WETLAND INVESTIGATION

GARY BISCHEL
BISCHEL PROPERTY

1085 HERITAGE LANE
ORONO, HENNEPIN COUNTY, MINNESOTA

August 4, 2021
AE JOB NO. 16596

ANDERSON

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CONTACT INFORMATION

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EXECUTIVE SUMMARY

Anderson Engineering of Minnesota, LLC was retained to provide professional wetland services using the 1987 United States Army Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1; January 1987) and all supplemental guidance documents to identify areas meeting wetland criteria at Hennepin County parcel 1011723130010 located in Orono, Minnesota. This project area is in Section 10, Township 117 North, Range 23 West.

Delineated aquatic resources or, portions thereof, were identified and delineated within the project area and summarized in Table 1 and depicted in Appendix A, Figure 5.

Table 1. Summary of delineated aquatic resources, corresponding sizes, and wetland type classifications.

WETLAND	APPROXIMATE SIZE (ac) within project area	WETLAND TYPE CLASSIFICATION			MnRAM Classification
		CIRCULAR 39	COWARDIN	EGGERS & REED	
1	0.17	Type 3/5	PUBG/EM1C	Open Water/Shallow Marsh	Manage 2

BACKGROUND

As requested by Gary Bischel, Anderson Engineering of Minnesota, LLC completed a wetland investigation at Hennepin County parcel 1011723130010 located in Orono, Minnesota (Appendix A, Figure 1). The parcel is in Section 10, Township 117 North, Range 23 West.

The wetland delineation was completed in accordance with the 1987 United States Army Corps of Engineers Wetland Delineation Manual and the published regional supplement to the Army Corps Wetland Delineation Manual, Midwest Regional Supplement.

The purpose of this study was to identify areas meeting the technical criteria for wetlands, delineate the jurisdictional extent of the wetland basins, and classify the wetland habitats in the project area.

Fieldwork for this site investigation was completed by Alex Yellick and Wyatt Benton on July 19, 2021. The weather was sunny and 85 degrees Fahrenheit.

METHODOLOGY

U.S. Geologic Service 7.5" Topographic Quadrangle maps, U.S. Fish and Wildlife Service National Wetland Inventory (NWI) maps, Minnesota Department of Natural Resources Public Water Inventory (PWI) maps, U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey, and available aerial photographs were consulted to initially locate potential wetland habitats.

Routine on-site Determination Method was used during this investigation. In this method, the following procedures were used:

1. The vegetative community was sampled in all present strata to determine whether it met hydrophytic vegetation criteria based on the indicators identified in the Midwest Regional Supplement.
2. Soil pits were dug using a Dutch auger to depths of sixteen to thirty-six inches. The soil profile was noted in addition to any hydric soil characteristics.
3. Signs of wetland hydrology were noted and compared to field criteria such as depth to shallow water table and depth of soil saturation found in the soil pits.

Data from sample points were recorded on Army Corps of Engineers Midwest Region Wetland Determination Data Forms (Appendix B). At least one sample point transect crosses the delineated wetland edge. This transect consists of an upland sample point and a wetland sample point. Other sample points may be in areas which have one or more other wetland criteria present; where questionable conditions exist; or to verify the absence of wetland criteria. Photographs of each resource is included in the resource review summary pages.

Sample points were marked in the field with orange flags. The identified aquatic resource was marked with sequentially numbered pink flags. All sample points and the delineated aquatic resource extent were located using a Trimble Geo XH sub-meter GPS unit.

Delineated resources were evaluated using Board of Soil and Water Resource's Minnesota Routine Assessment Method version 3.2 (MnRAM). Information from desktop and field assessment was evaluated in the system and a management classification ranging from exceptional quality to low quality is output as Preserve, Manage 1, Manage 2, and Manage 3. Resulting classifications are typically utilized in development planning.

RESOURCE REVIEW

The below described data were reviewed as part of the aquatic resource field delineation. A summary of each resource contained within the project area follows.

NATIONAL WETLANDS INVENTORY

The National Wetlands Inventory identifies one PABG wetland in the project area (Appendix A, Figure 2).

USDA – NATURAL RESOURCES CONSERVATION SERVICE SOIL SURVEY

Soil survey data for Hennepin County was obtained and reviewed prior to the delineation. Table 2 provides a list of the mapped soils in the project area. Figure 3 in Appendix A depicts USDA Natural Resources Conservation Service mapped soils within the project categorized by total percentage of hydric components.

Table 2. Summary of mapped soil units in the project area.

MAP UNIT SYMBOL	MAP UNIT NAME	HYDRIC RATING	DRAINAGE CLASSIFICATION	PERCENT COVER
L16A	Muskego, Blue Earth, and Houghton soils, ponded, 0 to 1 percent slopes	Hydric Soil Unit	Very poorly drained	55%
U3B	Udorthents (cut and fill land), 0 to 6 percent slopes	Not Rated	Well drained	42%
W	Water	Not Rated	Not Classified	3%

Hydric soils are defined in the *Field Indicators of Hydric Soils in the United States: Guide for Identifying and Delineating Hydric Soils, version 8.2, 2018*; The *1987 United States Army Corps of Engineers Wetlands Delineation Manual;* and The *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0).*

MINNESOTA DEPARTMENT OF NATURAL RESOURCES PUBLIC WATER INVENTORY

The Minnesota Department of Natural Resources Public Water Inventory for Hennepin County identifies public water 27086500 in the project extent (Appendix A, Figure 4).

30-DAY ROLLING PRECIPITATION DATA

A review of the 30-day rolling precipitation data collected from the University of Minnesota Climatology Working Group (Appendix C) indicates that precipitation totals for the weeks prior to the site visit were within the range of average in the general project area. The overall hydrologic conditions were suitable for completing an accurate wetland determination and boundary delineation.

RESOURCE 1

FIELD DELINEATED 7/19/2021

FIELD INVESTIGATION CONCLUSION[1]

Viewing Southwest | Gradual Transition to Wetland

Wetland	RESOURCE TYPE
0.17-Acre	TOTAL AREA WITHIN ECB
>5-Acre(s)	TOTAL EST. AREA
Open Water/Shallow Marsh	EGGERS & REED
Type 3/5	CIRCULAR 39
PUBG/EM1C	COWARDIN
Manage 2	MnRAM[2]

DOMINANT HYDROPHYTIC VEGETATION	
Typha X Glauca	Hybrid cattail
Phalaris arundinacea	Reed canary grass
Pilea pumila	Canadian clearweed

HYDRIC SOIL INDICATORS	
Depleted Below Dark Surface	A11
Loamy Mucky Mineral	F1

WETLAND HYDROLOGY DETERMINATION	
High Water Table	A2
Saturation	A3
FAC-Neutral Test	D2
Geomorphic Position	D5

DESKTOP REVIEW

HYDRIC RATING - SOIL UNIT(S)	Hydric - Muskego, Blue Earth, and Houghton soils, ponded, 0 to 1 percent slopes (L16A)
NATIONAL WETLAND INVENTORY	PABG
PUBLIC WATER INVENTORY	Yes – 27086500

DISCUSSION

RATIONALE FOR DETERMINATION	The resource was delineated based on a vegetation community predominated by hydrophytes, hydric soils, presence of wetland hydrology, and a geomorphic landscape position formed by a gradual boundary transition. The resource runs offsite to the northwest, west and south. The upland transition was determined based on a lack of hydric soils and wetland hydrology.
ATYPICAL/PROBLEMATIC CONDITIONS	None.
CONSISTENCY WITH DESKTOP REVIEW	NWI matched the area of Resource 1-2. Resource 1-1 was unmapped on NWI.

[1] Appendix B contains wetland determination data forms supporting this investigated resource:

Wet Point(s): 1A
Up Point(s): 1B

[2] Appendix D contains MnRAM output

INVESTIGATION AREA - A

FIELD DELINEATED 7/19/2021

Viewing West | Non-Wetland Flow path

FIELD INVESTIGATION CONCLUSION[1]

RESOURCE TYPE	Non-Wetland Flow Path
HYDRIC RATING - SOIL UNIT(S)	Not Rated - Udorthents (cut and fill land), 0 to 6 percent slopes
NATIONAL WETLAND INVENTORY	None
PUBLIC WATER INVENTORY	None

DISCUSSION

RATIONALE FOR DETERMINATION	IA-A occurred in an area with geomorphic position receiving hydrology from a culvert from the east and directing water west towards Resource 1. IA-A had hydric soils but did not contain wetland hydrology or hydrophytic vegetation and was determined to not be wetland.

[1] Appendix B contains wetland determination data forms supporting this investigated resource:

Wet Point(s): N/A
Up Point(s): IA-A

CONCLUSION

A total of one wetland, or portions thereof, was identified and delineated within the project area and in accordance with the 1987 United States Army Corps of Engineers Wetland Delineation Manual.

Project area aquatic resources may be regulated by several agencies at the local, state, and/or federal level. Activities which may potentially impact wetlands should be discussed in advance with the appropriate regulating agency regarding potential permit requirements. The Local Government Unit (LGU) responsible for implementing the Minnesota Wetland Conservation Act at this project location is Minnehaha Creek Watershed District.

The Watershed District may require vegetated buffers around all regulated wetland areas. Wetland buffers must meet the standards specified by the Watershed District for any project that is regulated under the Wetland Conservation Act.

This wetland investigation meets the standards and criteria described in the 1987 United States Army Corps of Engineers Wetland Delineation Manual and all applicable subsequent guidance for an on-site determination. The results reflect the conditions present at the time of the delineation.

I certify that I performed the field analysis and/or wrote the report for this wetland determination.

Wyatt Benton — August 4, 2021

Wyatt Benton
Environmental Scientist

I certify that I performed the field analysis and/or wrote the report for this wetland determination.

Alex Yellick — August 4, 2021

Alex Yellick
Senior Environmental Scientist
MN Certified Wetland Delineator #1354

I certify that I performed the field analysis and/or reviewed work completed by above staff.

Benjamin J Hodapp — August 4, 2021

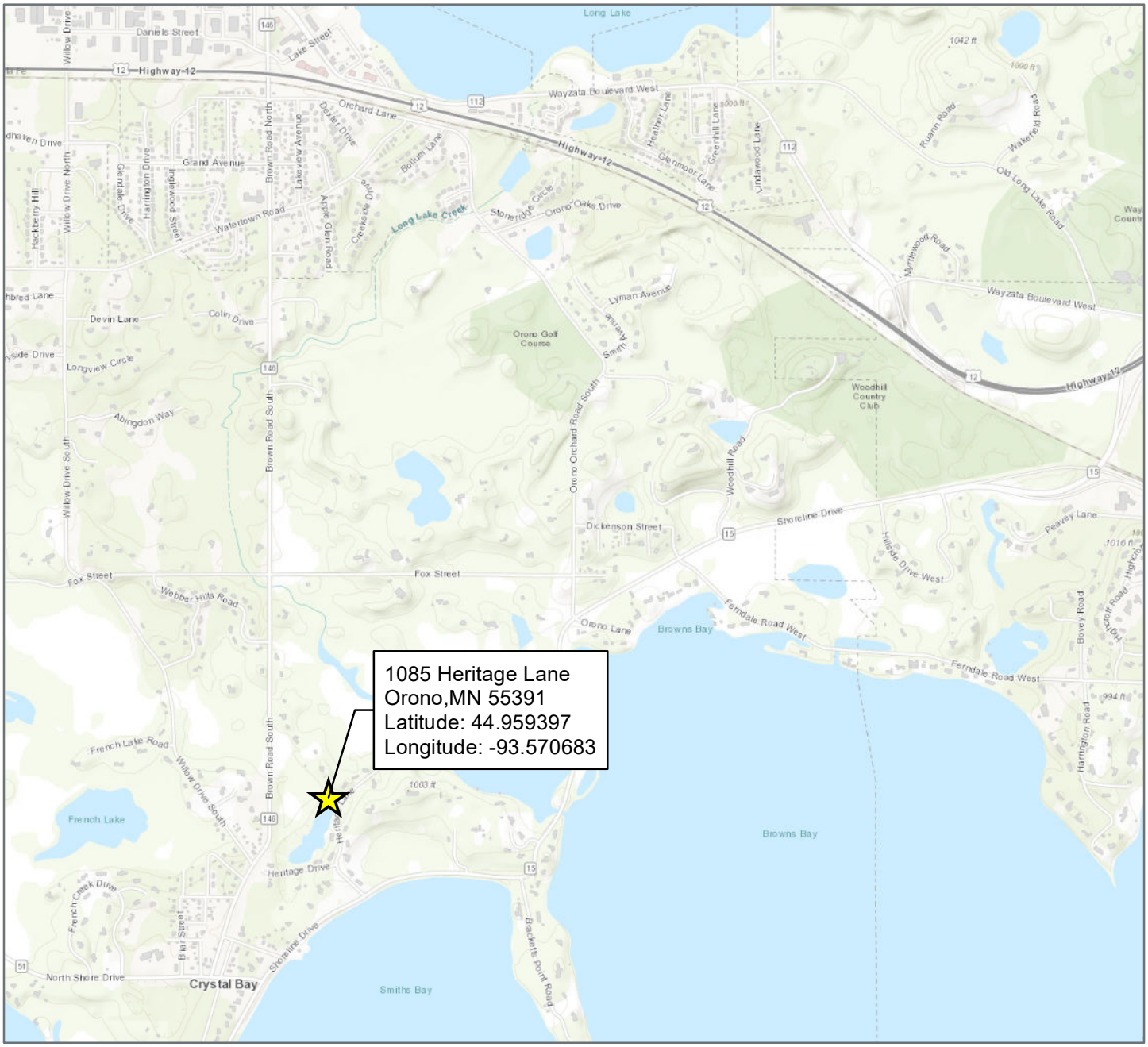
Benjamin J. Hodapp
Environmental Services Manager
MN Certified Wetland Delineator #1016

Appendix A

FIGURES

Bischel Property
Orono, MInnesota

Figure 1
Project Location



Legend

★ Project Location

Address: 1085 Heritage Lane
Orono, MN 55391
Lat/Long: 44.9594, -93.5707
PID: 1011723130010
Project No: 16596
Date: 7.14.2021

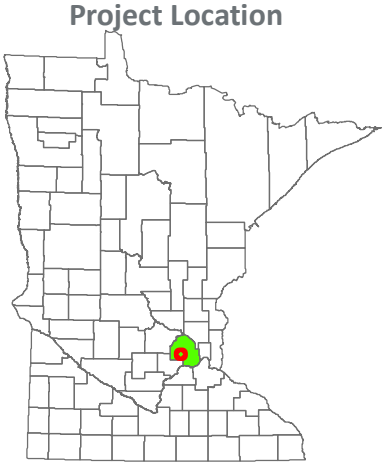
1 inch = 2,000 feet

0 1,000 2,000 4,000

Feet

ANDERSON
13605 1st Ave N #100, Plymouth, MN 55441
P 763.412.4000 **F** 763.412.4090 **ae-mn**.com

Project Location



City of Orono
Hennepin County, MN

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

Bischel Property
Orono, MInnesota

Figure 2
National Wetland Inventory

Legend

- Project Parcel
- Hennepin Co. Parcels
- National Wetland Inventory

Address: 1085 Heritage Lane
Orono, MN 55391
Lat/Long: 44.9594, -93.5707
PID: 1011723130010
Project No: 16596
Date: 7.14.2021

1 inch = 100 feet

0 50 100 200

Feet

ANDERSON
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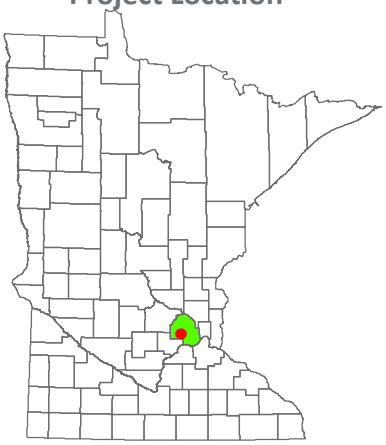
Project Location

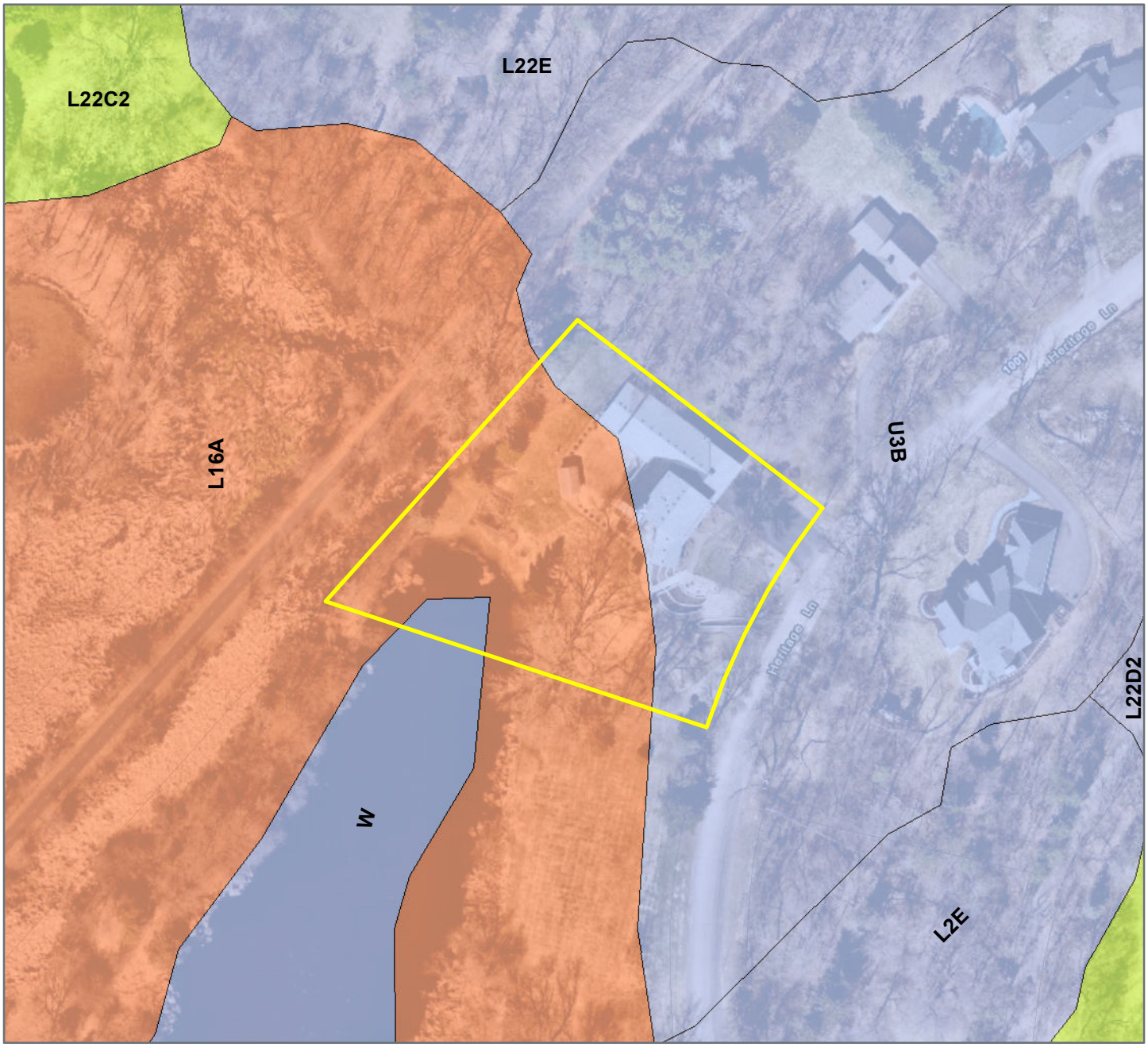


City of Orono
Hennepin County, MN

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

Bischel Property
Orono, MInnesota

Figure 3
Hennepin Co. Soil Survey



Legend

- Project Parcel
- Hennepin Co. Parcels

Hydric Rating by Map Unit

- 0% Hydric Components
- 1-32% Hydric Components
- 33-65% Hydric Components
- 66-99% Hydric Components
- 100% Hydric Components

Address: 1085 Heritage Lane
Orono, MN 55391
Lat/Long: 44.9594, -93.5707
PID: 1011723130010
Project No: 16596
Date: 7.14.2021

1 inch = 100 feet

0 50 100 200

Feet

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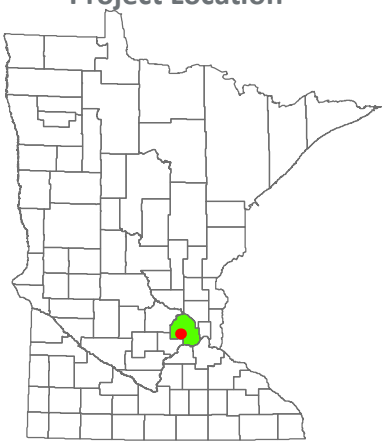
Project Location



City of Orono
Hennepin County, MN

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

Bischel Property
Orono, MInnesota

Figure 4
MnDNR Public Water Inventory

Legend

- Project Parcel
- Hennepin Co. Parcels
- Project Location
- MN DNR Inventoried Public Watercourse
- MN DNR Inventoried Public Waterbasin

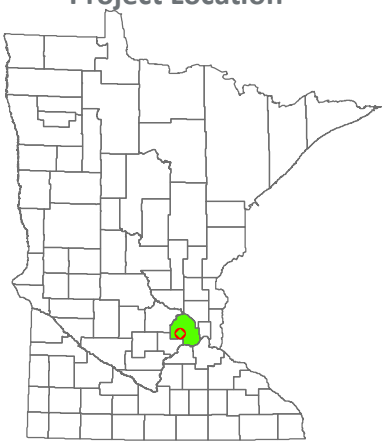
Address: 1085 Heritage Lane
Orono, MN 55391
Lat/Long: 44.9594, -93.5707
PID: 1011723130010
Project No: 16596
Date: 7.14.2021

1 inch = 500 feet

0 255 510 1,020

Feet

Project Location



City of Orono
Hennepin County, MN

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SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

Bischel Property
Orono, MInnesota

Figure 5
Delineation

Legend

- Project Parcel
- Hennepin Co. Parcels
- Wetland Field Delineated July 19th, 2021
- Drainage Flow Path
- Sample Point
- Culvert

Address: 1085 Heritage Lane
Orono, MN 55391
Lat/Long: 44.9594, -93.5707
PID: 1011723130010
Project No: 16596
Date: 7.19.2021

1 inch = 50 feet

0 25 50 100

Feet

ANDERSON
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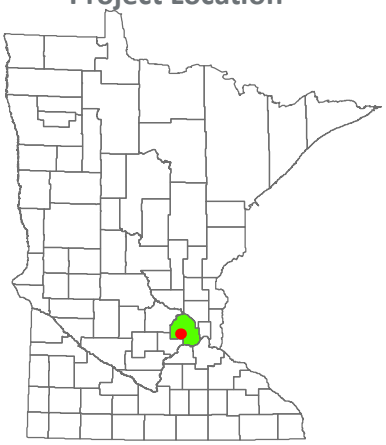
Project Location



City of Orono
Hennepin County, MN

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

Appendix B

ROUTINE ON-SITE DETERMINATION METHOD DATASHEETS

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PID 1011723130010 City/County: Orono/Hennepin Sampling Date: 07/19/2021
Applicant/Owner: Bischel Property State: MN Sampling Point: 01A
Investigator(s): A. Yellick, W. Benton Section, Township, Range: S.10 T.117N R.23W
Landform (hillslope, terrace, etc): Hill slope-Ts Local relief (concave, convex, none): concave
Slope(%): 0 Lat: 44.95932756 Long: -93.57084546 Datum: WGS 84
Soil Map Unit Name: L16A NWI classification: PUBG
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present? Yes X No

Is the Sampled Area within a Wetland? Yes X No

Remarks:
Open water/shallow marsh (PUBG/EM1C, type 3/5). PWI 27086500

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 feet)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 5 feet)			
1. *Typha ×glauca* / Hybrid cattail	50	Yes	OBL
2. *Pilea pumila* / Canadian clearweed	20	Yes	FACW
3. *Phalaris arundinacea* / Reed canarygrass, Reed canary gras	20	Yes	FACW
4. *Carex intumescens* / Greater bladder sedge	10	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 30 feet)			
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: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		150 (B)

Prevalence Index = B/A = 1.5

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No

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

SOIL

Sampling Point: 01A

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	95	10YR 3/6	5	C	M	Muck	Loam
16-24	10YR 2/1	60	10YR 4/2	40	C	M	Coarse Sand	Mixed Matrix

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Marix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

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 along 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): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PID 1011723130010 City/County: Orono/Hennepin Sampling Date: 07/19/2021
Applicant/Owner: Bischel Property State: MN Sampling Point: 01B
Investigator(s): A. Yellick, W. Benton Section, Township, Range: S.10 T.117N R.23W
Landform (hillslope, terrace, etc): Hill slope-BS Local relief (concave, convex, none): none
Slope(%): 2 Lat: 44.95932103 Long: -93.57082543 Datum: WGS 84
Soil Map Unit Name: L16A NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 feet)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 feet)			
1. *Poa pratensis* / Kentucky blue grass	75	Yes	FAC
2. *Phalaris arundinacea* / Reed canarygrass, Reed canary gras	25	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 feet)			
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: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	75	x 3 =	225
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		275 (B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

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

SOIL

Sampling Point: 01B

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/2	100					Loam	
12-24	10YR 2/2	90	10YR 3/6	10	C	M	Loam	CaC03 mixed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Marix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

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 along 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)
- 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): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PID 1011723130010 City/County: Orono/Hennepin Sampling Date: 07/19/2021
Applicant/Owner: Bischel Property State: MN Sampling Point: IA-A
Investigator(s): A. Yellick, W. Benton Section, Township, Range: S.10 T.117N R.23W
Landform (hillslope, terrace, etc): Hill slope-TS Local relief (concave, convex, none): concave
Slope(%): 3 Lat: 44.95917993 Long: -93.57021199 Datum: WGS 84
Soil Map Unit Name: U3B NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Area is a nonwetland flow path to wetland 1 from the road.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 feet)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5 feet)			
1. *Festuca brevipila* / Hard fescue	20	Yes	NI
2. *Taraxacum officinale* / Red seeded dandelion, Common dan	20	Yes	FACU
3. *Plantago major* / Common plantain	20	Yes	FAC
4. *Pilea pumila* / Canadian clearweed	20	Yes	FACW
5. *Arabidopsis thaliana* / Arabidopsis, Mouse-ear cress, Thale c	20	Yes	NI
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30 feet)			
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: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	20	x 3 =	60
FACU species	20	x 4 =	80
UPL species	40	x 5 =	200
Column Totals:	100 (A)		380 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ____ No X

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

SOIL

Sampling Point: IA-A

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/2	60	10YR 6/3	40	C	M	Coarse Sand	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Marix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8

Hydric Soil Present? Yes X No ___

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 along 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)
- ___ 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): ___

Wetland Hydrology Present? Yes ___ No X

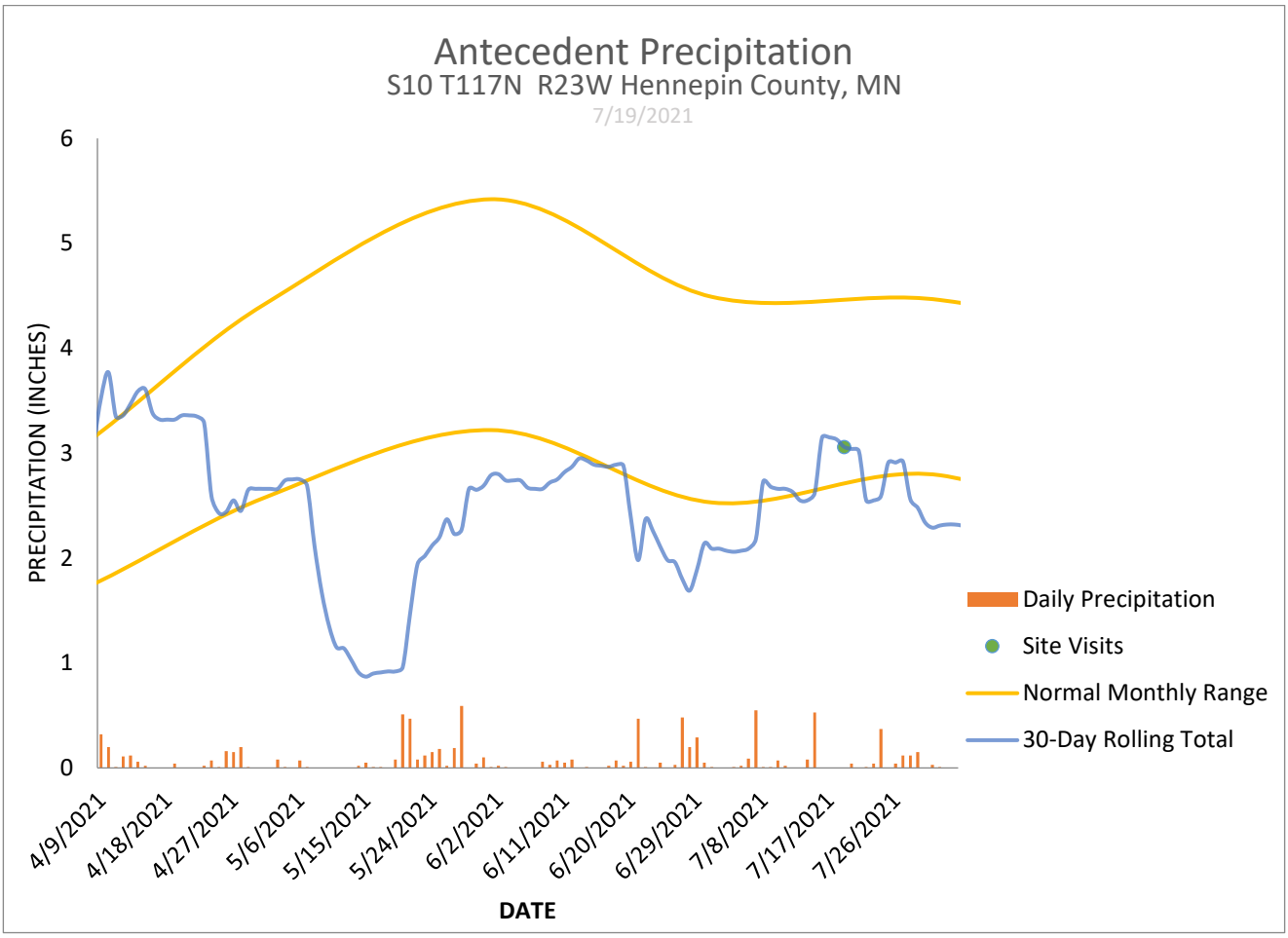
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C

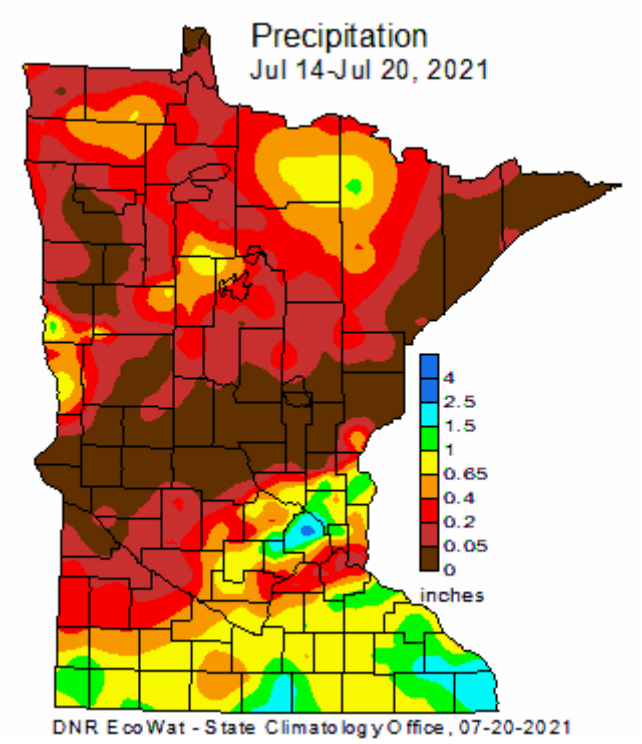
ANTECEDENT PRECIPITATION RECORD

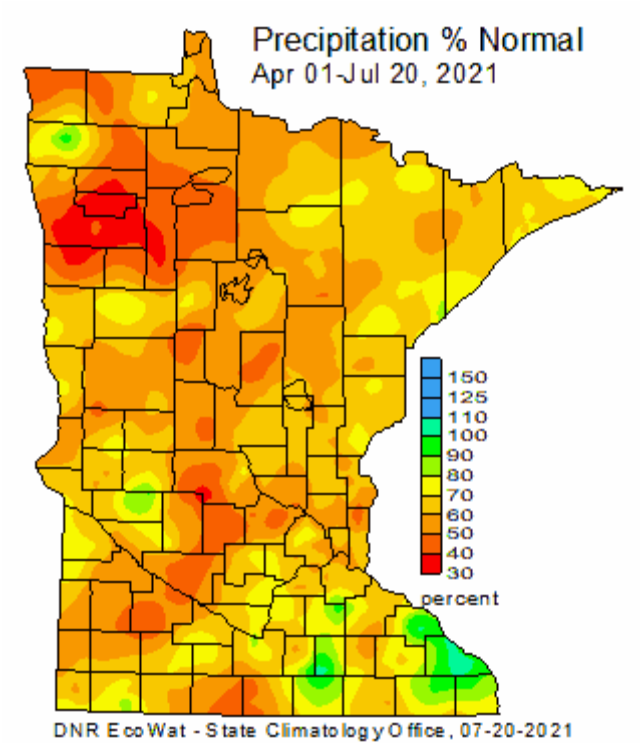
Appendix C, Figure 1. Graph of recent precipitation in comparison with the normal range of precipitation in the general site location. Daily precipitation data is plotted independently and as a 30-day rolling total up to the date of the site visit. The normal range is plotted from precipitation data recorded from 1981 to 2010. The normal range is represented in this graph with two lines, the 30th percentile and the 70th percentile of the period-of-record data distribution.

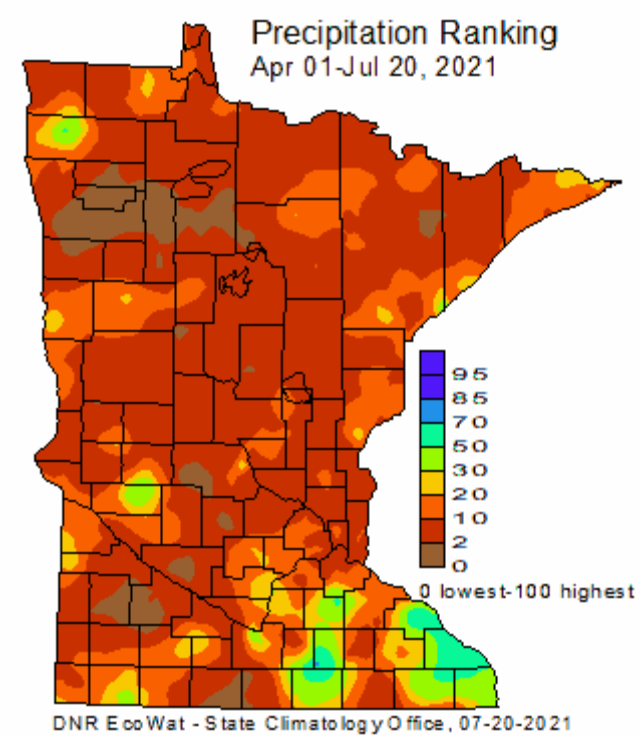


Source: http://climate.umn.edu/

Appendix C, Figure 2. Minnesota State Climatology Office map depicting total precipitation for the week of the site visit.





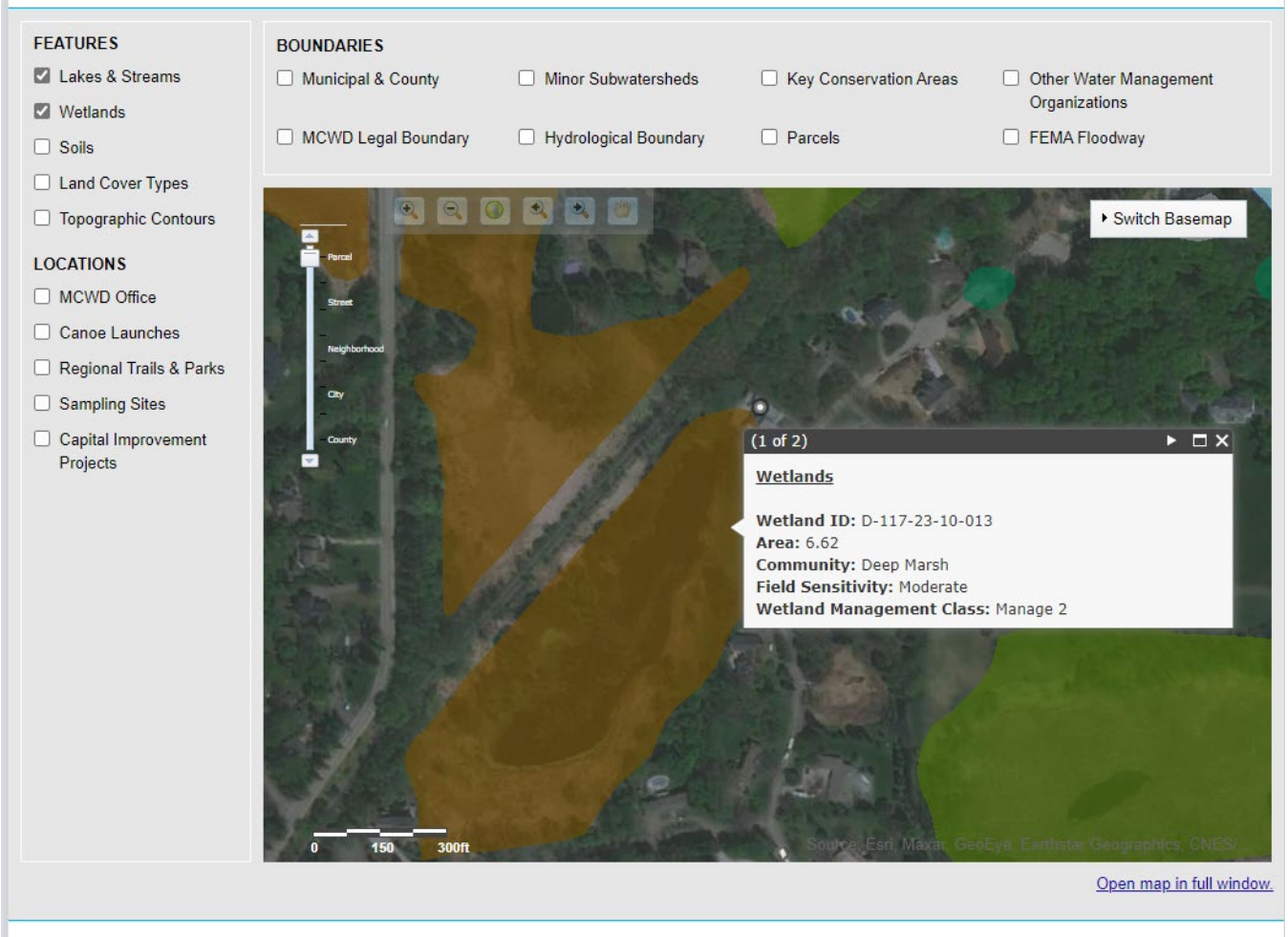


Source: [Maps Produced July 20, 2021 | Minnesota DNR (state.mn.us)]

Appendix D

MINNESOTA ROUTINE ASSESSMENT METHODOLOGY (MnRAM)

Appendix D, Figure 1. MNRAM classification taken from Minnehaha Creek Watershed District website mapping resource.



Source: [Minnehaha Creek Watershed District | MCWD: Minnehaha Creek Watershed District]

Appendix E

CREDENTIALS

Benjamin Hodapp, PWS

Environmental Specialist

CERTIFICATIONS

Professional Wetland Scientist #1832
MN Certified Wetland Delineator #1016

EDUCATION

MS Water Resources Management
University of Wisconsin-Madison

BS Biology; Ecology
Minnesota State University- Mankato

SPECIALIZED TRAINING

Wetland Delineation & Management Training
Richard Chinn Environmental Training, Inc.

Wetland Plant Identification
Biotic Consultants Inc.

Plant Identification for Wetland Delineation
University of Wisconsin-La Crosse

Watershed Academy Web Certificate
United States Environmental Protection Agency

PROFESSIONAL ASSOCIATIONS

Society of Wetland Scientists
MN Wetland Professionals Association (WPA)
MN WPA President 2010
Wisconsin Wetlands Association
Association of State Wetland Managers
Minnesota Native Plant Society
Ecological Society of America

TOTAL EXPERIENCE

19 years

YEARS WITH CURRENT FIRM

2004 to Present

PUBLICATIONS & PRESENTATIONS

The Future of Rowan Creek Watershed: Connecting Land Use and Management with Water Quality. 2003. Water Resources Management Workshop 2002, Gaylord Nelson Institute for Environmental Studies, University of Wisconsin, Madison.

The Tumultuous World of Drainage Districts: An Analysis of Existing Management Arrangements, with Recommendations. Working Paper Series 2002-1. Water Resources Institutions and Policies, Department of Urban and Regional Planning, University of Wisconsin, Madison.

South Shore Lake Bemidji Remediation & Restoration, Society of American Military Engineers meeting June 22, 2016, St Paul, MN.

SUMMARY OF EXPERIENCE

Benjamin Hodapp, an Environmental Specialist and Senior Project Manager, brings a broad background of knowledge and experience in the environmental field to the Anderson Engineering team. Benjamin has a unique combination of multi-disciplinary academic training and work experience at various levels of federal, state and local government and private consulting.

Benjamin's project experience includes natural resource inventory and assessment; wetland delineation, mitigation design and monitoring; regulatory permitting; agency and stakeholder coordination; environmental impact assessment, environmental document preparation and public outreach.

REPRESENTATIVE PROJECTS

Southwest Light Rail Transit- Metropolitan Council – Minneapolis, MN: Project manager for wetland delineation and permitting efforts in support of multi-disciplinary consultant team for preparation of Final Environmental Impact Statement for proposed 16 mile light rail alignment. Project tasks included completion of wetland delineations, preparation of all federal, state and local wetland permits and wetland mitigation plans, quality assurance and quality control of all deliverable products.

Harriet Island to South St. Paul Regional Trail – City of St Paul, City of South St. Paul and Dakota County – St Paul, MN: Project manager for wetland delineation, mapping and assessment efforts in support of multi-disciplinary consultant team responsible for preliminary engineering and final design. Project tasks included project management oversight and coordination, supervising field staff in completion of both off-site and on-site wetland determinations, boundary delineations, GPS mapping and functional assessments. Oversaw preparation of and responsible for quality assurance and quality control of all deliverable products.

Crosstown Blvd. Pedestrian Trail – City of Andover – Andover, MN: Project Manager for wetland delineation associated with proposed City trail improvements. Services included a wetland delineation, GPS mapping and functional assessment document findings and coordination and approval of findings with federal, state and local regulatory agencies.

Bennett Family Park Improvements – Minnetonka, MN: Project Manager for wetland delineation associated with proposed baseball complex improvements. Services included a wetland delineation, GPS mapping and functional assessment document findings and coordination and approval of findings with federal, state and local regulatory agencies.

Section 401/404 Wetland Permitting – Fort McCoy Commemorative Park Expansion – Fort McCoy, WI: Provided project management services for Section 401/404 permitting associated with proposed wetland impacts resulting from the Commemorative Park Expansion Project at the Fort McCoy U.S. Army installation. Project tasks included project management, developing a wetland mitigation strategy in compliance with Section 401/404 and state wetland permitting requirements and oversight and quality control in preparing Section 401/404 permit application.

Alex Yellick

Senior Environmental Scientist

EDUCATION

MS Environmental & Conservation Sciences
North Dakota State University

BS Biological Sciences
North Dakota State University

CERTIFICATIONS

MN Certified Wetland Delineator #1354

MnDNR Tree Inspector #201005102

Erosion and Stormwater Management Construction Site Management

HAZWOPER 40-hour Training

TOTAL EXPERIENCE

7 years

YEARS WITH CURRENT FIRM

2018 to present

SUMMARY OF EXPERIENCE

Alex H. Yellick, an Environmental Associate, brings a broad range of knowledge and experience in the environmental field to the Anderson Engineering team. Prior to his employment with Anderson Engineering of MN, LLC, Alex worked as a certified wetland delineator and has background in biologic assessments and threatened and endangered species review, regulatory review/permitting and Phase I Environmental Site Assessments. The skills that Alex developed through his biological and conservation sciences advanced educational background and experience make him proficient in assessing and addressing a range of environmental issues, and clearly communicating solutions to clients and various regulatory agencies.

Alex's project experience includes biological assessments of urban and rural wetlands, environmental permitting, assistance with preparing Wetland Bank Plans, environmental compliance oversight, stormwater best management practices design and compliance, and Phase I Site Assessments. Alex has experience with Global Positioning Systems, Geographic Information Systems, and AutoCAD.

REPRESENTATIVE PROJECTS

National Environmental Policy Act Environmental Assessments – California, Illinois, Montana: Prepared National Environmental Policy Act-compliant Environmental Assessments for U.S Department of Veteran Affairs. Projects include cemetery expansion or hospital development at Sacramento Valley National Cemetery, Abraham Lincoln National Cemetery, and Fort Harrison Veteran Affairs Medical Center.

Minnesota Environmental Policy Act Categorical Exclusion Documentation and Wetland Delineation– Minnesota Department of Transportation Highway 63 and Interstate 90 Interchange Improvements. Through partnership with Short Elliott Hendrickson Inc. (SEH), and working with MnDOT District 6, a nonprogrammatic Long Form Categorical Exclusion document and supporting information was prepared and approval was obtained from the Federal Highway Administration. In addition, project area federal and state regulated water resources were inventoried and a wetland replacement plan was developed.

Wetland Delineation/Assessment – Various Locations: services included wetland delineation and assessment of permitting requirements in support of development and real-estate transactions. Project tasks included completion of wetland field delineations following the 1987 United States Army Corps of Engineers Wetland Manual and Regional Supplements, boundary delineations, GPS mapping, and preparation of reports to document findings and assess wetland impacts.

Permitting and Compliance Activities – Minnesota, Arkansas, Mississippi, Oklahoma, and Texas: Services included federal, state, and local environmental permitting and operational compliance assistance associated with energy infrastructure construction and maintenance activities.

Wyatt Benton

Environmental Scientist

EDUCATION

Bachelor of Science in Land Use Planning and Environmental Policy
Minor in Soil Science and Management

University of Wisconsin – Stevens Point

PROFESSIONAL ASSOCIATIONS

MN Wetland Professionals Association (WPA)

Wisconsin and National Wildlife Federation

TOTAL EXPERIENCE

3 years

YEARS WITH CURRENT FIRM

2019 to present

SUMMARY OF EXPERIENCE

Wyatt Benton, an Environmental Scientist, brings a broad range of knowledge and experience in the environmental science field to the Anderson Engineering team. Prior to his employment with Anderson Engineering of MN, LLC, Wyatt worked for the National Park Service monitoring scenic easements and collecting field data along the St. Croix Scenic Riverway in Minnesota and Wisconsin. He has conducted environmental review, city planning, and ordinance review for several cities, counties, and state governments across the Midwest. He is an associate director with the Wisconsin Wildlife Federation and president of the Conservation Leadership Corp which conducts statewide conservation and leadership education programs. He also has spent time in Washington D.C. speaking on conservation issues and working with Wisconsin legislators. The skills that Wyatt has developed through his educational background and experience make him proficient in assessing and addressing a range of ecological indicators and environmental issues.

Wyatt's project and educational experience includes conservation planning, soil science and management, biologic assessments, mitigation design and monitoring, city and transit planning, wetland determinations, wetland functions and values assessments, floodplain analysis, threatened and endangered species analysis, and National Environmental Policy Act (NEPA) document preparation. Wyatt has experience with Global Positioning Systems, Geographic Information Systems, Computer-Aided Design, Photoshop, and SketchUp Design tools.

REPRESENTATIVE PROJECTS

NEPA Documentation – Various Locations: Report preparation experience has included completing environmental assessments for the Department of Veterans Affairs St. Louis Medical Center Hospital, Fort Sam Houston National Cemetery and FCC tower and antenna siting in Miami Florida.

Permitting – Various Locations: Acting as permitting specialist for MN Department of Transportation projects including the I94 Maple Grove to Rogers Resurfacing project.

Wetland Delineation Activities – Various Locations: Services include performing the following general activities in compliance with federal, state, and local regulations: performing routine wetland determination and delineations to identify regulated aquatic resources and management of collected field data into environmental reports for state and federal agencies and private entities.

Urban Tree Care and Soil Management – Twin Cities, MN: Work included urban tree root enhancement and urban soil management and mitigation.