: Muskego and Houghton Soils (hydric) | NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y
Hydric soil present?	N
Indicators of wetland hydrology present?	N
Is the sampled area within a wetland?	N
If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

	Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Staus
1	*Acer negundo*	15	Y	FAC
2	*Fraxinus pennsylvanica*	10	Y	FACW
3	*Acer saccharum*	10	Y	FACU
4				
5				
		35	= Total Cover	
	Sapling/Shrub stratum (Plot size:)			
1	*Rhamnus cathartica*	35	Y	FAC
2				
3				
4				
5				
		35	= Total Cover	
	Herb stratum (Plot size:)			
1	*Parthenocissus quinquefolia*	10	Y	FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	
	Woody vine stratum (Plot size:)			
1				
2				
		0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across all Strata: 5 (B)
Percent of Dominant Species that are OBL, FACW, or FAC: 60.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	50	x 3 =	150
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column totals	80 (A)		250 (B)

Prevalence Index = B/A = 3.13

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: W10-1Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-8	10YR 3/1	100					Loam	
8-16	10YR 3/2	95	10YR 5/2	5	D	M	Loam	
16-20	10YR 5/2	100					Loam	

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

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Plymouth Creek | City/County: Plymouth/Hennepin | Sampling Date: 08/12/2025

Applicant/Owner: City of Plymouth | State: MN | Sampling Point: W10-1Wet

Investigator(s): Marty Anderson | Section, Township, Range: S:17, T:118N, R:22W

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): None

Slope (%): 1 to 2 | Lat: - | Long: - | Datum: WGS84

Soil Map Unit Name: Muskego and Houghton Soils (hydric) | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y
Hydric soil present?	Y
Indicators of wetland hydrology present?	Y
Is the sampled area within a wetland?	Y
If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Climate conditions were wetter than normal according to ATP analysis.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size:)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size:)			
1 *Phalaris arundinacea*	85	Y	FACW
2 *Solidago gigantea*	10	N	FACW
3			
4			
5			
6			
7			
8			
9			
10			
	95 = Total Cover		
Woody vine stratum (Plot size:)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	95 (A)		190 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** W10-1Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-6	10YR 2/2	100					Loam	
6-10	10YR 2/2	95	10YR 5/1	5	D	M	Loam	
10-16	10YR 5/1	95	10YR 4/6	5	C	M	Clay loam	

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

Hydric Soil Indicators:

- ___ Histisol (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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

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

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	10
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	10

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C – Photo Log



Photo ID Number: 1 – Within Plymouth Creek



Photo ID Number: 2 – High patch of nettle



Photo ID Number: 3 – Drain from nearby neighborhood.



Photo ID Number: 4 – Bend in the creek

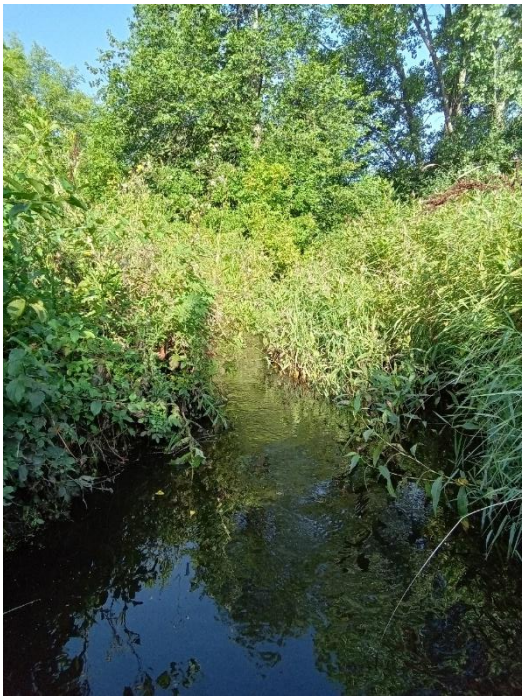


Photo ID Number: 5 – Within Plymouth Creek near Wetland 1



Photo ID Number: 6 – Plymouth Creek



Photo ID Number: 7 – Wetland 3

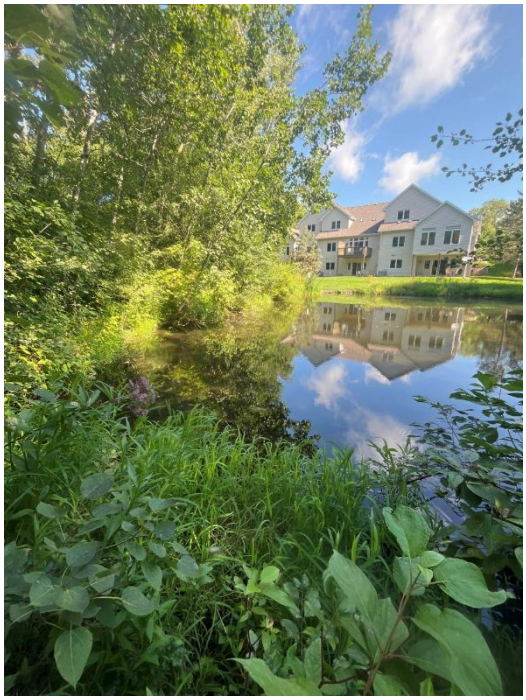


Photo ID Number: 8 – Wetland 5



Photo ID Number: 9 – Wetland 4



Photo ID Number: 10 – Fallen trees in creek



Photo ID Number: 11 – Wetland 6



Photo ID Number: 12 – Culvert in Wetland 6



Photo ID Number: 13 – Edge of Wetland 7A



Photo ID Number: 14 – Wetland 7B



Photo ID Number: 15 – Wetland 7B



Photo ID Number: 16 – Plymouth Creek within Wetland 7

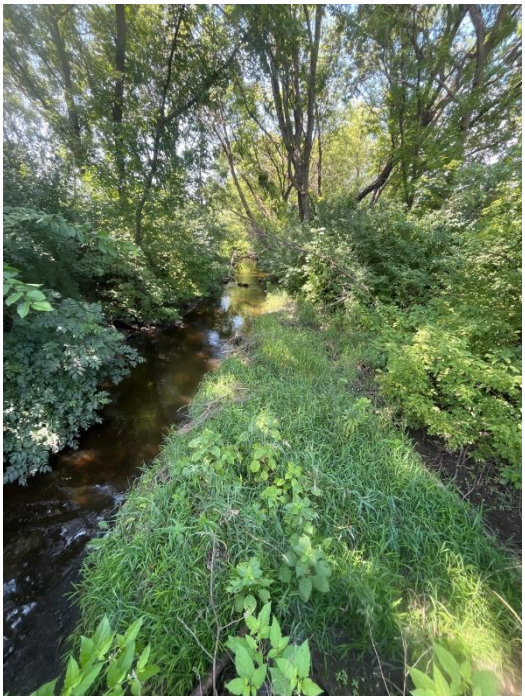


Photo ID Number: 17 – RCG patch within Plymouth Creek



Photo ID Number: 18 – Wetland 9



Photo ID Number: 19 – Wetland 10



Photo ID Number: 20 – Culvert within Wetland 10

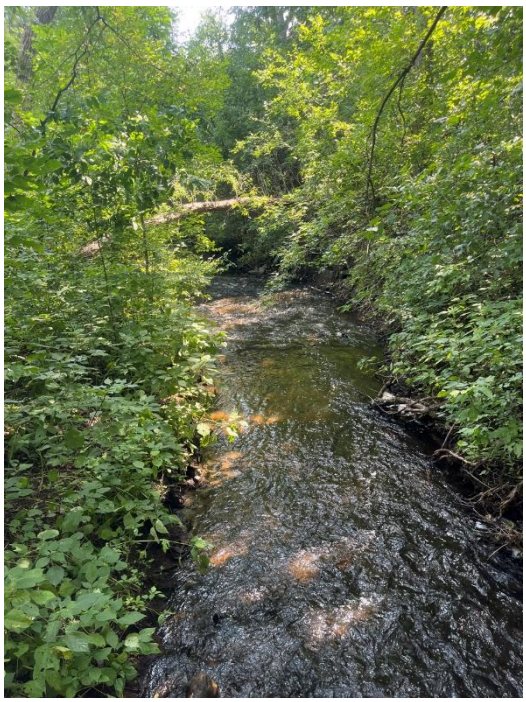


Photo ID Number: 21 – Plymouth Creek



Photo ID Number: 22 – Topo lobe

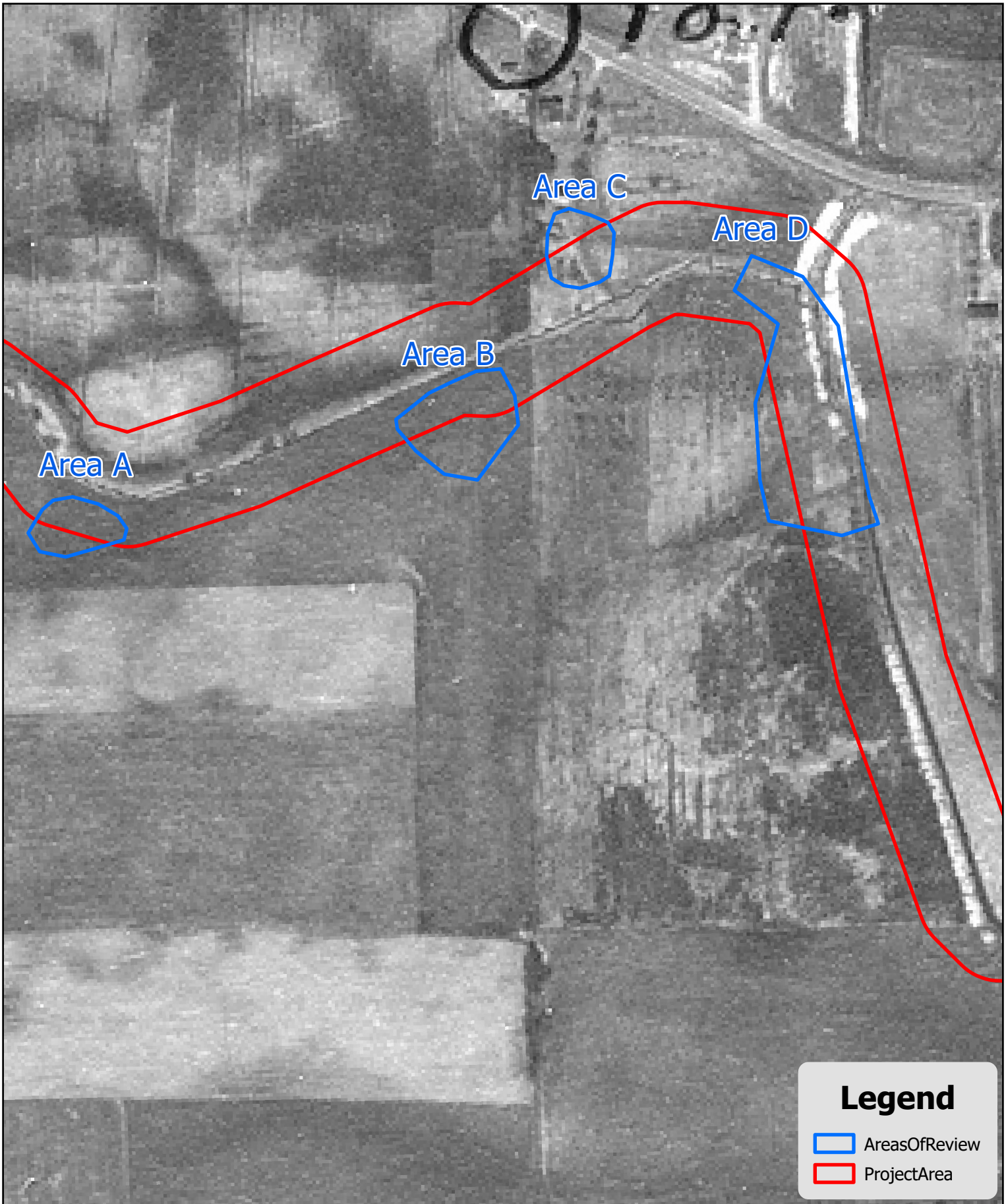


Photo ID Number: 23 – Plymouth Creek



Photo ID Number: 24 – Offsite Wetland

Appendix D – Historic Aerials



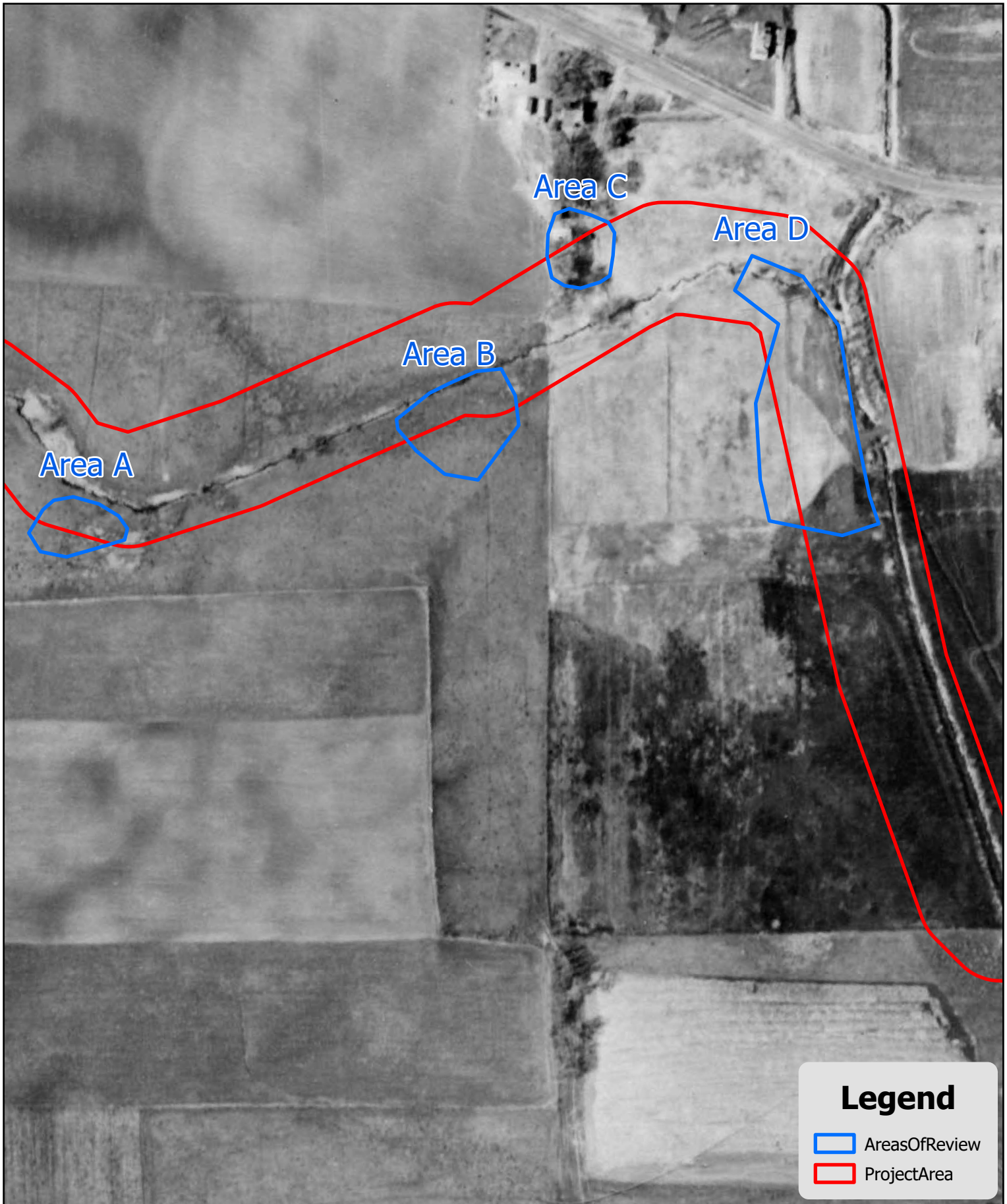
Appendix D - 1947 Photo
Plymouth Creek
City of Plymouth, Minnesota

0 300 600
US Feet

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moore engineering, inc.

Created By: MA Date Created: 08/18/25 Date Saved: 08/18/25 Date Exported: 08/18/25
Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
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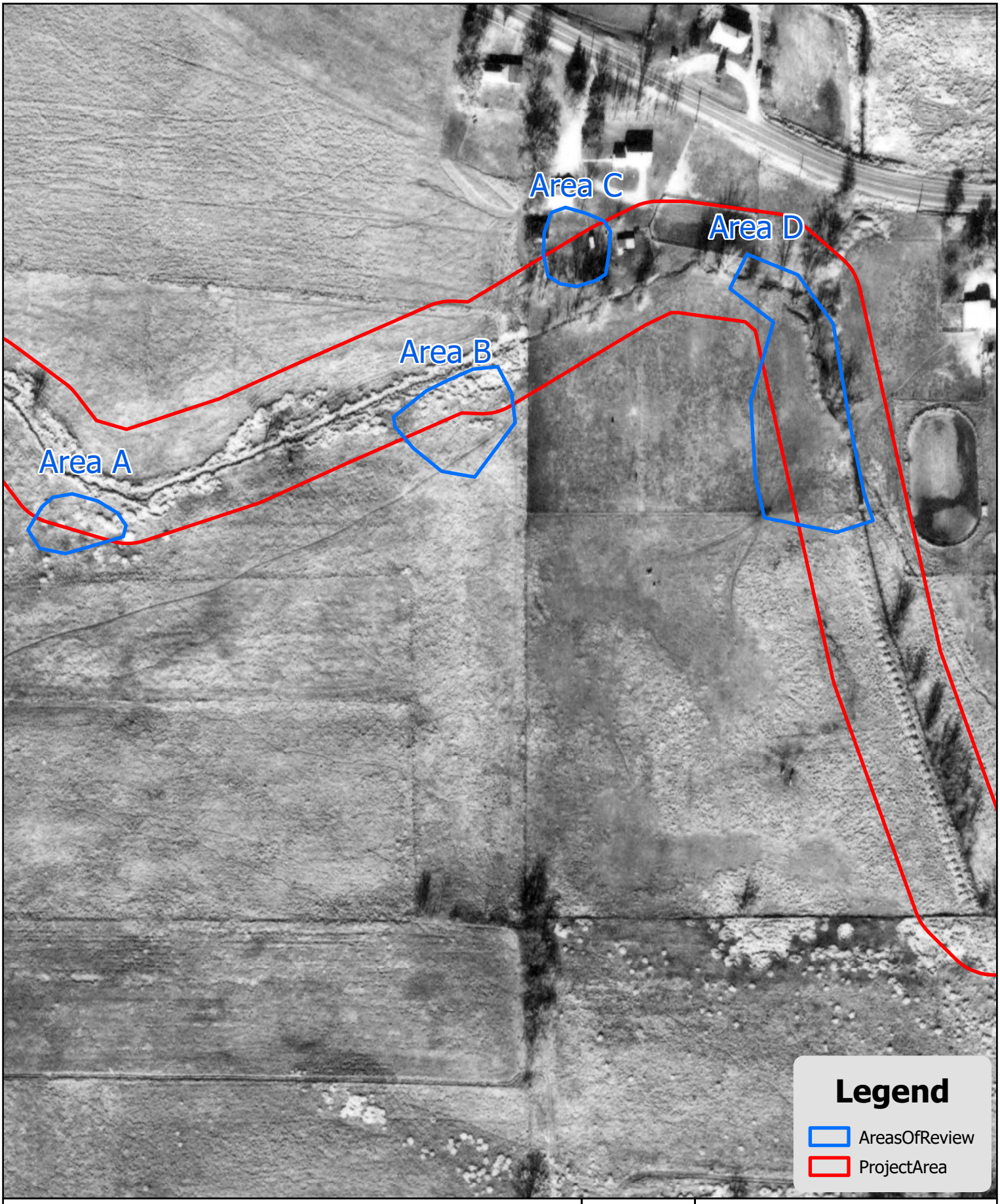
Appendix D - 1956 Photo
Plymouth Creek
City of Plymouth, Minnesota

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US Feet

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Appendix D - 1971 Photo
Plymouth Creek
City of Plymouth, Minnesota

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US Feet

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Created By: MA Date Created: 08/18/25 Date Saved: 08/18/25 Date Exported: 08/18/25
Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
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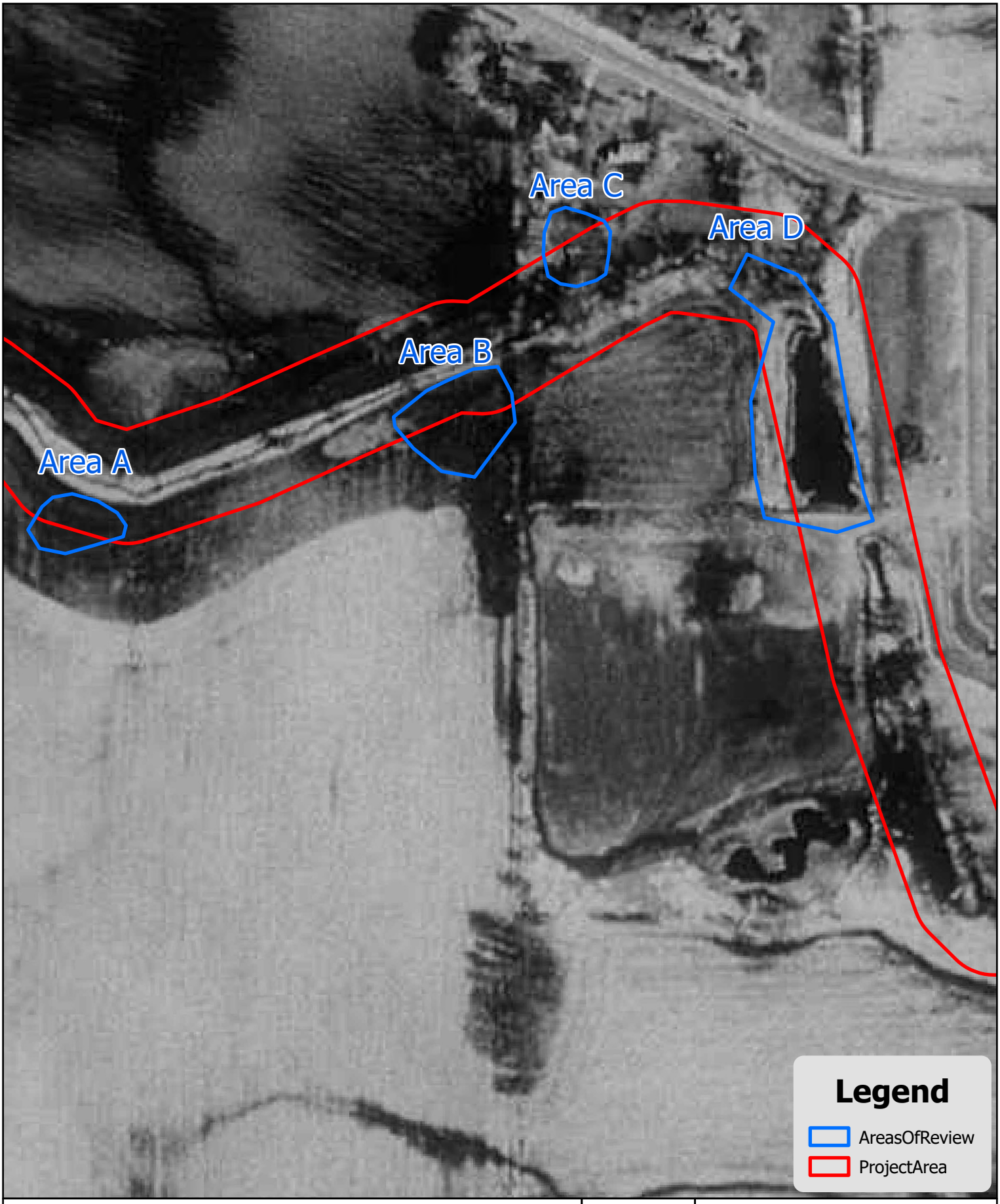
Appendix D - 1988 Photo
Plymouth Creek
City of Plymouth, Minnesota

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US Feet

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Delineated By: Marty Anderson (Moore Engineering, Inc) Delineated on: 08/18/25 Aerial Image: 2021 County NAIP SIDS
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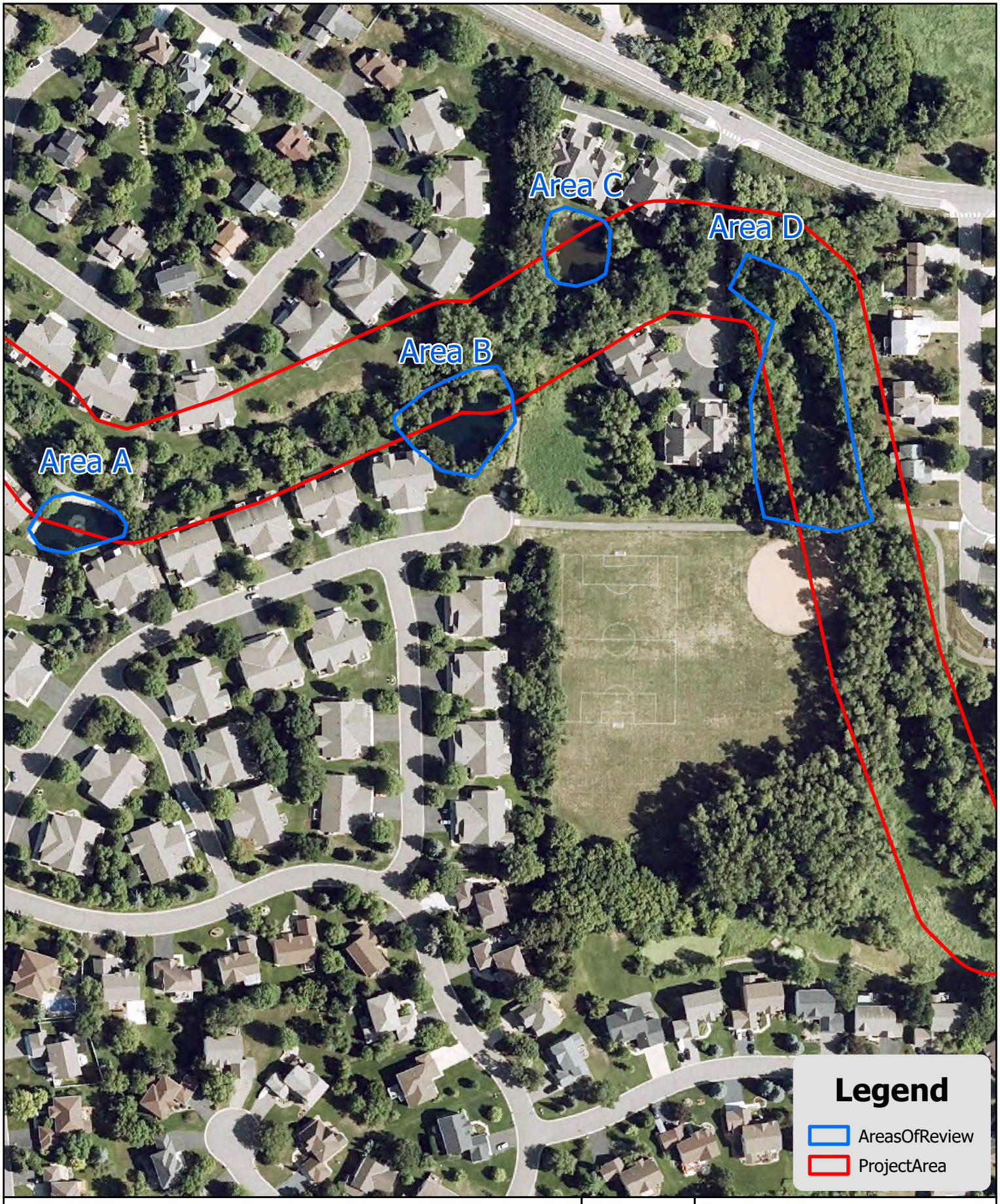
Appendix D - 1991 Photo
Plymouth Creek
City of Plymouth, Minnesota

0 300 600
US Feet

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Appendix D - 2023 Photo
Plymouth Creek
City of Plymouth, Minnesota

0 300 600
US Feet

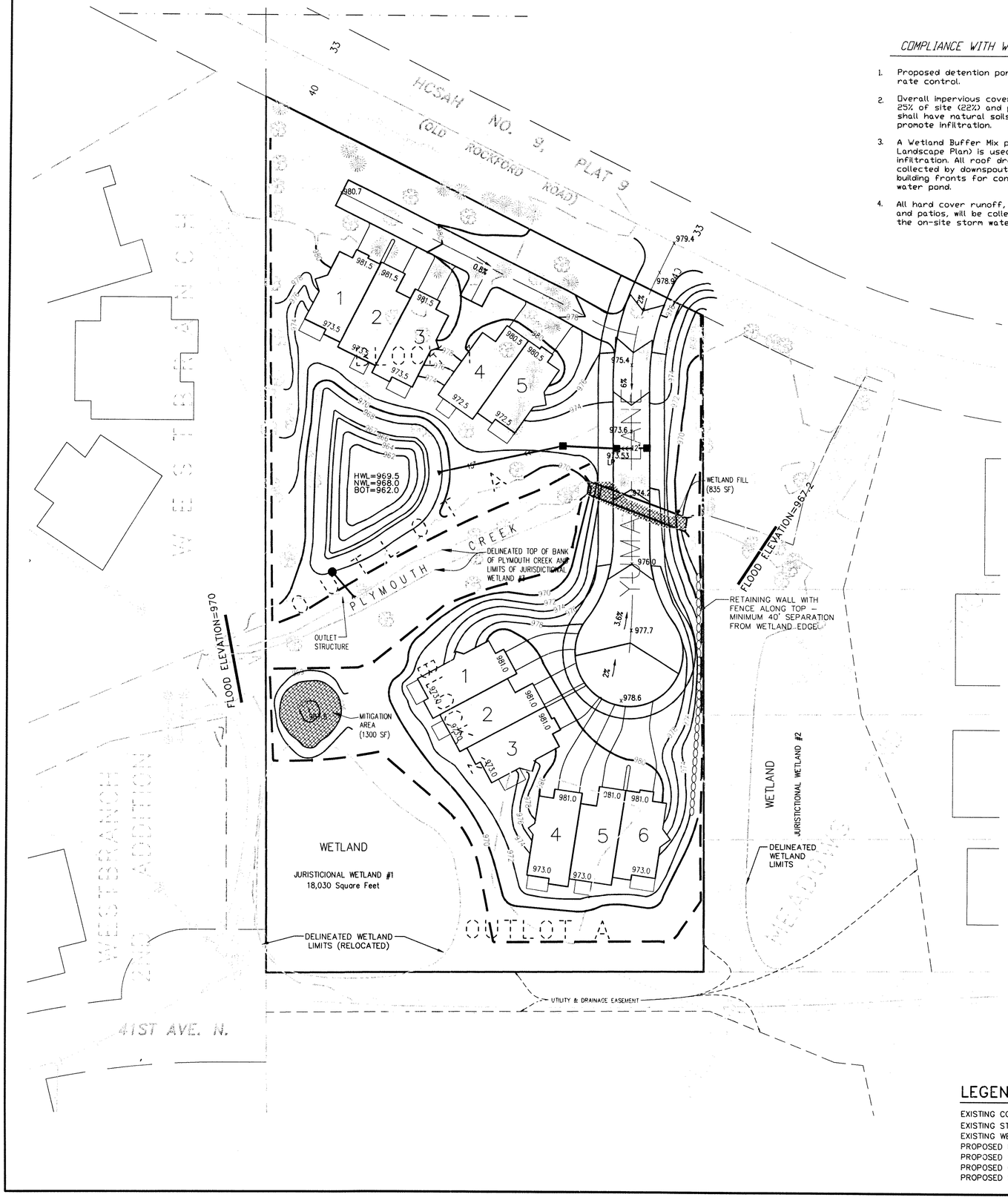
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moore engineering, inc.

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Appendix E – Yuma Lane Plan Sheet

SUMMER CREEK



COMPLIANCE WITH WATER RESOURCES PLAN

1. Proposed detention pond shall be used for rate control.
2. Overall impervious cover for the site is under 25% of site (22%) and proposed storm pond shall have natural soils at pond bottom to promote infiltration.
3. A Wetland Buffer Mix planting (refer to Landscape Plan) is used to promote infiltration. All roof drainage shall be collected by downspout and diverted to building fronts for conveyance to the storm water pond.
4. All hard cover runoff, except from decks and patios, will be collected and treated in the on-site storm water management plan.

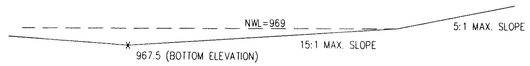
EROSION/SILTATION CONTROL PLAN

1. All erosion control and siltation control measures will comply with Minnesota's Best Management Practices Manual, the Bassett Creek Watershed District's Erosion and Sediment Control Manual, and the City of Plymouth's Policy for Erosion and Siltation Control.
2. Temporary sedimentation ponds (35' wide x 100' long x 2' below finished grade) shall be constructed at all low points in streets, and shall be centered on the proposed catch basins. The ponds shall be constructed with the initial grading.
3. All disturbed areas shall be seeded and mulched and disc anchored within 48 hours after fine grading is completed.
4. Siltation and erosion control: The contractor shall assume complete responsibility for controlling all siltation and erosion of the project area. The contractor shall use whatever means necessary to control erosion and siltation, including but not limited to erosion control fences. Control shall commence with grading and continue throughout the project until acceptance of the work.
5. Any depositing of silt or mud on new or existing pavement, in temporary sedimentation basins, or in existing storm sewers or swales shall be removed after each rain and affected areas cleaned.
6. Where there are disturbed areas within 20 feet of the bank of Plymouth Creek and where there are slopes at 3H:1V or greater, a polypropylene netting or wood fiber blanket shall be provided and staked over the mulching.

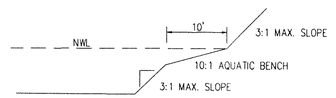
EXISTING FLOOD VOLUME CHANGES:*

FLOOD VOLUME FILLED	1,122 C.Y.
FLOOD VOLUME REPLACEMENT	223 C.Y.
NET FLOOD VOLUME CHANGE*	889 C.Y. VOLUME LOSS*

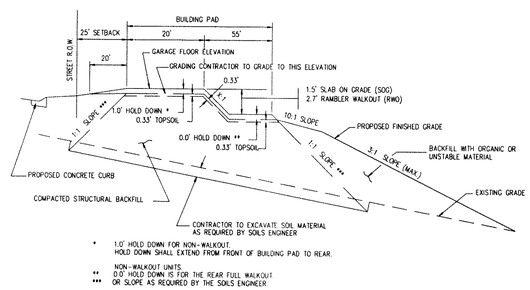
* FLOOD VOLUME CHANGES ARE BASED ON EXISTING FLOOD PROFILE. THE FLOOD PLAIN PROFILE CHANGES RESULT IN ADDITIONAL STORAGE VOLUME UPSTREAM OF THE YUMA LANE CULVERT.



WETLAND MITIGATION DETAIL (TYPE 2,3)
NO SCALE



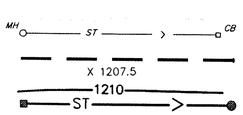
NURP POND AQUATIC BENCH DETAIL
NO SCALE

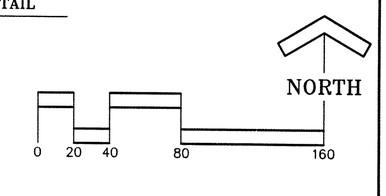


TYPICAL BUILDING PAD GRADING DETAIL
NO SCALE

LEGEND

EXISTING CONTOURS
EXISTING STORM SEWER
EXISTING WETLANDS
PROPOSED EROSION CONTROL FENCE
PROPOSED SPOT ELEVATION
PROPOSED CONTOUR
PROPOSED STORM SEWER





Engineering • Planning • Surveying

MFRA
McCombs Frank Roos Associates, Inc.

15050 23rd Avenue North • Plymouth, Minnesota • 55447
phone 612/476-6010 • fax 612/476-8532
E-Mail: cadd@mfra.com

Client

GM Homes
Plymouth, MN

Project

Summer Creek
Plymouth, MN

Sheet Title

Preliminary Grading & Drainage Plan

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Name Gregory J. Frank
Date June 22, 2000
Registration Number 11571

Designed	GJF	Checked	GJF
Drawn	JMT	Approved	GJF
Date	6/22/00		

Revisions

No.	Date	By	Remarks
A	11/8/00	JMT	City Staff Review Comments
B	12/7/00	JMT	Redesign for 11 Lots from 13
C	12/19/00	JMT	Redesign Parking

DEC 19 2000

Sheet 8/10 **Revision** C

MFRA FILE NO.: 12892

K:\sdsi\proj\GM\12892\dwg\Fgrad.DWG 12/19/00 11:24:24 AM CST

Attachment D
Cultural Resource Report

925 10th Avenue E, Ste 1, West Fargo, ND 58078
P: 701.282.4692

Memorandum

Date: 09/24/2026

Prepared By: Dean Sather, PM, Moore Engineering Inc.

Project: Plymouth Creek Restoration - Phase II, City of Plymouth, MN

Subject: Cultural Resource Review and Project Area Visual Inspection

Introduction

The City of Plymouth, in cooperation with the Bassett Creek Watershed Management Commission (BCWMC) Capital Improvement Program (CIP), proposes to initiate Phase II of the stream restoration and improvement of approximately 4,400 ft (1,341 meters) of stream along Plymouth Creek between 41st Ave. No and 38th Ave. No. within the city limits of Plymouth in Hennepin County, Minnesota. The survey may include the area a distance of 75' from the centerline of Plymouth Creek, totaling approximately 15.5 acres. The proposed Project is located within Sections 16 and 17 of Township 118 North, Range 22 West, Figure 1.



Figure 1: Project Location – Phase 2 Restoration from 41st Avenue Trail to 38th Avenue with Existing Alignment Stationing

A site visit was conducted by Moore staff on September 16, 2026, to assess both the Project Area's physical condition and potential cultural resource significance. The inspection survey was divided into three separate segments. Segment #1 extended between 41st Avenue North and Vicksburg Lane North and measured approximately 1,300 feet (396 meters). Segment #2 extended between Vicksburg Land North and Rockford Road and measured approximately 1,600 feet (487 meters). Segment #3 extended between Rockford Road and 38th Avenue North and measured approximately 1,500 feet (457 meters). This memorandum summarizes the visual inspection of the three project segments and provides a recommendation regarding the project's potential for cultural resources.

Project Area Review

The literature review was conducted by In Situ staff on August 14, 19, and 20, 2025, using files maintained by the Minnesota State Historic Preservation Office (SHPO) and Minnesota Office of the State Archaeologist (OSA). The literature review identified 61 previously recorded architectural resources within the Study Area. None of the previously recorded architectural resources are located within the proposed Project area. No previously documented historic or prehistoric archaeological sites were identified within the Project Area or the surrounding study area.

Field review consisted of visual inspection of the three segments of the current Project Area. This included the creek bed, the lateral margins of the creek, and the external upland surfaces immediately adjacent to the incised trench of the creek.

Segment #1 (41st Avenue North to Vicksburg Lane North)

Segment #1 is located along the western and southern boundaries of the Plymouth Creek Elementary School main campus. The route of the creek in this portion has been relocated further to the west and south of the campus. The relocated channel of the creek is situated within an expansive wetland complex. The original location of the creek seems to have been incorporated into the landscaping of the elementary school campus and does not appear to maintain any integrity. A visual inspection of the upland surfaces along the western and southern margin of the elementary school campus did not exhibit any features that would suggest the potential of intact cultural material deposits.

Segments #2 and #3 (Vicksburg Lane North to 38th Avenue North)

The creek bed in Segments #2 and #3 varied between 2 and 4 feet in width and exhibited a muddy or sandy base with occasional concentrations of gravels (images 1 and 2). Where possible, the gravel concentrations were inspected for the presence of pre-historic or historic archaeological materials. No identifiable archaeological materials were located within the creek bed. Several items of recent origin (plastic wrappers, bottles, etc.) were observed.



Image 1: Plymouth Creek, view to west.

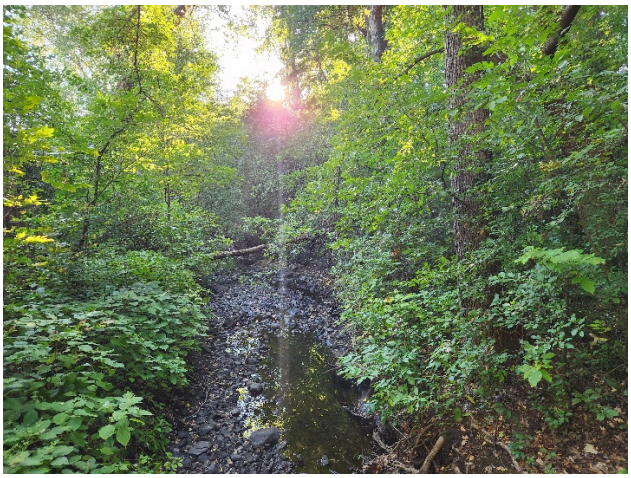


Image 2: Plymouth Creek, view to east.

The lateral margins of the creek bed varied in width. In some isolated areas, the lateral margins of the creek consisted on a relatively level surface extending away from the edge of the creek approximately 2 to 3 feet at which point, the land began sloping up towards the external uplands (images 3 and 4). The isolated level surfaces adjacent to the creek bed were inspected for the presence of cultural materials or features. None were observed. It should be noted that the surface of the adjacent level areas seldom extended more than 6 inches in elevation above the creek bed and were not considered of high potential for the presence of intact cultural deposits.

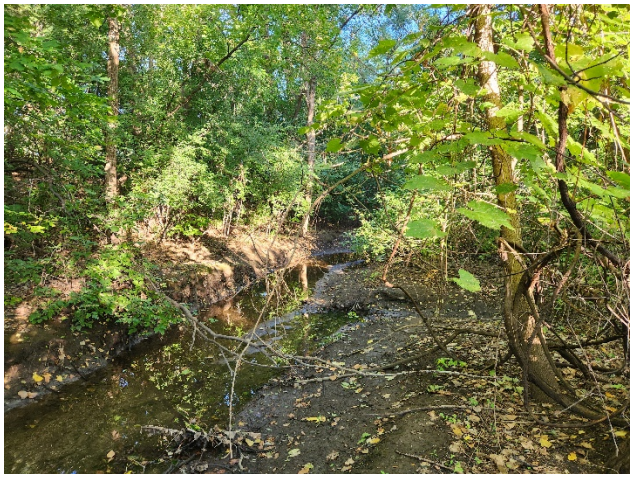


Image 3: Plymouth Creek lateral Margins.



Image 4: Plymouth Creek Lateral Margins

Away from the isolated areas of level lateral margins, the ground surface adjacent to the creek bed sloped immediately towards the external uplands (image 5). While not considered of high potential for the presence of intact cultural deposits, these surfaces were inspected for areas of exposure to ascertain if potential archaeological materials were actively eroding into the trench of Plymouth Creek. No archaeological materials were identified during this inspection.



Image 5: Sloped lateral Margins

An asphalt trail has been constructed on the external upland surface immediately north of the Plymouth Creek trench and roughly parallels the route of the creek. In some locations it is immediately obvious that the trail has been constructed on fill, as the lateral margins of the trail slope away in both directions (image 6). In other areas, the trail appears to have been landscaped into the sloped surface leading into the Plymouth Creek trench (image 7). Along the entire route of Segment #2, the ground along the southern edge of the trail is a sloped surface descending into the creek trench. As the current plans for the creek restoration do not anticipate extending into or beyond the existing trail, the northern external uplands appear to have been significantly modified/landscaped and do not represent an area of high potential for the presence of intact cultural resource deposits.

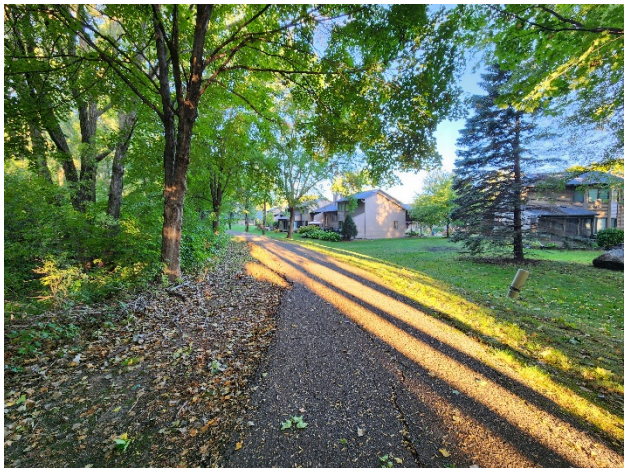


Image 6: Trail on Fill.



Image 7: Trail on Landscaped Slope.

Along the southern edge of the Plymouth Creek trench is a large apartment complex consisting of six individual multi-unit structures. The land between the structures and the edge of the creek trench is broad and flat and has been landscaped in concert with the apartment facility. While there is not a trail paralleling the southern edge of the creek, there are occasional features associated with the apartment complex situated in this intermediate area (picnic areas, parking surfaces, etc.) The southern external uplands appear to have been significantly modified/landscaped and do not represent an area of high potential for the presence of intact cultural resource deposits.

Conclusion and Recommendation

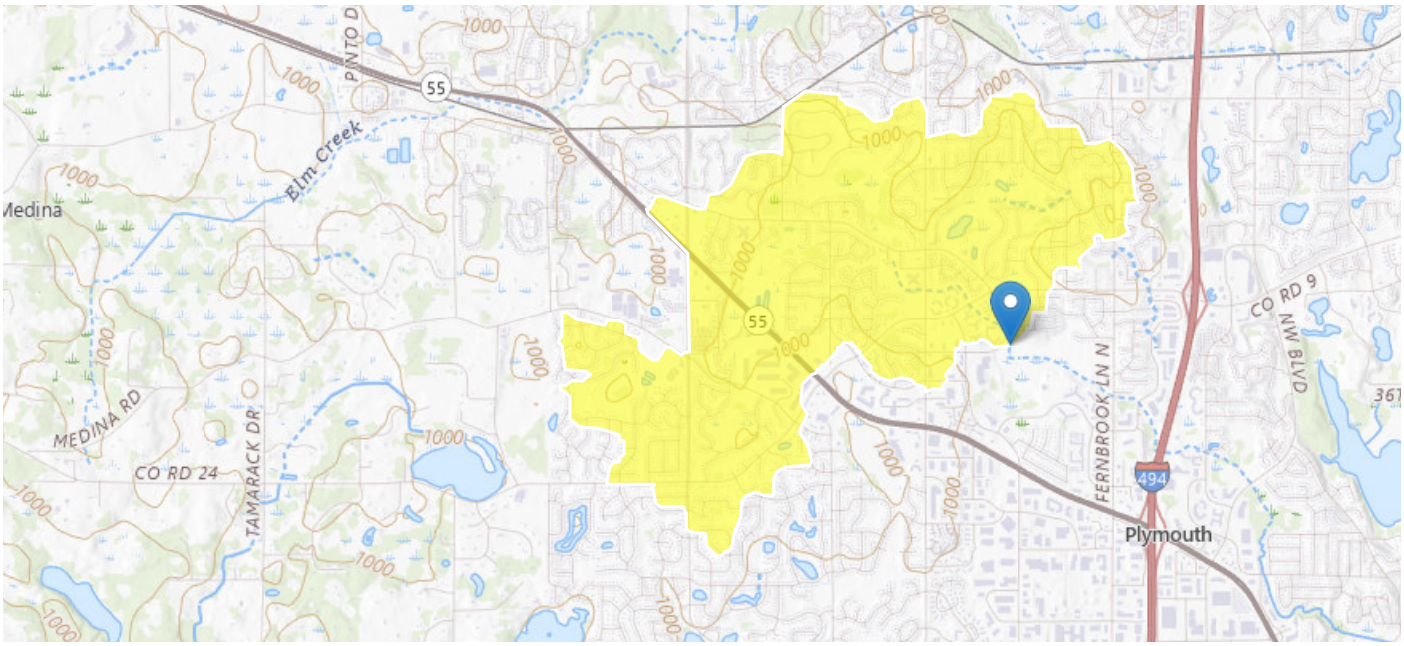
The cultural resource visual survey of the Plymouth Creek Restoration Project identified no archaeological resources within the Project Area. It is recommended that no additional cultural resources investigations are warranted in the current Project Area.

Moore suggests that if construction plans are altered to include areas not previously considered or inspected, those locations should be examined for cultural resources. Although an archaeological survey was completed, the possibility of unidentified resources remains. If suspected unrecorded cultural resource materials or sites are discovered during construction, all ground-disturbing activities in the area should stop and archaeologists at Moore should be contacted. Further, if human remains are encountered during construction activities, all ground disturbing activity must cease, and local law enforcement must be notified. Minnesota Statute 307.08, the Private Cemeteries Act, prohibits the intentional disturbance of human burials.

Attachment E
StreamStats Report

StreamStats Report

Region ID: MN
Delineation Point (Latitude, Longitude): 45.02494, -93.47270
Time: 2026-09-22 10:23:42 -0500



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at **https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release (https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release)** .

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	11.29	feet per mi
DRNAREA	Area that drains to a point on a stream	3.55	square miles
LAKEAREA	Percentage of Lakes and Ponds	0	percent
LAT_OUT	Latitude of Basin Outlet	45.024944	decimal degrees

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Minnesota Peakflow D 2023 5079]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CSL10_85	Stream Slope 10 and 85 Method	11.29	feet per mi	1.493468411	75.17007505
DRNAREA	Drainage Area	3.55	square miles	0.147080646	1870.067115
LAKEAREA	Percent Lakes and Ponds	0	percent	0	13.46002046
LAT_OUT	Latitude of Basin Outlet	45.024944	decimal degrees	43.51441115	46.0944041

Peak-Flow Statistics Flow Report [Minnesota Peakflow D 2023 5079]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU	SE	ASEp
66.7-percent AEP flood	39.7	ft^3/s	17.2	91.4	51.7	53.8
50-percent AEP flood	57.5	ft^3/s	27.2	121	45.7	47.6
20-percent AEP flood	118	ft^3/s	60.9	229	40.3	42.2
10-percent AEP flood	170	ft^3/s	85.6	338	41.2	43.2
4-percent AEP flood	246	ft^3/s	120	506	43.8	46.1
2-percent AEP flood	310	ft^3/s	144	665	46.4	48.9
1-percent AEP flood	380	ft^3/s	168	858	49.8	52.5
0.2-percent AEP flood	567	ft^3/s	223	1440	58.1	61.4

Peak-Flow Statistics Citations

Christopher A. Sanocki and Sara B. Levin2023, Techniques for Estimating the Magnitude and Frequency of Peak Flows on Small Streams in Minnesota, excluding the Rainy River Basin, Based on Data through Water Year 2019, U.S. Geological Survey Scientific Investigations Report 2023-5079, 15 p. (https://doi.org/10.3133/sir20235079)

Bankfull Statistics

Bankfull Statistics Parameters [Interior Plains D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.55	square miles	0.19305	59927.7393

Bankfull Statistics Parameters [Central Lowland P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.55	square miles	0.200772	59927.66594

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.55	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Interior Plains D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	18.3	ft
Bieger_D_channel_depth	1.9	ft
Bieger_D_channel_cross_sectional_area	39.2	ft^2

Bankfull Statistics Flow Report [Central Lowland P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	20.8	ft
Bieger_P_channel_depth	2.3	ft
Bieger_P_channel_cross_sectional_area	37.3	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	19.3	ft
Bieger_USA_channel_depth	1.58	ft
Bieger_USA_channel_cross_sectional_area	33.9	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bieger_D_channel_width	18.3	ft
Bieger_D_channel_depth	1.9	ft
Bieger_D_channel_cross_sectional_area	39.2	ft^2
Bieger_P_channel_width	20.8	ft
Bieger_P_channel_depth	2.3	ft
Bieger_P_channel_cross_sectional_area	37.3	ft^2
Bieger_USA_channel_width	19.3	ft
Bieger_USA_channel_depth	1.58	ft
Bieger_USA_channel_cross_sectional_area	33.9	ft^2

Bankfull Statistics Citations

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

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SSDelineate Services Version: 1.2.0
NSS Services Version: 2.5.0
GageStats Services Version: 1.2.1
Pourpoint Services Version: 1.2.2
Batch Processor Version: 1.6.2