

WETLAND DELINEATION REPORT (V.2)

Toll Brothers Concordia - City of Ann Arbor

38.70-acre Earhart Road Property



NISWANDER
ENVIRONMENTAL

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I.	Introduction and Methods	1
II.	Methods	1
III.	Available Mapping and Data	2
	A. USGS Topographic Map.....	2
	B. National Wetland Inventory.....	2
	C. USDA NRCS Soils Map.....	3
IV.	Results	3
	A. Wetlands and Streams.....	3
V.	Regulatory Considerations and Conclusions	5
	A. Wetland Regulations by the State of Michigan.....	5
	B. Inland Lakes and Streams Regulations by the State of Michigan.....	5
	C. Local Regulations.....	6
VI.	Findings and Recommendations	6
VII.	References	7

List of Tables

Table 1.	NRCS Soils Map Units.....	3
Table 2.	Wetland Delineation Data: Wetland Type & Regulatory Status.....	4

Appendices

Appendix A: Site Mapping

- Figure 1. Site Location Map
- Figure 2. USGS Topographic Map
- Figure 3. National Wetlands Inventory Map
- Figure 4. NRCS Soils Map
- Figure 5. Wetland Location Map

Appendix B: Photographic Log

Appendix C: Wetland Data Forms

I. INTRODUCTION

On September 22, 2020, Niswander Environmental conducted a wetland delineation on a 38.70 acre vacant parcel (Property) located on the east side of Earhart Road, north of Geddes Road in Section 10 of the City of Ann Arbor (T03N, R05E), Washtenaw County, Michigan (Site Location Map, **Appendix A**).

Our on-site assessment identified two wetlands adjacent to a stream channel on the Property (Wetland Location Map, **Appendix A**). It is Niswander Environmental's professional opinion that all wetlands and streams on the Property will be regulated by the Michigan Department of Environment, Great Lakes and Energy (EGLE), formerly known as the Michigan Department of Environmental Quality (MDEQ) under the authority of Part 301, Inland Lakes and Streams, and Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, PA 451 of 1994, as amended (NREPA).

II. METHODS

Potential wetland areas were evaluated in the field using the procedures outlined in the US Army Corps of Engineers *1987 Wetland Delineation Manual* ("87 Manual"), and the Midwest Regional Supplement to the "87 Manual" as required by the Michigan Department of Environment, Great Lakes and Energy, under NREPA. According to these procedures, wetlands are identified by the presence of hydric soils, signs of hydrology indicators, and dominant hydrophytic vegetation.

Hydric soil indicators are assessed in the field through soil pits that are dug in and around potential wetland areas. The Natural Resource Conservation Service (NRCS) defines a hydric soil as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. To assist in field identification of hydric soils, the NRCS developed the *Field Indicators of Hydric Soils in the United States* (Version 8.2, 2018), which specifies parameters such as soil matrix color, amount and contrast of redox concentrations or depletions, and depth and thickness for a specific soil type such as loamy, clayey, or sandy soils.

Signs of hydrology within potential wetland areas are also investigated. Standing water or saturated soils, water marks on trees, drift lines, sediment deposits, and water-stained leaves (among others) are examples of primary indicators of hydrology, while secondary indicators include drainage patterns, moss trim lines, crayfish burrows, and surface soil cracks. Either one primary or two secondary indicators are necessary in determining the presence of wetland hydrology.

Dominant vegetation for wetland areas is determined by estimating the percent cover for all species in the tree, shrub, forb, and vine strata. Based on using the percent cover and the "50/20 rule" as defined in the "87 Manual", dominant species are determined for each stratum. The U.S. Army Corps of Engineers (USACE) *National Wetland Plant List* (<http://rsgisias.crrel.usace.army.mil/NWPL/>) has assigned every species that occurs in wetland an

indicator status as to the likelihood that it will occur in wetland areas. These indicator statuses are obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU) and/or upland (UPL). Those species with ratings of FAC, FACW, and OBL are considered to be hydrophytes (most likely to occur in wetland environments). Wetland vegetation is confirmed when, under normal circumstances, more than 50 percent of the dominant species from all strata are FAC, FACW, and/or OBL. An area has non-hydrophytic (non-wetland) vegetation when 50 percent or more of the dominant species from all strata are rated as FACU and/or UPL. Areas that meet the three criteria of hydric soils, wetland hydrology, and hydrophytic vegetation are considered wetlands. There are certain cases where only two of the criteria are required to be met (for more explanation, see Chapter 5, Difficult Wetland Situations, of the Midwest Regional Supplement).

During an on-site delineation, the boundary of the wetland is identified by verifying the presence/absence of the three criteria and marking this boundary with pink Wetland Delineation flagging labeled using an alpha-numbering system (A1, A2, A3, etc.).

Under Part 303 (Wetlands Protection) of NREPA, wetlands are regulated if they are greater than 5 acres in size or if they are connected to or within 500 feet of an inland lake, pond, river, drain, or stream (*i.e.*, watercourse), within 1,000 feet of a Great Lake or determined to be of significant natural resource value to the State. Watercourses are regulated by the State under Part 301 (Inland Lakes and Streams) of NREPA if they exhibit defined banks, a bed, and visible evidence of a continued flow or continued occurrence of water. EGLE has the final authority on the regulatory status of wetlands and watercourses in the State of Michigan.

III. AVAILABLE MAPPING & DATA

USGS Topographic Map

The U.S. Geological Survey (USGS) Quadrangle (USGS 1983) indicates that elevations within the Property range from approximately 810 to 890 feet mean sea level (**Appendix A** USGS Topographic Map). The topographic maps do not depict wetlands or streams intersecting or adjacent to the Review Area. USGS topographic maps typically show only the more distinct wetland and water features and should be utilized for preliminary analysis only. Field mapping is necessary to determine the actual existence, type, and boundaries of wetlands and water features.

National Wetland Inventory

The U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, a national wetland mapping program, was reviewed prior to the site inspection (**Appendix A** NWI Map). The NWI map depicts forested wetland on the Property. However, since NWI maps are remotely compiled from aerial photography, they may not show all wetlands in a given area, nor accurately characterize all wetlands shown. These maps should be used only for preliminary analysis and field mapping is necessary to determine the on the ground presence, type, and boundaries of wetlands.

NRCS Soils Map

The USDA-NRCS Soil Survey was reviewed prior to the site inspection. Seven soil map units, Boyer loamy sand (BnC), Fox sandy loam (FoB), Spinks loamy sand (SpC), Wasepi sandy loam (WaA), and Wawasee loams (WawabB, WawabC, & WawabD) are mapped on the Property (**Appendix A** NRCS Soil Map; Table 1). No soils on the Property are listed as hydric soils by the USDA-NRCS. A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA-NRCS 2017). Hydric soils are one of three diagnostic criteria used to determine whether or not an area is a wetland. Field soil analysis is necessary to accurately identify hydric soil conditions.

Table 1. NRCS Soils Map Units

Soil Unit Symbol	Soil Unit Name	Drainage Class	Hydric Rating
BnC	Boyer loamy sand, 6 to 12 percent slopes	Well drained	No
FoB	Fox sandy loam, till plain, 2 to 6 percent slopes	Well drained	No
SpC	Spinks loamy sand, 6 to 12 percent slopes	Well drained	No
WaA	Wasepi sandy loam, 0 to 4 percent slopes	Somewhat poorly drained	No
WawabB	Wawasee loam, 2 to 6 percent slopes	Well drained	No
WawabC	Wawasee loam, 6 to 12 percent slopes	Well drained	No
WawabD	Wawasee loam, 12 to 18 percent slopes	Well drained	No

IV. RESULTS

Wetlands & Streams

Wetlands are defined, in pertinent part, by Part 303 of NREPA as: "...land characterized by the presence of water at a frequency and duration sufficient to support and that under normal circumstances does support wetland vegetation or aquatic life and is commonly referred to as a bog, swamp, or marsh..."

The on-site assessment identified two wetlands containing a stream (Wetlands A/D & B/C) on the Property. The wetland and stream locations are depicted in Figure 5. Wetland Location Map provided in **Appendix A**.

Site Photographs depicting conditions at the time of the site investigation are provided in **Appendix B** and Wetland Data Forms are provided in **Appendix C**. The flagged wetland boundaries shown in Figure 5 was GPS located in the field using a sub meter Arrow 100 GPS unit.

Wetland A/D (flags A1-A27 and D1-D35)

Wetland A/D (1.40 acres on-site) is a forested/scrub shrub wetland associated with an un-named stream that occurs on the southern edge of the property and continues east/west beyond the limits of the survey area. Wetland A/D and Wetland B/C are directly connected via the stream channel. Wetland A/D contains the following species: American elm (*Ulmus americana*), silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), cottonwood (*Populus deltoides*) and glossy buckthorn (*Frangula alnus*). It is Niswander Environmental’s professional opinion that the EGLE would regulate Wetland A/D since it is directly connected to the un-named stream.

Wetland B/C (flags B1-B6 and C1-C6)

Wetland B/C (0.07 acres on-site) is a stream channel that occurs on the southern edge of the property and continues east/west beyond the limits of the survey area. Wetland A/D and Wetland B/C are directly connected via the stream channel. It is Niswander Environmental’s professional opinion that the EGLE would regulate Wetland B/C as a stream channel.

Table 2. Wetland Delineation Data: Wetland Type & Regulatory Status

Wetland ID	Wetland Flags	Wetland Type	State Regulated?
WETLAND A/D	A1-A27, D1-D35	Forested/Scrub Shrub/Stream	Regulated
WETLAND B/C	B1-B-6, C1-C6	Stream	Regulated

Stream

An existing stream was observed on the Property flowing through both identified wetlands. Based on our review, the stream showed evidence defined banks and bed, and visible evidence of a continued flow or continued occurrence of water. The stream enters the site from Earhart Road and flows south along the southern property boundary. The stream appears to have been impounded by two existing concrete weir structures located at the southern end of the Property. After it exits the impoundment, the stream flows offsite to the south and ultimately to the Huron River.

Upland Areas

Non-wetland areas were documented on most of the area of investigation. The vegetation in the upland areas was dominated by red pine (*Pinus resinosa*), black cherry (*Prunus serotina*), cottonwood (*Populus deltoides*), autumn olive (*Elaeagnus umbellata*), poison ivy (*Toxicodendron radicans*) and Virginia creeper (*Parthenocissus quinquefolia*).

V. REGULATORY CONSIDERATIONS

Wetland Regulations by the State of Michigan

Wetlands are protected under Part 303 Wetland Protection, of P.A. 451 of 1994, the Natural Resources and Environmental Protection Act (NREPA, as amended). In summary, EGLE assumes authority over wetlands that are 5 acres or greater in area; contiguous (directly adjacent to) to an inland lake, pond, or stream; within 500 feet or directly connected to an inland lake, pond, or stream; or within 1,000 feet or directly connected to a Great Lake, Lake Saint Clair, Saint Mary's River, Saint Clair River, or Detroit River.

In accordance with Part 303, wetlands are regulated if they are any of the following:

"Wetland" means a land or water feature, commonly referred to as a bog, swamp, or marsh, inundated or saturated by water at a frequency and duration sufficient to support, and that under normal circumstances does support, hydric soils and a predominance of wetland vegetation or aquatic life. A land or water feature is not a wetland unless it meets any of the following:

- (i) Is a water of the United States as that term is used in section 502(7) of the federal water pollution control act, 33 USC 1362.
- (ii) Is contiguous to the Great Lakes, Lake St. Clair, an inland lake or pond, or a stream. As used in this subparagraph, "pond" does not include a farm or stock pond constructed consistent with the exemption under section 30305(2)(g).
- (iii) Is more than 5 acres in size.
- (iv) Has the documented presence of an endangered or threatened species under part 365 or the endangered species act of 1973, Public Law 93-205.
- (v) Is a rare and imperiled wetland.

The following activities are prohibited within regulated wetlands without an EGLE permit:

- Deposit or permit the placing of fill material in a wetland.
- Dredge, remove, or permit the removal of soil or minerals from a wetland.
- Construct, operate, or maintain any use or development in a wetland.
- Drain surface water from a wetland.

Inland Lakes and Streams Regulation by the State of Michigan

Inland lakes and streams are protected under Part 301 Inland Lakes and Streams, of the NREPA. The EGLE assumes authority over natural or artificial inland lakes that are greater than five acres in size, and natural or created streams that have definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water.

The following activities are prohibited within regulated inland lakes and streams without an EGLE permit:

- Dredging or filling bottomland;
- Constructing, enlarging, extending, removing, or placing a structure on bottomland;
- Erecting, maintaining, or operating a marina;



- Creating, enlarging, or diminishing an inland lake or stream;
- Structurally interfering with the natural flow of an inland lake or stream;
- Constructing, dredging, commencing, extending or enlarging an artificial canal, channel, ditch, lagoon, pond, lake, or similar waterway where the purpose is ultimate connection with an existing inland lake or stream, or where any part of the artificial waterway is located within 500 feet of the ordinary high water mark of an existing inland lake or stream;
- Connecting any natural or artificially constructed waterway, canal, channel, ditch, lagoon, pond, lake or similar water with an existing inland lake or stream for navigation or any other purpose.

Local Regulations

City of Ann Arbor

According to the EGLE Website, the City of Ann Arbor has a local wetland ordinance. We recommend the client contact the City to see if they have any other natural features ordinances that should be considered during site planning.

VI. FINDINGS AND RECOMMENDATIONS

Niswander Environmental identified two (2) wetlands containing a stream on the Property that are connected along the southern edge of the survey area, see Figure 5. Wetland Location Map. **It is Niswander Environmental's professional opinion that all the wetlands and streams on the property will be regulated by EGLE.** Please note that the EGLE has the final authority of the location and regulatory status of wetlands in the state of Michigan. Should you wish to have EGLE review the wetland boundaries and regulatory determinations, we recommend the Level 3 review under the EGLE Wetland Identification Program (WIP). If impacts are anticipated to any of the wetlands on the site, it may be beneficial to have an EGLE Pre-application meeting to get the regulatory agency familiar with the project and to get feedback prior to submitting any permit applications for work in wetlands, lakes, or streams. An EGLE permit may be required for any proposed work (*e.g.*, filling, dredging, construction, draining, discharging storm water, and/or other wetland development) that takes place within the boundaries of a regulated wetland.

We look forward to working with you to make this project a success. If you have any questions or require additional information, please call us at your convenience.

Sincerely,

Todd Losee
Project Manager/Ecologist
Professional Wetland Scientist #1733

Drew Walterhouse
Ecologist
Professional Wetland Scientist #3004

VII. REFERENCES

- Environmental Laboratory, 1987 Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, United States Army Engineer Waterways Experiment Station, Vicksburg, MS.
- 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. Published 28 April 2016. ISSN 2153 733X.
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- USDA-NRCS. 2018. "Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 8.2, 2018." Edited by LM Vasilas, GW Hurt, and JF Berkowitz. US Dep. of Agriculture (USDA) - Natural Resources Conservation Service (NRCS). https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053171.pdf.
- U.S. Fish and Wildlife Service (USFWS). 2020. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. <http://www.fws.gov/nwi/>.



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APPENDIX A

SITE MAPPING

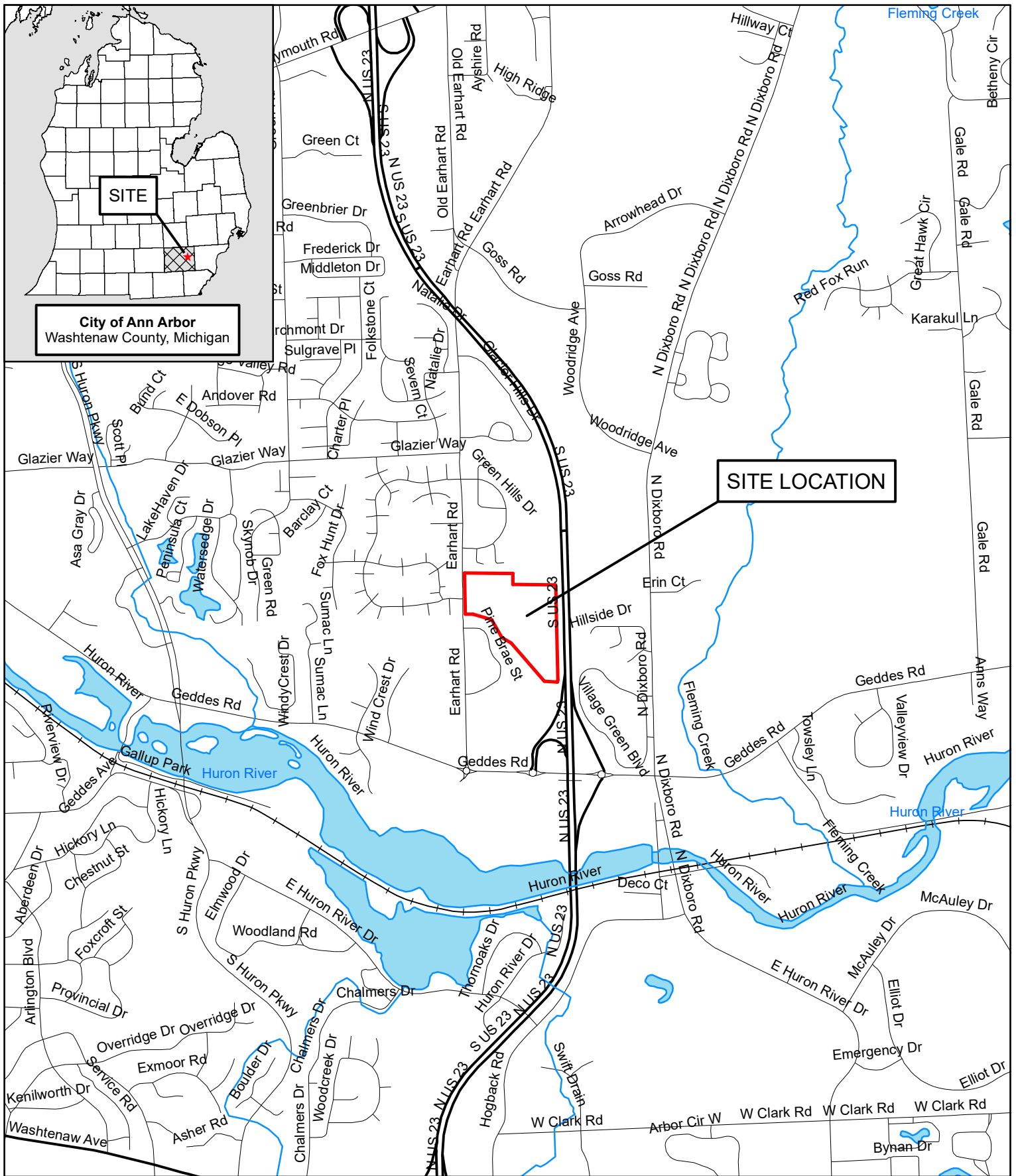


Figure 1. Site Location Map

Toll Brothers Concordia - City of Ann Arbor - Wetland Delineation
 38.70-acre Earhart Road Property
 Section 25 of the City of Ann Arbor, Washtenaw County,
 Michigan (T02S, R06E)
 Delineation Date: September 22, 2020
 Map Created: September 29, 2020




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Figure 2. USGS Topographic Map
 Toll Brothers Concordia - City of Ann Arbor - Wetland Delineation
 38.70-acre Earhart Road Property
 Section 25 of the City of Ann Arbor, Washtenaw County,
 Michigan (T02S, R06E)
 Delineation Date: September 22, 2020
 Map Created: September 29, 2020

0 500 1,000 2,000 Feet



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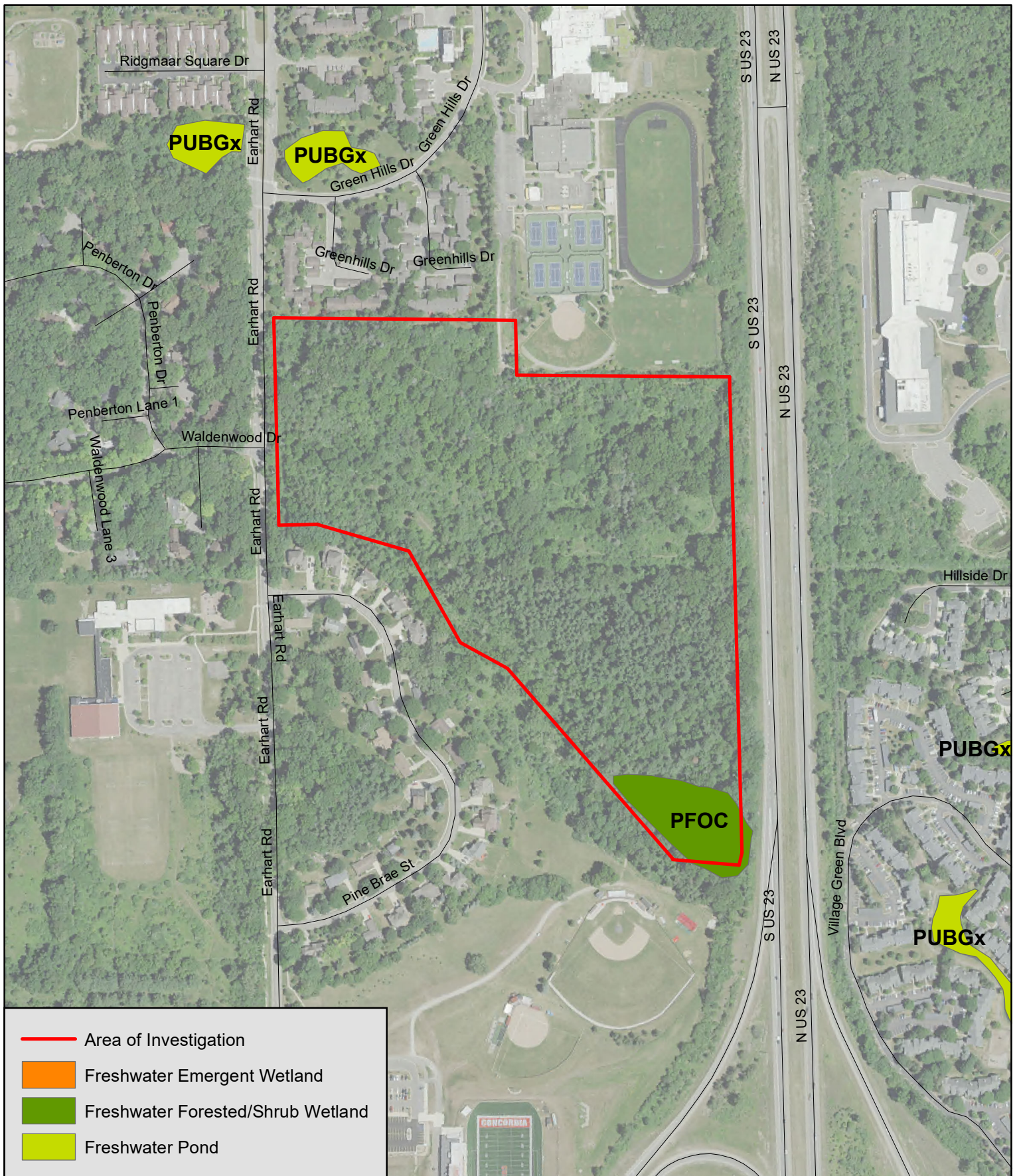


Figure 3. USFWS National Wetlands Inventory Map

Toll Brothers Concordia - City of Ann Arbor - Wetland Delineation

38.70-acre Earhart Road Property

Section 25 of the City of Ann Arbor, Washtenaw County, Michigan (T02S, R06E)

Delineation Date: September 22, 2020

Map Created: September 29, 2020

0 200 400 800 Feet



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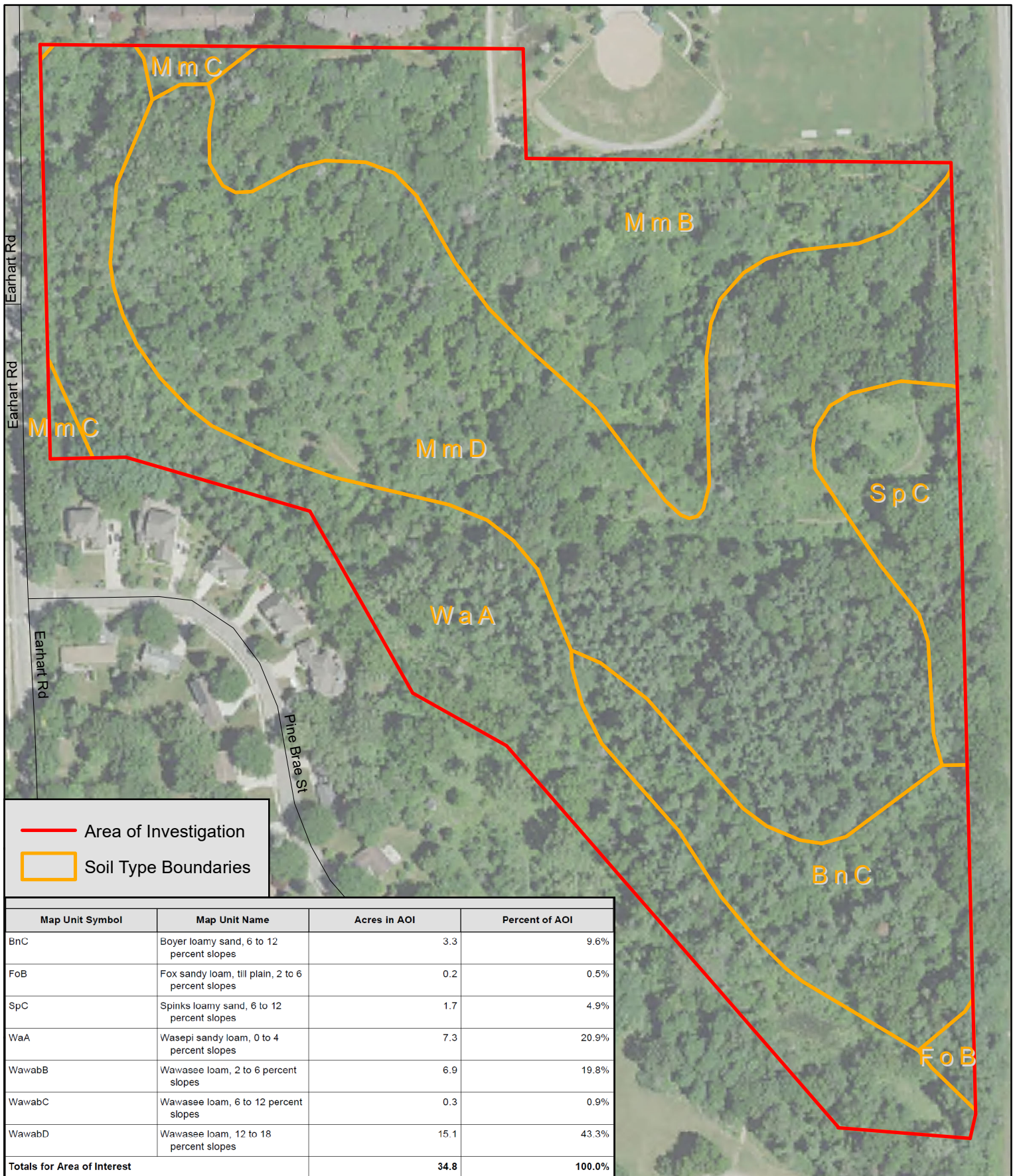


Figure 4. NRCS Soils Map

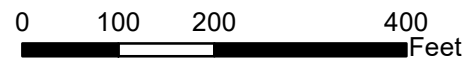
Toll Brothers Concordia - City of Ann Arbor - Wetland Delineation

38.70-acre Earhart Road Property

Section 25 of the City of Ann Arbor, Washtenaw County, Michigan (T02S, R06E)

Delineation Date: September 22, 2020

Map Created: September 29, 2020



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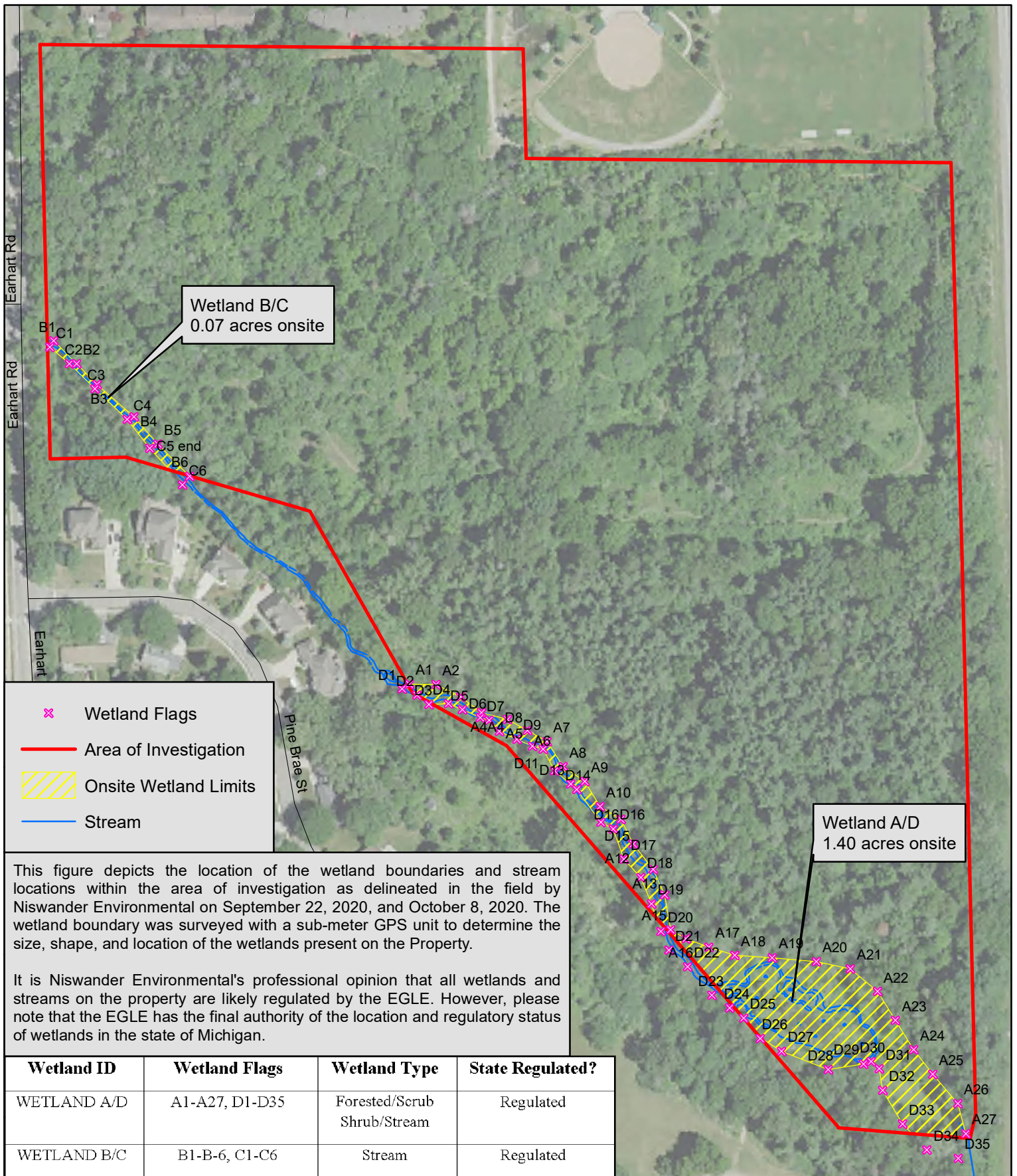


Figure 5. Wetland Location Map v.2

Toll Brothers Concordia - City of Ann Arbor - Wetland Delineation

38.70-acre Earhart Road Property

Section 25 of the City of Ann Arbor, Washtenaw County,
Michigan (T02S, R06E)

Delineation Date: September 22, 2020

Map Created: October 8, 2020

0 100 200 400 Feet



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APPENDIX B

PHOTOGRAPHIC LOG



Photographic Log
Photos Taken September 22, 2020



Photo 1
Wetland A/D facing south along the A/D line



Photo 2
Wetland B/C (stream channel) facing north west along B/C line



Photographic Log



Photo 3
View of upland area



Photo 4
View of upland area



Photographic Log



Photo 5

View of existing concrete weirs located at the southern end of the property



Photo 6

View of soil pit #1



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APPENDIX C

WETLAND DATA FORMS

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Toll Brothers – Concordia City/County: Ann Arbor/Washtenaw Sampling Date: 9/22/20
 Applicant/Owner: Toll Brothers, Inc. / Concordia University State: MI Sampling Point: SP1
 Investigator(s): DMW Section, Township, Range: Sec 25, T02S, R06E
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave
 Slope (%): 1 Lat: 42.27870 Long: -83.67758 Datum: WGS 84
 Soil Map Unit Name: Wasepi sandy loam, 0 to 4 percent slopes NWI classification: PFO

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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Ulmus americana</u>	10	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
10 =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Cornus amomum</u>	10	Yes	FACW	Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>75</u></td> <td style="text-align: center;">x 1 = <u>75</u></td> </tr> <tr> <td>FACW species <u>65</u></td> <td style="text-align: center;">x 2 = <u>130</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td style="text-align: center;">x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td style="text-align: center;">x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td style="text-align: center;">x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td style="text-align: center;"><u>205</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>1.46</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>75</u>	x 1 = <u>75</u>	FACW species <u>65</u>	x 2 = <u>130</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>140</u> (A)	<u>205</u> (B)	Prevalence Index = B/A = <u>1.46</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>75</u>	x 1 = <u>75</u>																			
FACW species <u>65</u>	x 2 = <u>130</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>140</u> (A)	<u>205</u> (B)																			
Prevalence Index = B/A = <u>1.46</u>																				
2. <u>Rhamnus frangula</u>	20	Yes	FACW																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
30 =Total Cover																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Lythrum salicaria</u>	30	Yes	OBL	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Impatiens capensis</u>	20	Yes	FACW																	
3. <u>Typha latifolia</u>	15	No	OBL																	
4. <u>Bidens frondosa</u>	5	No	FACW																	
5. <u>Leersia oryzoides</u>	30	Yes	OBL																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
100 =Total Cover																				
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
2. _____	_____	_____	_____																	
_____ =Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/1	80	7.5YR 5/6	20	C	PL	Mucky Sand	Prominent redox concentrations
3-14	10YR 2/1	95	7.5YR 5/6	5	C	M	Mucky Sand	Prominent redox concentrations

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:
 This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Toll Brothers – Concordia City/County: Ann Arbor/Washtenaw Sampling Date: 9/22/20
 Applicant/Owner: Toll Brothers, Inc. / Concordia University State: MI Sampling Point: SP2
 Investigator(s): DMW Section, Township, Range: Sec 25, T02S, R06E
 Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave
 Slope (%): 6 Lat: 42.27940 Long: -83.67763 Datum: WGS 84
 Soil Map Unit Name: Boyer loamy sand, 6 to 12 percent slopes 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 <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Juglans nigra</u>	20	Yes	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u> 0 </u> (A) Total Number of Dominant Species Across All Strata: <u> 6 </u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u> 0.0% </u> (A/B)																
2. <u>Prunus avium</u>	15	Yes	FACU																	
3. <u>Pinus resinosa</u>	5	No	FACU																	
4. <u>Quercus bicolor</u>	5	No	FACW																	
5. <u> </u>	45	=Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Lonicera X bella</u>	50	Yes	FACU	Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u> 0 </u></td> <td>x 1 = <u> 0 </u></td> </tr> <tr> <td>FACW species <u> 5 </u></td> <td>x 2 = <u> 10 </u></td> </tr> <tr> <td>FAC species <u> 0 </u></td> <td>x 3 = <u> 0 </u></td> </tr> <tr> <td>FACU species <u> 195 </u></td> <td>x 4 = <u> 780 </u></td> </tr> <tr> <td>UPL species <u> 0 </u></td> <td>x 5 = <u> 0 </u></td> </tr> <tr> <td>Column Totals: <u> 200 </u> (A)</td> <td><u> 790 </u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u> 3.95 </u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u> 0 </u>	x 1 = <u> 0 </u>	FACW species <u> 5 </u>	x 2 = <u> 10 </u>	FAC species <u> 0 </u>	x 3 = <u> 0 </u>	FACU species <u> 195 </u>	x 4 = <u> 780 </u>	UPL species <u> 0 </u>	x 5 = <u> 0 </u>	Column Totals: <u> 200 </u> (A)	<u> 790 </u> (B)	Prevalence Index = B/A = <u> 3.95 </u>	
Total % Cover of:	Multiply by:																			
OBL species <u> 0 </u>	x 1 = <u> 0 </u>																			
FACW species <u> 5 </u>	x 2 = <u> 10 </u>																			
FAC species <u> 0 </u>	x 3 = <u> 0 </u>																			
FACU species <u> 195 </u>	x 4 = <u> 780 </u>																			
UPL species <u> 0 </u>	x 5 = <u> 0 </u>																			
Column Totals: <u> 200 </u> (A)	<u> 790 </u> (B)																			
Prevalence Index = B/A = <u> 3.95 </u>																				
2. <u>Ligustrum vulgare</u>	10	No	FACU																	
3. <u> </u>																				
4. <u> </u>																				
5. <u> </u>	60	=Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Rubus allegheniensis</u>	70	Yes	FACU	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Parthenocissus quinquefolia</u>	20	Yes	FACU																	
3. <u> </u>																				
4. <u> </u>																				
5. <u> </u>																				
6. <u> </u>																				
7. <u> </u>																				
8. <u> </u>																				
9. <u> </u>																				
10. <u> </u>	90	=Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>Parthenocissus quinquefolia</u>	5	Yes	FACU	Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>																
2. <u> </u>																				
5. <u> </u>	5	=Total Cover																		

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

SOIL

Sampling Point: SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/3	100					Sandy	
4-14	10YR 5/3	100					Sandy	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils³:		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21)			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> Very Shallow Dark Surface (F22)			
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)				
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)				
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)				
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)				
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)				

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

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:
This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:		
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	
(includes capillary fringe)	

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

Remarks: