

WETLAND DELINEATION REPORT

4/30/2020

2020-113
1235 Lyman Ave Delineation
Orono, MN

Jacobson Environmental, PLLC
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1.0 SUMMARY

Jacobson Environmental, PLLC (JE) visited the project site at PID #'s 02-117-23-21-0005 and 02-117-23-21-0006 on 4/28/2020. The site was approximately 3.51 acres in size, and was located at Section 2, T117N, R23W, Orono, Minnesota. See Figure 1 for a Site Location Map.

The purpose of the investigation was to identify areas within the project boundary meeting the technical criteria for wetlands, delineate the jurisdictional extent of the wetland basins, and classify the wetland habitat according to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation: Midwest Region.

Wetlands are areas that are saturated or inundated with surface and or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in hydric soil conditions. Examples of wetlands include seasonally flooded basins, floodplain forests, wet meadows, shallow and deep marshes, shrub swamps, wooded swamps, fens, and bogs.

Wetland boundaries were determined through a routine analysis of the vegetation, soils and hydrology which must all show wetland characteristics for an area to be delineated as a wetland.

One wetland basin was delineated within the project area, which is summarized below and shown on Figure 5.

Basin ID	Circular 39	Cowardin	Eggers & Reed	Dominant Vegetation	Size (acres)
1	Type 3	PEM1C	Shallow marsh	Tartarian Dogwood, Green Ash, Lake Sedge and Reed Canary Grass	1.97

All figures and appendices referenced by this report are presented at the end of the text.

This wetland delineation was performed by Jacobson Environmental, PLLC under the direction of Wayne Jacobson, Minnesota Professional Soil Scientist #30611, Society of Wetland Scientists – Professional Wetland Scientist #1000, University of Minnesota / BWSR Wetland Delineator, Certified #1019, American Fisheries Society – Associate Fisheries Scientist #A-171.

2.0 METHODS

2.1 EXISTING INFORMATION REVIEW

Prior to field delineation, Jacobson Environmental reviewed the following information:

2.1.1 Antecedent Precipitation

The previous three month's precipitation data obtained from the Minnesota State Climatology Office suggest that the sampling period occurred under wet conditions. Antecedent precipitation data can be found in Appendix A. The growing season in this area is approximately from mid-April to mid-October, when the air temperature averages above 28 degrees F. This delineation was completed during the growing season.

2.1.2 National Wetlands Inventory

The National Wetlands Inventory (NWI) identified PEM1C/FO1A wetland complex within the property boundary (Figure 2).

2.1.3 Web Soil Survey

The National Resource Conservation Service Web Soil Survey (Figure 7) identified the following soils:

Soil	Hydric Rating
Lester-Kilkenny complex, 6 to 10 percent slopes, moderately eroded	5
Lester-Kilkenny complex, 16-22 percent slopes	5
Muskego and Houghton soils, 0 to 1 percent slopes	100

2.1.4 Public Waters Inventory

The Minnesota Department of Natural Resources Public Waters Inventory shows that no public waters exist on the property (Figure 4).

2.1.5 Topographic Map

A topographic map with aerial photo overlay was obtained from Hennepin County (Figure 6). This map was reviewed for suspected wetland areas based on topography and vegetative cover.

2.2 FIELD DELINEATION

The wetlands on the subject property were delineated using the routine determination methodology set forth in the 1987 U.S. Army Corps of Engineers *Wetlands Delineation Manual* and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation: Midwest Region as follows:

- 1) The vegetative community was sampled in all present strata to determine whether 50% of the dominant plant species were hydrophytic using the 50/20 method.
- 2) Soil pits were dug using a Dutch auger to depths of 18"-40", noting soil profiles and any hydric soil characteristics.
- 3) Signs of wetland hydrology were noted and were compared to field criteria such as depth to shallow water table and depth of soil saturation found in the soil pits.

Transects were established in representative areas of each wetland. Each transect consisted of one sample point within the wetland and one sample point in upland. Other areas which have one or more of the wetland vegetation, soils, or hydrologic characteristics present, or where questionable conditions exist may also have been sampled. Data sheets for each sample point are available in Appendix B.

Wetland classifications discussed in the text are set forth in *Wetlands and Deepwater Habitats of the United States* (FWS/OBS Publication 79/31, Cowardin et al. 1979) and *Wetlands of the United States* (USFWS Circular 39, Shaw and Fredine, 1971.) Additionally, plant community types as named by Eggers and Reed (1998) are given.

Wetland edges were marked with orange numbered pin flags. 4-foot wood lath marked with orange "wetland boundary" flagging tape or flagging tied on vegetation may be used if site conditions warrant. Sample points are marked with orange numbered pin flags.

Any wetlands or sample points were mapped using GPS.

2.2.1 Vegetation

The plant species within the parcel were cataloged and assigned a wetland indicator status according to: Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin, 2016. *The National Wetland Plant List: 2016 Wetland Ratings*, Phytoneuron 2016-30: 1-17.

In the text of this report and on the enclosed data forms, the plant indicator status follows the plant's scientific name unless a status has not been assigned. The hydrophytic plant criterion is met when more than 50 percent of the dominant species by the 50/20 rule for each stratum (herb, shrub/sapling, tree, and woody vine) were assigned an obligate (OBL)¹, facultative wet (FACW), and/or facultative (FAC) wetland status.

¹ OBL=Obligate Wetland, occurs an estimated 99% in wetlands. FACW=Facultative Wetland, has an estimated 67%-99% probability of occurrence in wetlands. FAC=Facultative, is equally likely to occur in wetlands and non-wetlands, 34%-66% probability. FACU=Facultative Upland, occurs in wetlands only occasionally, 1%-23% probability. UPL=Upland, almost never occurs in wetlands, <1% probability. NI= No Indicator, insufficient information available to determine an indicator status. Positive or negative sign previously indicated a frequency toward higher (+) or lower (-) frequency of occurrence within a category.

With the 50/20 rule, dominants are generally measured by absolute % cover in each stratum which individually or collectively account for more than 50% of total vegetative cover in the stratum, plus any other species which itself accounts for at least 20% of the total vegetative cover.

2.2.2 Hydric Soils

A hydric soil is a soil formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. If a soil exhibits the indicators of a hydric soil or is identified as a hydric soil the hydric soil criterion is met.

The break between hydric and non-hydric soils was determined by excavating soil pits along transects crossing the wetland/upland eco-tone and evaluating the soil colors, textures, and presence or absence of redoximorphic indicators (i.e., mottles, gley or oxidized rhizospheres). Hydric Soil Indicators for the Midwest Region were noted as presented in the National Technical Committee for Hydric Soils *Field Indicators of Hydric Soils in the United States version 8.1* (USDA NRCS 2017) if present at each sample point. Upper soil profiles were also compared to the mapped or inclusionary soil series found in the sample area for soil identification purposes.

2.2.3 Cautions Used in Applying the Field Indicators of Hydric Soils

There are hydric soils with morphologies that are difficult to interpret. These include soils with black, gray, or red parent material; soils with high pH; soils high or low in content of organic matter; recently developed hydric soils, and soils high in iron inputs. In some cases, we do not currently have indicators to assist in the identification of hydric soils in these situations. If the soil meets the definition of a hydric soil, the lack of an indicator does not preclude the soil from being hydric. The indicators were developed mostly to identify the boundary of hydric soil areas and generally work best on the margins. Not all the obviously wetter hydric soils will be identified by the indicators. Redoximorphic features are most likely to occur in soils that cycle between anaerobic (reduced) and aerobic (oxidized) conditions.

Morphological features of hydric soils indicate that saturation and anaerobic conditions have existed under either contemporary or former hydrologic regimes. Where soil morphology seems inconsistent with the landscape, vegetation, or observable hydrology, it may be necessary to obtain the assistance of an experienced soil or wetland scientist to determine whether the soil is hydric.

To clarify, when investigating hydric soils in this area, one must consider the following:

- Many of these soils have black or gray parent materials.
- Many of the soils have a high organic matter content.
- The hydric soil margin is typically higher than the wetland boundary margin on the site.
- Not all the obviously wetter soils will be identified by the indicators.
- Many of the hydric soils are Mollisols which are classic problem hydric soils in many cases.

3.0 RESULTS

3.1 WETLAND BASIN DESCRIPTIONS

Basin 1

Basin 1 was an approximately 1.97-acre, Type 3, PEM1C, shallow marsh wetland. The basin was dominated by Tartarian Dogwood, Green Ash, Lake Sedge and Reed Canary Grass.

Hydrology indicators included A1 (surface water), A2 (high water table), A3 (saturation), D2 (geomorphic position) and D5 (fac-neutral test).

Wetland soils met indicators A1 (histisol).

Adjacent upland was typically dominated by Green Ash, Northern Red Oak, American Basswood and Common Buckthorn. Primary hydrology indicators were not observed at the upland sample point, but hydric soil indicators were found in the upland sample point soil.

The wetland boundary followed a change in vegetation from wetland to upland plant communities, as well as a slight change in topography. The basin was shown as a PEM1C wetland on the NWI map (Figure 2) and was located within an area mapped as Muskego and Houghton soils (RATING=100) by the Web Soil Survey (Figure 7).

Sample data sheets 1-UP, 1-WET in Appendix B correspond to this basin.

4.0 CONFIRMATION OF JURISDICTIONAL STATUS

Jacobson Environmental is submitting this report to the client and regulatory agencies to request a wetland boundary and type determination. We have enclosed an official WCA Approval of Wetland Type and Boundary form in Appendix D along with a USCOE wetland delineation concurrence request.

5.0 CERTIFICATION

I certify that this wetland delineation meets the standards and criteria described in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation: Midwest Region. This was a Routine On-Site Determination and the results reflect the conditions present at the time of the delineation.

I certify that this report has been prepared in accordance with regulatory standards. Thank you for the opportunity to provide wetland services on this important project.

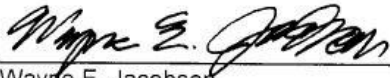
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Environmental Consultants

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If any wetland impacts are planned for this project, permits would be necessary from the LGU and other agencies.



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Professional Wetland Scientist #1000
Wetland Delineator, Certified #1019
Associate Fisheries Scientist #A-171
Jacobson Environmental, PLLC.

4/30/2020

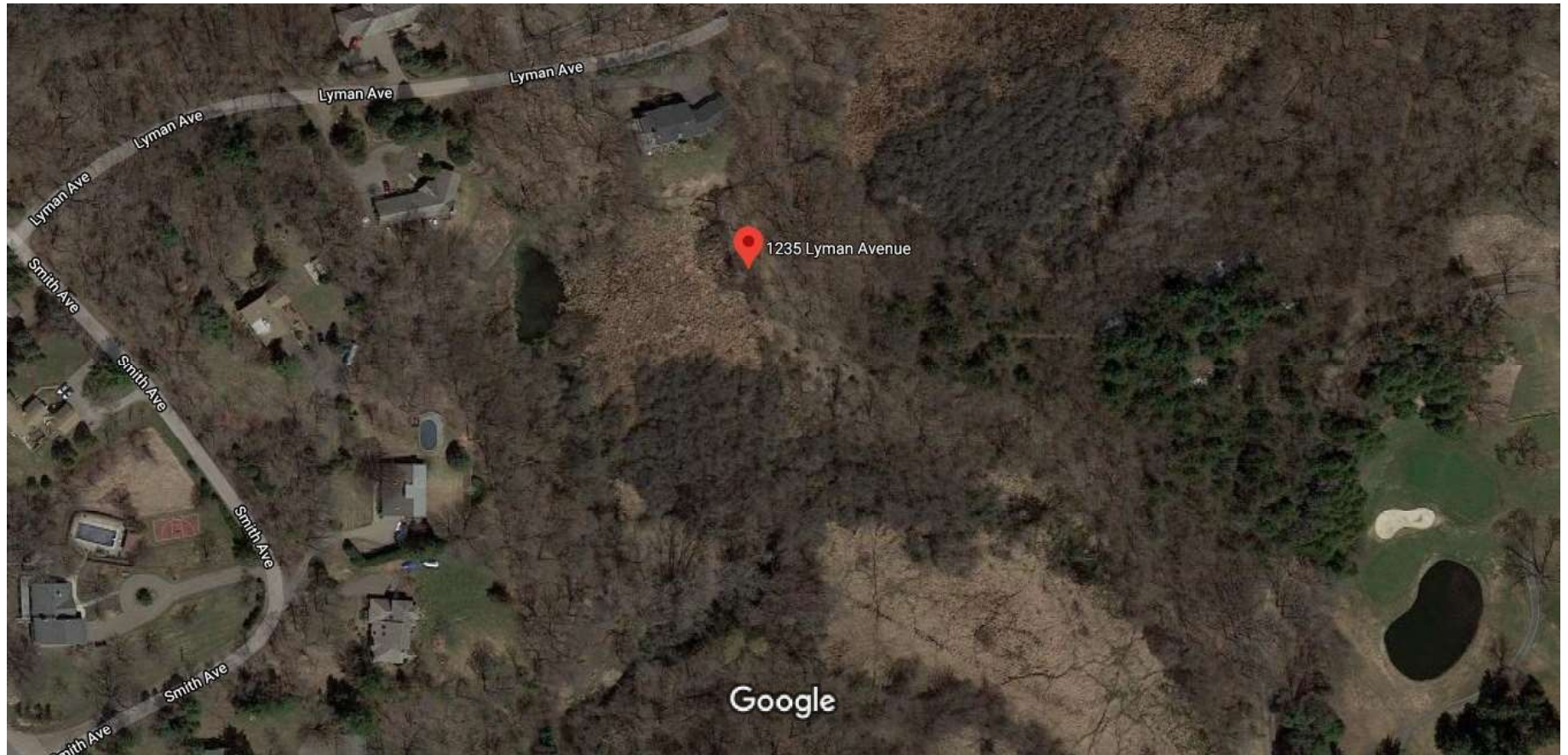
Date

Figures



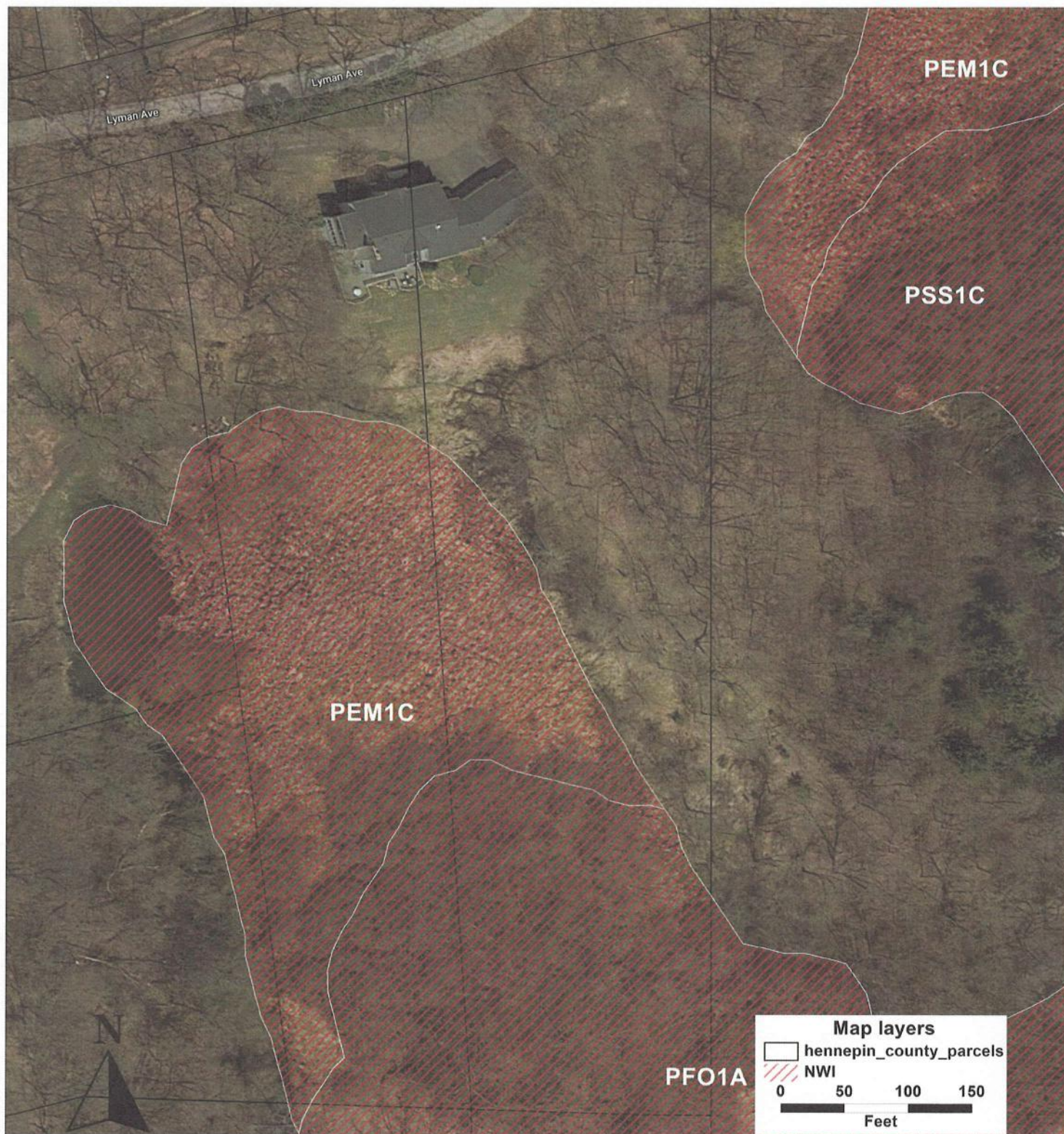
1235 Lyman Ave

Figure 1 Site Location Map



Imagery ©2020 Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2020 100 ft

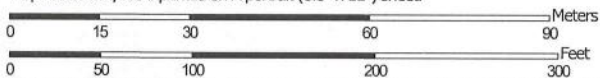
Figure 2 NWI Map



Soil Map—Hennepin County, Minnesota
(Figure 3 Soils Map)



Map Scale: 1:1,200 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

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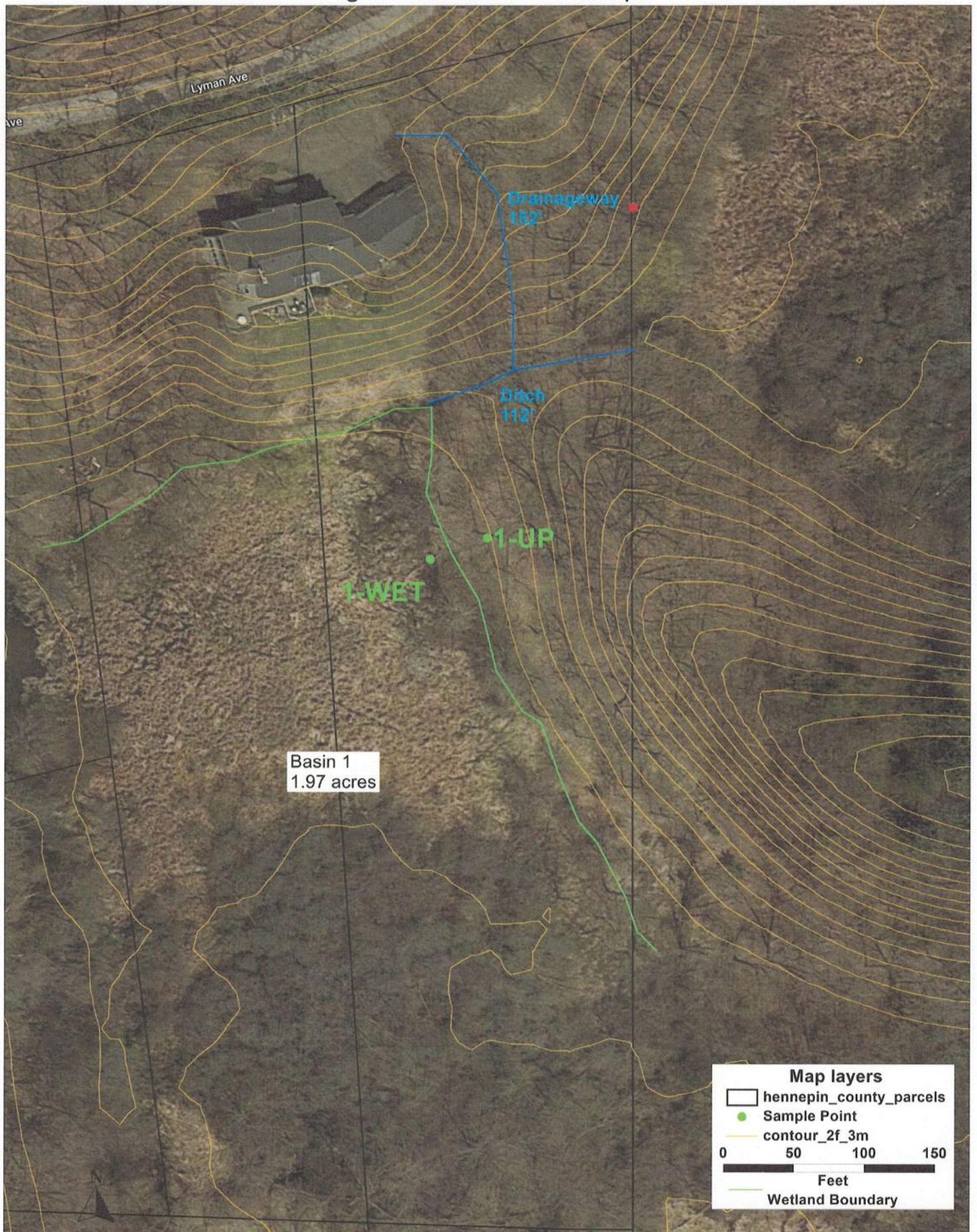
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
L41C2	Lester-Kilkenny complex, 6 to 10 percent slopes, moderately eroded	0.7	10.9%
L41E	Lester-Kilkenny complex, 16 to 22 percent slopes	2.9	48.2%
L50A	Muskego and Houghton soils, 0 to 1 percent slopes	2.4	40.9%
Totals for Area of Interest		6.0	100.0%

Figure 4 PWI Map



Figure 5 Delineation Map





Hennepin County Natural Resources Map

Date: 4/7/2020

Legend

2 Foot Elevation Contours

— Index

— Intermediate



PID: 0211723210006
Address: 1235 LYMAN AVE,
ORONO
Owner Name: WILLIAM J PAUL
HOUSTON ET AL
Acres: 1.46

Comments:
Figure 6 Site Map

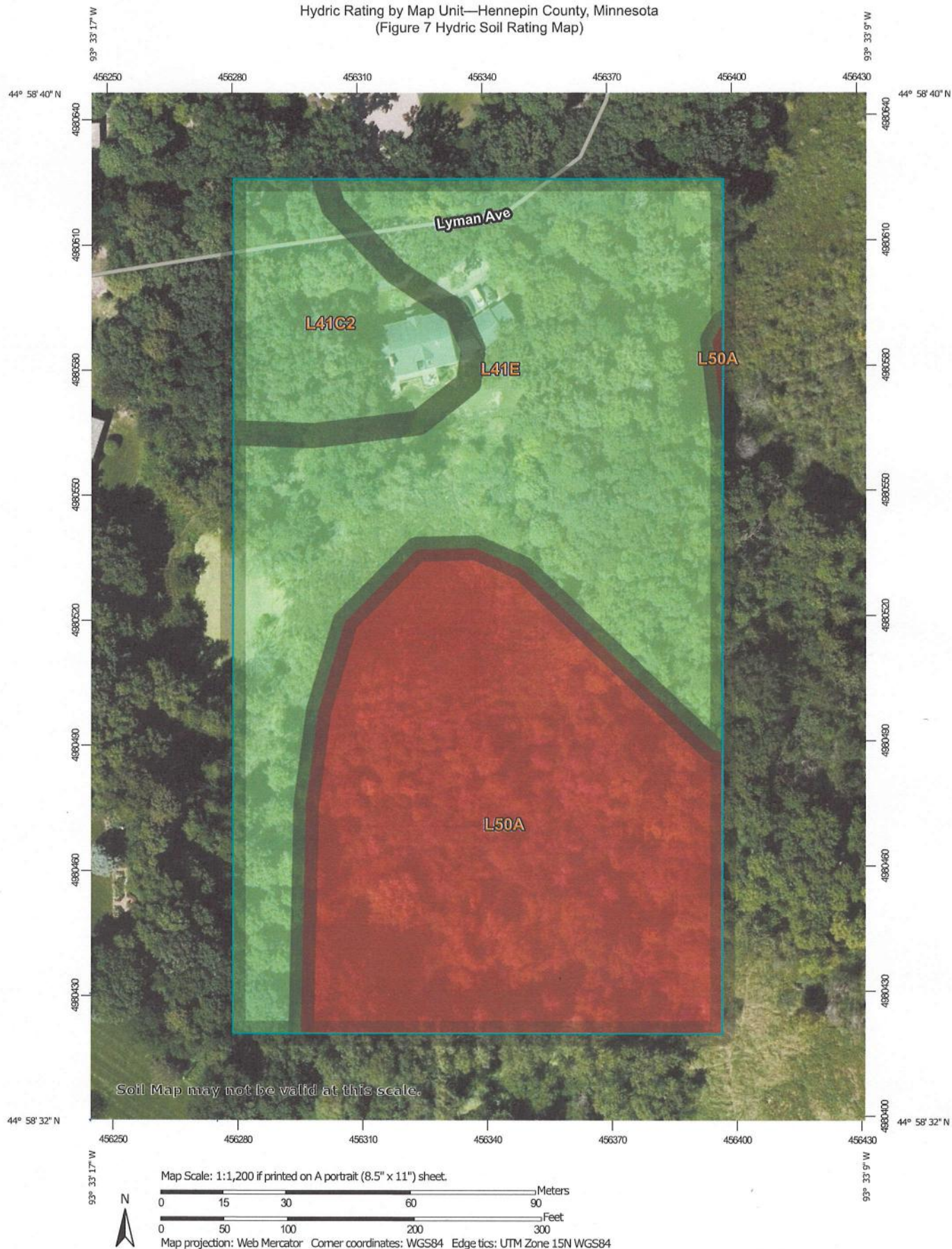
1 inch = 200 feet



This data (i) is furnished 'AS IS' with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this data.

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Hydric Rating by Map Unit—Hennepin County, Minnesota (Figure 7 Hydric Soil Rating Map)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

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Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
L41C2	Lester-Kilkenny complex, 6 to 10 percent slopes, moderately eroded	5	0.7	10.9%
L41E	Lester-Kilkenny complex, 16 to 22 percent slopes	5	2.9	48.2%
L50A	Muskego and Houghton soils, 0 to 1 percent slopes	100	2.4	40.9%
Totals for Area of Interest			6.0	100.0%

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Appendix A
Antecedent Precipitation Data

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

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Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: **Hennepin** township number: **117N**
township name: **Excelsior** range number: **23W**
nearest community: **Long Lake** section number: **2**

Aerial photograph or site visit date:

Tuesday, April 28, 2020

Score using 1981-2010 normal period


values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: March 2020	second prior month: February 2020	third prior month: January 2020
estimated precipitation total for this location:	2.88	0.59	0.78
there is a 30% chance this location will have less than:	1.24	0.40	0.49
there is a 30% chance this location will have more than:	1.97	0.88	1.09
type of month: dry normal wet	Wet	Normal	Normal
monthly score	3x3=9	2x2=4	1x2=2
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)			
15 = wet			

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

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Nearest Station Precipitation Data Retrieval

Minnesota's [precipitation data archive](#) is searched for data closest to a selected target location for each month. Values from the site closest to the target location are returned below after clicking the **retrieve monthly data** or **retrieve daily data** buttons. The precipitation data are made up of measured rainfall and the measured liquid content of snowfall.

Temperature, snowfall, and snow depth data from National Weather Service reporting stations are no longer retrieved from this application. To obtain those data, see our newest [data retrieval tool](#) (May 2014). National Weather Service precipitation data continue to be available from this application.

[Obtaining data for legal purposes](#)

[Guide for column headers in the data table](#)

target location: Hennepin-Excelsior-Long Lake 117N 23W S2 (latitude: 44.97102 longitude: 93.55357)

years: to

number of **missing days** allowed per month:

results:

```
Target: T117 R23 S2
mon year cc tttN rrw ss nnnn oooooooo pre (inches) dis
Jan 2020 10 116N 23W 15 NWS CHAN_NWS .78 7 mi.
Feb 2020 10 116N 23W 15 NWS CHAN_NWS .59 7 mi.
Mar 2020 10 116N 23W 15 NWS CHAN_NWS 2.88 7 mi.
Apr 2020 10 116N 23W 15 NWS CHAN_NWS 2.96 7 mi.
May 2020 m 999 mi.
Jun 2020 m 999 mi.
Jul 2020 m 999 mi.
Aug 2020 m 999 mi.
Sep 2020 m 999 mi.
Oct 2020 m 999 mi.
Nov 2020 m 999 mi.
Dec 2020 m 999 mi.
```

Where indicated: Missing values are shown as 'm'. Days on which precip accumulated in the gage are shown as '-'. 'TTTT RR SS' is the 'public land survey(PLS)' or 'legal' location of the observed data. Section values greater 36 are SECTIC 'TIC' locations plus 100. 'NWS ID' the National Weather Service Cooperative station number. Note that the 'PLS' will always be correct for precipitation data while the 'NWS ID' will always be correct for the temperature data. If no PLS info is supplied the the 'NWS ID' number applies to all shown data.

State Climatology Office - MnDNR - Ecological and Water Resources

Appendix B

Sample Data Sheets

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site 1235 Lyman Ave City/County: Orono/Hennepin Sampling Date: 4/28/20
 Applicant/Owner: William J Paul Houston State: Minnesota Sampling Point: 1-UP
 Investigator(s): WEJ, ACM Section, Township, Range: Sec. 2, T117N, R23W
 Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): linear
 Slope (%): 4 Lat: Long: Datum:
 Soil Map Unit Name Lester-Kilkenny complex NWI Classification:

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? present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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

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

Antecedent precipitation data indicate wetter than normal conditions. See Appendix A.

VEGETATION -- Use scientific names of plants.

Tree Stratum	(Plot size: 30' radius)	Absolute % Cover	Dominant Species	Indicator Status
1	<i>Fraxinus pennsylvanica</i>	10	Y	FACW
2	<i>Quercus rubra</i>	10	Y	FACU
3	<i>Tilia americana</i>	7	Y	FACU
4	<i>Acer Saccharum</i>	5	N	FACU
5	<i>Celtis occidentalis</i>	2	N	FAC
		34	= Total Cover	
Sapling/Shrub stratum	(Plot size: 15' radius)			
1	<i>Rhamnus cathartica</i>	15	Y	FAC
2				
3				
4				
5				
		15	= Total Cover	
Herb stratum	(Plot size: 5' radius)			
1	<i>Rhamnus cathartica</i>	5	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	
Woody vine stratum	(Plot size: 30' radius)			
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 22 x 3 = 66
 FACU species 22 x 4 = 88
 UPL species 0 x 5 = 0
 Column totals 54 (A) 174 (B)
 Prevalence Index = B/A = 3.22

Hydrophytic Vegetation Indicators:

Rapid test for hydrophytic vegetation
X Dominance test is >50%
Prevalence index is ≤3.0*
 Morphological 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: 1-UP

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-20	10YR2/1	100					clay loam	
20-24	10YR4/2	98	7.5YR4/6	2	C	PL	sandy 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 wetland 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 ☒ Depth (inches): -
 Water table present? Yes ☐ No ☒ Depth (inches): >24
 Saturation present? Yes ☐ No ☒ Depth (inches): >24
 (includes capillary fringe)

Indicators of wetland hydrology present? N

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

Remarks:

According to the antecedent precipitation data, the period was wetter than normal.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site 1235 Lyman Ave City/County: Orono/Hennepin Sampling Date: 4/28/20
 Applicant/Owner: William J Paul Houston State: Minnesota Sampling Point: 1-WET
 Investigator(s): WEJ, ACM Section, Township, Range: Sec. 2, T117N, R23W
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave
 Slope (%): 1 Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name Muskego and Houghton soils VWI Classification: PEM1C/FO1A

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?	<u>Y</u>	Is the sampled area within a wetland? <u>Y</u> If yes, optional wetland site ID: _____
Hydric soil present?	<u>Y</u>	
Indicators of wetland hydrology present?	<u>Y</u>	

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

Antecedent precipitation data indicate wetter than normal conditions. See Appendix A.

VEGETATION -- Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		<u>0</u>	= Total Cover	
Sapling/Shrub stratum	(Plot size: <u>15' radius</u>)			
1	<u>Cornus alba</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
2	<u>Fraxinus pennsylvanica</u>	<u>3</u>	<u>Y</u>	<u>FACW</u>
3				
4				
5				
		<u>13</u>	= Total Cover	
Herb stratum	(Plot size: <u>5' radius</u>)			
1	<u>Carex lacustris</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>
2	<u>Phalaris arundinacea</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
3	<u>Impatiens capensis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
4	<u>Typha angustifolia</u>	<u>5</u>	<u>N</u>	<u>OBL</u>
5				
6				
7				
8				
9				
10				
		<u>50</u>	= Total Cover	
Woody vine stratum	(Plot size: <u>30' radius</u>)			
1				
2				
		<u>0</u>	= 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 30 x 1 = 30
 FACW species 33 x 2 = 66
 FAC species 0 x 3 = 0
 FACU species 0 x 4 = 0
 UPL species 0 x 5 = 0
 Column totals 63 (A) 96 (B)
 Prevalence Index = B/A = 1.52

Hydrophytic Vegetation Indicators:

Rapid test for hydrophytic vegetation

X Dominance test is >50%

X Prevalence index is ≤3.0*

Morphological 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: 1-WET

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-16	10YR2/1	100					muck	

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

Hydric Soil Indicators:

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

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 wetland 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 X No _____ Depth (inches): 0.5
 Water table present? Yes X No _____ Depth (inches): +0.5
 Saturation present? Yes X No _____ Depth (inches): +0.5
 (includes capillary fringe)

Indicators of wetland hydrology present? Y

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

Remarks:

According to the antecedent precipitation data, the period was wetter than normal.

Appendix C
Site Photographs



Basin 1



1-UP



1-WET



Ditch facing East

Appendix D

Wetland Type and Boundary Approval Forms

PART ONE: Applicant Information

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

Applicant/Landowner Name: William J Paul Houston

Mailing Address: 1235 Lyman Ave Orono, MN 55391

Phone:

E-mail Address:

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

Mailing Address:

Phone: 952-738-2463

E-mail Address: ekvam@outdoorexperiences.com

Agent Name: Wayne Jacobson, WDC, PSS Jacobson Environmental

Mailing Address: 5821 Humboldt Ave N Brooklyn Center, MN 55430

Phone: 612-802-6619

E-mail Address: jacobsonenv@msn.com

PART TWO: Site Location Information

County: Hennepin

City/Township: Orono

Parcel ID and/or Address: 02-117-23-21-0005, 02-117-23-21-0006 1235 Lyman Ave Orono, MN 55391

Legal Description (Section, Township, Range): Section 2, T117N, R23W

Lat/Long (decimal degrees):

Attach a map showing the location of the site in relation to local streets, roads, highways.

Approximate size of site (acres) or if a linear project, length (feet): 3.51 acres total

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

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

PART THREE: General Project/Site Information

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

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

PART FOUR: Aquatic Resource Impact¹ Summary

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

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

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

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

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

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

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

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

PART FIVE: Applicant Signature

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

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

Signature: _____ Date: _____

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

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

Attachment A

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

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

☒ **Wetland Type Confirmation**

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

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

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

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

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