Wetland Delineation Report
Great Lakes Tech Park Project
Saginaw County, Michigan

November 13, 2024
ECT No. 240704

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List of Acronyms and Abbreviations

CWA	Clean Water Act
EGLE	Department of Environment, Great Lakes, and Energy
ECT	Environmental Consulting & Technology, Inc.
EPA	Environmental Protection Agency
FAC	Facultative
FACU	Facultative upland
FACW	Facultative wetland
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Map
GNSS	Global Navigation Satellite System
HUC	Hydrologic Unit Code
MIRIS	Michigan Resource Inventory System
MWI	Michigan Wetlands Inventory
NHD	National Hydrography Dataset
NRCS	Natural Resources Conservation Service
NREPA	Natural Resources and Environmental Protection Act
NWI	National Wetlands Inventory
OBL	Obligate wetland
OHWM	Ordinary high-water mark
SFHA	Special Flood Hazard Area
UPL	Obligate upland
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOTUS	Waters of the United States

1.0 Introduction

Saginaw Future Inc. (Saginaw Future) contracted Environmental Consulting & Technology, Inc. (ECT) to perform a wetland and surface water delineation for part of the Great Lakes Tech Park located northwest of the intersection of N Graham Road and Gratiot Road in Section 29, Thomas Township, Saginaw County, Michigan (Project Area). The Project Area consists of approximately 115 acres which includes all or parts of three parcels (28-12-3-29-1001-003, 28-12-3-29-1002-003, and 28-12-3-29-1002-002) and is situated within the Shiawassee River watershed (Hydrologic Unit Code 0408020304).

ECT conducted a field reconnaissance within the Project Area (**Appendix A: Figure 1**) on October 18, 2024, to identify, delineate, and characterize wetlands and waterbody features. The results of this delineation are shown on the *Delineation Map* (**Appendix A; Figure 7**). Antecedent precipitation was calculated based on methods described in Hydrology Tools for Wetland Determination. This method compares the precipitation of the three months before the delineation dates to the past 30 years of weather station data on a weighted scale. The antecedent precipitation determines whether delineations were performed in dry, normal, or wet conditions relative to the past 30 years of precipitation. The delineation completed on October 18, 2024, was preceded by a period of "Drier than Normal" conditions (**Appendix B**).

2.0 Methods & Data

Wetlands within the Project Area were delineated following the 1987 USACE Wetland Delineation Manual (Environmental Laboratory 1987) and Regional Supplement to the USACE Wetland Delineation Manual: Northcentral and Northeast Regional Guidelines (USACE 2012). The presence of wetlands is determined based on three parameters: the presence of hydrophytic vegetation (hydrophytes), hydric soils, and wetland hydrology. Wetland boundaries were flagged and located using a global navigation satellite system (GNSS) receiver capable of sub-meter accuracy. Wetland and upland data points were also located with the GNSS receiver. USACE wetland determination data forms were completed for each wetland and its corresponding upland point (**Appendix D**).

Vegetation was identified by leaves, bark, twigs, stems, and/or persistent remains from the preceding growing season. The wetland indicator status for vegetation noted during the evaluation was obtained from the USACE 2020 National Wetland Plant List (USACE 2020). The soil was evaluated by digging test pits and/or using a soil probe sufficient to document hydric soil indicators, up to 20 inches deep. Soil conditions were evaluated using criteria established by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Field Indicators of Hydric Soils in the United States (USDA-NRCS et al. 2018) and soil colors were evaluated using a Munsell® color chart. Hydrology was evaluated through direct observation of primary indicators (e.g., standing water and/or saturated soil) and indirectly through observation of secondary hydrology indications.

Potentially regulated streams were identified based on the presence of morphological features such as a defined bed and banks, the presence of ordinary high-water mark (OHWM), and evidence of water flow. Streams were separated into three flow regimes: perennial, intermittent, and ephemeral. Perennial streams are classified as having regular water flow that can be seen year-round. Intermittent streams flow during certain times of the year; however, during dry periods they may not have any flowing surface water. Ephemeral streams have brief water flow typically exhibited during periods of rainfall in the immediate vicinity. Streams were also mapped using the Arrow 100® GNSS receiver.

ECT reviewed background database information for potential wetland and surface water resource features before conducting field delineation. The following sections provide the results from available mapping and data.

2.1 Aerial Imagery

Aerial imagery of the Project Area was reviewed to identify past and current land use and potential wetlands and surface water resources. The aerial imagery review indicated that the Project Area consisted predominantly of agricultural land with a forested area in the northwest part (**Appendix A: Figure 1**). Land use in the vicinity of the Project Area consisted of a mix of light residential, agricultural, and commercial development. There has been little change in land use since at least 1993.

2.2 U.S. Geological Survey Topographic Review Map

The USGS Hemlock (2019) 7.5-minute quadrangle map depicts the elevation within the Project Area between 600 and 610 feet above mean sea level (**Appendix A: Figure 2**; USGS 2019a).

2.3 USDA-NRCS Soils Review

ECT reviewed the USDA-NRCS soil data for hydric soils that may be present within the Project Area. Hydric soils form under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil (USDA-NRCS et al. 2018). Hydric soil is one of the three parameters utilized to determine the presence of wetlands. USDA-NRCS soil data are useful for broad planning but cannot replace site-specific details, which require onsite investigation.

Two predominately hydric soils (Lenawee silty clay loam and Pella silt loam) are mapped within the Project Area and these soil units occupy 14.5% (16.73 acres) of the Project Area. One partially hydric soil (Pella-Frankenmuth complex) is mapped across 49.88% (57.55 acres) of the Project Area. **Appendix A: Figure 5** presents a soil map showing mapped soil units within the Project Area.

2.4 National Wetlands Inventory, National Hydrography Dataset Review, and Michigan Wetland Inventory Review

ECT reviewed the National Wetland Inventory (NWI), National Hydrography Dataset (NHD), and Michigan Wetland Inventory (MWI) maps to determine the likely presence, location, size, and type of surface water resources that may be within the Project Area (USFWS 2024; USGS 2023; EGLE 2024). The United States Fish and Wildlife Service (USFWS) generates NWI maps through high-altitude imagery. MWI maps are produced by overlaying data from the NWI, land cover from the Michigan Department of Natural Resources' Michigan Resource Inventory System (MIRIS), and soils as mapped by USDA-NRCS. These maps were used for preliminary analysis only, as these maps may not accurately depict the extent or existence of wetland systems in a specific area, nor do these maps always correctly identify the types of wetlands present. On-site field mapping is required to determine the actual presence of wetlands and their types within the Project Area. The USGS has developed the NHD, which is a geospatial dataset that depicts surface water networks and hydrologic drainage areas, such as rivers, streams, and lakes based on available topographic maps. However, field verification is required to identify and map surface water as some topographic maps may not reflect the current topography of an area.

One NWI freshwater forested/shrub wetland is mapped in the northwest corner of the Project Area. No NHD features are mapped within the Project Area (**Appendix A: Figure 4**). The MWI map identified areas of hydric soil and mapped wetlands across the Project Area, with these mapped features dominating the western portion of the Project Area (**Appendix A: Figure 5**).

2.5 Floodplain Map

Flood hazard areas identified on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) are identified as Special Flood Hazard Areas (SFHA). SFHA is defined as the area that will be inundated by a flood event that has a one percent chance of being equaled or exceeded in any given year. The one percent annual chance flood is also referred to as the base flood or 100-year flood. Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are also shown on the FIRM and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded).

Based on ECT's review of FIRMs, there is no mapped floodplain within the Project Area (**Appendix A: Figure 6**; FEMA 2024).

3.0 Surface Water Resources

3.1 Wetlands

During the site reconnaissance, two wetlands (designated W1 and W2) totaling 8.01 acres were identified within the Project Area. The identified wetland is shown on the *Delineation Map* (**Appendix A: Figure 7**). Wetland W1 is regulated based on its size (over five acres) and Wetland W2 is regulated based on connection to a stream. The wetlands identified in the field had a predominance of hydrophytic vegetation, soils that exhibited hydric conditions, and observed hydrological characteristics. **Appendix C** presents representative photographs depicting conditions at the time of the site investigation. USACE Northcentral and Northeast Region wetland/upland data sheets are provided in **Appendix D**. **Table 1** provides details on the identified wetlands within the Project Area.

Wetland W1

Wetland W1 consists of seasonally saturated, forested habitat (west parts) that extends east into a farmed area where it becomes emergent (predominantly farmed) habitat associated with a broad and shallow drainageway. Surface water from the wetland flows into a catch basin at the east/southeast end of wetland W1. Vegetation in the forested areas was characterized by red maple (*Acre rubrum;* FAC), silver maple (*Acer saccharinum;* FACW), swamp white oak (*Quercus bicolor;* FACW), eastern cottonwood (*Populus deltoides;* FAC), American elm (*Ulmus americana;* FACW), American hornbeam (*Carpinus caroliniana;* FAC), fowl manna grass (*Glyceria striata;* OBL), small-spike false nettle (*Boehmeria cylindrica;* OBL) among other FAC to OBL species. Where present, vegetation in the emergent parts of the wetland was characterized by reed canary grass (*Phalaris arundinaceae*; FCAW), yellow bristle grass (*Setaria pumila;* FAC), and fall panic grass (*Panicum dichotomiflorum;* FACW). Farmed areas were most recently planted with corn (*Zea mays*; UPL), which had been harvested prior to the visit. Observation of remaining corn stubble indicated that corn present within the wetland appeared stressed compared to corn growing in adjacent uplands. In the farmed portion of the wetland, hydrophytic vegetation is presumed present under normal circumstances (i.e., if the areas were not planted with a managed crop and allowed to develop naturally).

Soils within wetland W1 met the hydric soil indicators for Depleted Matrix (F3) and/or Redox Dark Surface (F6). Visual indications of wetland hydrology observed during the site visit included water-stained leaves, oxidized rhizospheres on living roots, moss trim lines, drainage patterns, geomorphic position, microtopographic relief, and/or the FAC-neutral test.

Parts of Wetland W1 consisted of a mosaic pattern of wetland and non-wetland areas in a landscape characterized by pit-and-mound or cradle/knoll topography. This is particularly true near the outer limits of the delineated wetlands. Mosaic pattern wetlands are typically considered a difficult wetland situation in the Northcentral and Northeast Region. For Wetland W1, ECT delineated the outer limits of the wetland mosaic. Therefore, some areas within the delineated wetland boundaries may include uplands. ECT did not conduct a detailed assessment to determine the specific percentage of wetlands and uplands within areas of wetland/upland mosaic. However, cursory visual evaluation indicates the overall area of upland within delineated areas is low. If activities are planned in areas of mosaic pattern wetlands, additional assessment would be required to determine the specific area of wetlands within the affected areas.

Wetland W2

Wetland W2 consists of a seasonally saturated emergent wetland formed in a roadside ditch. Vegetation in the wetland was characterized by reed canary grass. Vegetation in the wetland is periodically mowed. Soils within the wetland met the hydric soil indicators for Depleted Matrix and/or Redox Dark Surface. Visual indications of wetland hydrology observed during the site visit included water-stained leaves, oxidized rhizospheres on living roots, drainage patterns, geomorphic position, shallow aquitard, and/or the FAC-neutral test.

Table 1. Delineated Wetland Summary Data

Wetland ID	Lat/Long	Predominant Wetland Type(s)[1]	Likely EGLE Regulatory Status	Potential Regulating Feature	Area within Project Area (Acres)
W1	43.42357898/ -84.14000896	PEM/ PFO	Regulated	Part of a wetland complex greater than five acres in size.	7.98
W2	43.41660092/ -84.14030674	PEM	Regulated	Direct surface water connection to a stream.	0.03

Source: (ECT 2024)
[1]Palustrine Emergent (PEM) and Palustrine Forested (PFO)

3.2 Streams

No streams were observed in the Project Area during the site visit.

3.3 Uplands

Uplands in the Project Area typically consisted of forested habit (west parts) and farmed areas. Vegetation in forested upland areas was characterized by red maple, American hornbeam witch hazel (*Hamamelis virginiana;* FACU), green ash (*Fraxinus pennsylvanica;* FACW), red oak (*Quercus rubra;* FACU), basswood (*Tilia americana;* FACU), and shagbark hickory (*Carya ovata;* FACU). Vegetation in farmed areas consisted of a managed crop, most recently planted with corn which had been harvested prior to the visit. Observation of remaining corn stubble indicated that corn present within the upland areas did not appear to be stressed due to the presence of water. Several catch basins were observed in the farmed areas, presumably tied into a private and/or municipal drainage system. Soil in uplands typically lacked indicators of hydric soil and/or wetland hydrology. However, soil in some upland areas, particularly in areas mapped as hydric soils by the NRCS, exhibited hydric soil indicators, particularly Depleted Matrix. This is not uncommon in areas that have been effectively drained for agricultural use.

4.0 Regulatory Considerations

4.1 Federal Regulations

Since 1984, the federal government has authorized the State of Michigan to administer the CWA Section 404 program within its borders, allowing them to regulate impacts on wetlands and waters of the United States (WOTUS). Because the program is administered by the State of Michigan, applicants for most wetland permits are required only to apply to the Michigan EGLE for approval under Part 303 of the NREPA, 1994, PA 451, as amended, currently in effect in Michigan (NREPA; State of Michigan 1994). However, there are exceptions where the USACE maintains jurisdiction within Michigan. In these areas, a separate permit must be received from both the USACE and EGLE. USACE jurisdiction over WOTUS is maintained under Section 10 of the federal Rivers and Harbors Act of 1899 (33 U.S.C. 403; Chapter 425, March 3, 1899; 30 Stat.1151):

- Traditionally navigable waters:
    - Great Lakes;
    - Connecting channels to the Great Lakes;
    - Waters connected to the Great Lakes where navigational conditions are maintained; and
- Wetlands that are directly adjacent to these waters.

Wetlands in the Project Area are not directly adjacent to a Great Lake or waters connected to the Great Lakes where navigational conditions are maintained.

4.2 State Regulations

In Michigan, wetlands, streams, and floodplains are regulated by EGLE in coordination with USACE and the EPA under NREPA. These agencies make permitting and compliance determinations regarding wetlands, streams, and floodplains in the State of Michigan, and have the final decision in matters of regulatory status. Under Section 404 of the CWA, WOTUS is regulated jointly by EGLE and USACE. USACE has regulatory authority over Section 10 Waters and Tribal Lands. The EPA oversees the State's 404 Program and will assist in permit review if the Project impacts exceed thresholds outlined in the EPA Memorandum of Understanding. The threshold of wetland impacts outlined in the EPA Memorandum of Understanding is one acre of wetland impact. Once a project triggers this

threshold, the permit application is sent to the EPA, USFWS, and USACE for review. Federal agencies are allowed to comment on the permit application and add their own permit conditions.
A permit is required for activities such as, but not limited to, the placement of fill, dredging of material, draining of surface water, or constructing a structure within a regulated wetland or stream. Wetlands are protected under Part 303, Wetland Protection, of the NREPA. EGLE assumes regulatory authority over wetlands that are five acres or greater in the total area; contiguous to (directly adjacent to, connected to) an inland lake, pond, or stream; within 500 feet of an inland lake, pond, or stream; or within 1,000 feet of a Great Lake, Lake Saint Clair, Saint Mary's River, Saint Clair River, or Detroit River.

EGLE may also exert regulatory control over isolated wetlands less than five acres in size "...if the department determines that protection of the area is essential to the preservation of the natural resources of the state from pollution, impairment, or destruction and the department has so notified the owner."

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

1. The placement of fill material;
2. Dredging;
3. Construction within; and/or
4. The draining of surface water from a wetland.

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

Under Part 31, Water Resources Protection, EGLE regulates the development, grading, fill, and cut of floodplains with a drainage area greater than two square miles. EGLE does not regulate floodplains of the Great Lakes. A person shall not alter a floodplain except as authorized by a floodplain permit issued by EGLE under NREPA, Part 13, Permits (all water resources permits are under Part 13). The purpose of Part 31 is to ensure that the flow-carrying capacity of a watercourse is not harmfully obstructed and that the floodway portion of the floodplain is not used for residential construction. There is no mapped 100 or 500-year floodplain within the Project Area.

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

1. Dredging or filling bottomland;
2. Constructing, enlarging, extending, removing, or placing a structure on the bottomland;
3. Erecting, maintaining, or operating a marina;
4. Creating, enlarging, or diminishing an inland lake or stream;
5. Structurally interfering with the natural flow of an inland lake or stream;
6. Constructing, dredging, commencing, extending, or enlarging an artificial canal, channel, ditch, lagoon, pond, lake, or similar waterway where the purpose is an 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; and
7. 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.

Per the above definitions and conditions observed during the delineation, ECT is of the opinion that both Wetlands W1 and W2 are likely regulated under NREPA Part 303 based on their overall size (Wetland W1) and/or connectivity to a stream and/or larger wetlands on or off-site (both wetlands). A permit is required from EGLE to excavate soil from, place fill in, or otherwise alter regulated wetlands on the Site.

5.0 Conclusion

ECT conducted a wetland and surface water assessment and delineation for the Project Area. Two wetlands totaling 8.01 acres were identified within the Project Area. ECT is of the opinion that both wetlands are likely regulated under Part 303. No streams were identified within the Project Area.

ECT's work was performed in general accordance with accepted procedures in conducting wetland assessments and delineations. ECT makes no representation for a period over which this delineation will remain valid, though a wetland determination or delineation performed or confirmed by EGLE is typically valid for a period of three years. Discrepancies may arise between current and future delineation of wetlands on the Site due to changes in land use, vegetation, and/or hydrology. No

warranties, implied or expressed, are made. ECT assumes no responsibility for reporting to federal, state, or local authorities or private parties, information disclosed by this, or future phases of work performed at this site.

6.0 References

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Common Aquatic Resource Definitions

100-year flood: A flood with a magnitude that has a 1% chance of occurring or being exceeded in any given year.

Ditch: a waterway excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

Ephemeral Streams: have flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round.

Floodplain: The area of land adjoining a river or steam that will be inundated by a 100-year flood.

Hydric soil: Soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (1991 National Technical Committee on Hydric Soils definition).

Hydrophytes: Plant species that grow in water or on a substrate that is at least periodically deficient in oxygen because of excessive water content; plants typically found in wet habitats.

Intermittent Streams: have water intermittently throughout the year when upstream waters or groundwater provides enough streamflow. They may not have flowing surface water during dry times of the year.

Palustrine Emergent Wetland (PEM): Vegetative classification of a wetland system based on the dominant vegetation, consisting of rooted herbaceous (non-woody) plant species that have parts extending above a water surface with at least 30% aerial coverage.

Palustrine Forested Wetland (PFO): Vegetative classification of a wetland system based on the dominant vegetation consisting of woody plants 3 inches in diameter or greater regardless of height with at least 30% aerial coverage.

Palustrine Scrub-Shrub Wetland (PSS): Vegetative classification of a wetland system based on the dominant vegetation consisting of woody plants less than 3 inches in diameter but greater than 3 ft but less than 20 ft in height OR where trees and shrubs combined have an aerial coverage no greater than 30%.

Perennial Streams: year-round streams typically have water year-round. Water comes from upstream tributaries or headwaters as well as precipitation.

Wetland: Defined by USACE as "…areas that are inundated or saturated by surface 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 saturated soil conditions."

Wetland hydrology: Hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season.

Wetland Indicator Status:

OBL: Obligate wetland plant that occurs almost always, 99% of the time, in wetlands under natural conditions, but which rarely occur in non-wetlands.

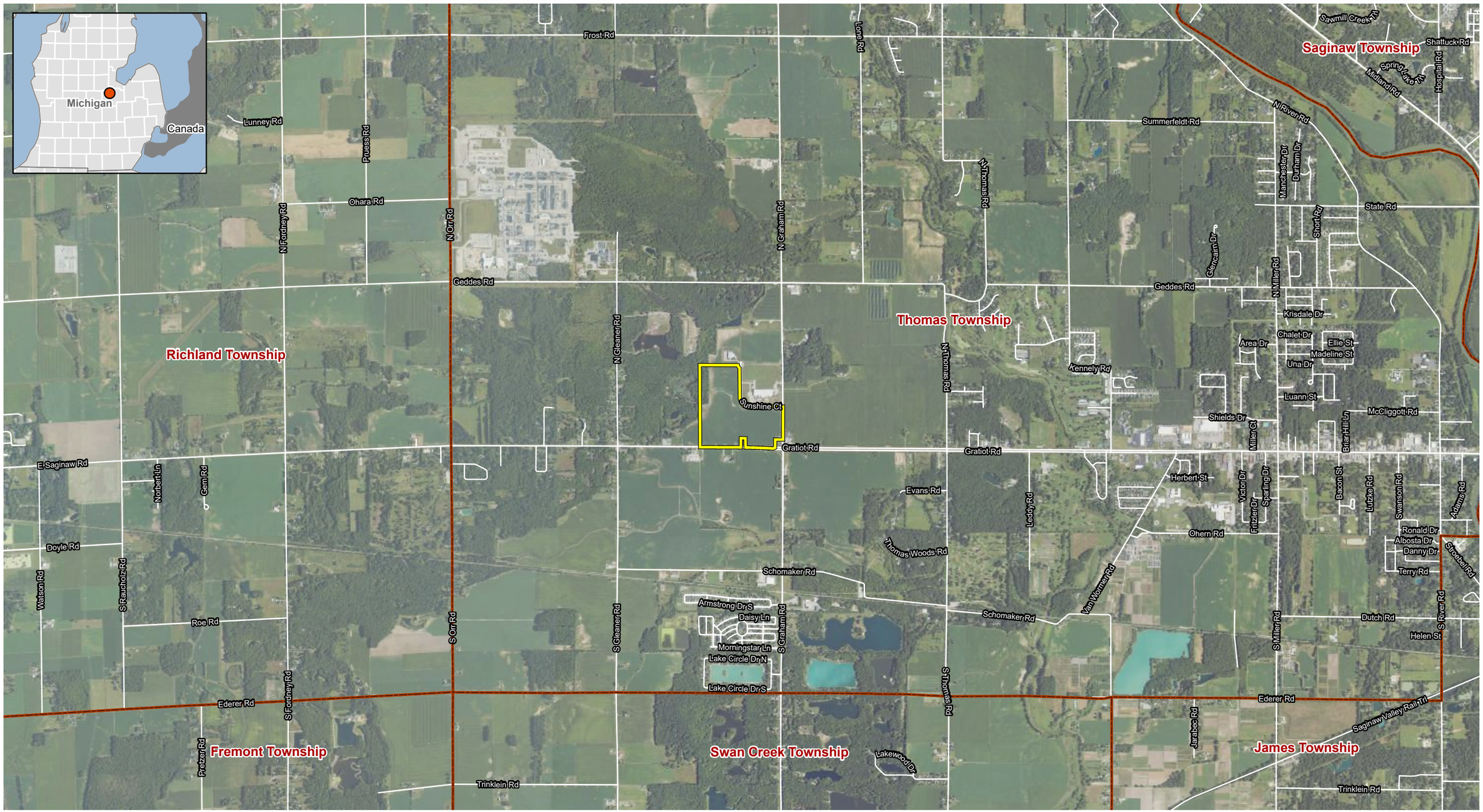
FACW: Facultative wetland plant that occurs usually, 67% to 99% of the time, in wetlands, but also occurs 1% to 33% of the time in non-wetlands.

FAC: Facultative plant that occurs in both wetlands and non-wetlands 33% to 67% of the time.

FACU: Plant that occurs sometimes, 1% to 33% of the time, in wetlands but occurs more often, 67% to 99% of the time, in non-wetlands.

UPL: Upland plant that occurs very rarely in wetlands, less than 1% of the time.

Appendix A Background Figures



Project Area (± 115.38 ac.)
City
Township Boundary
County

N

0 1,500 3,000
Feet

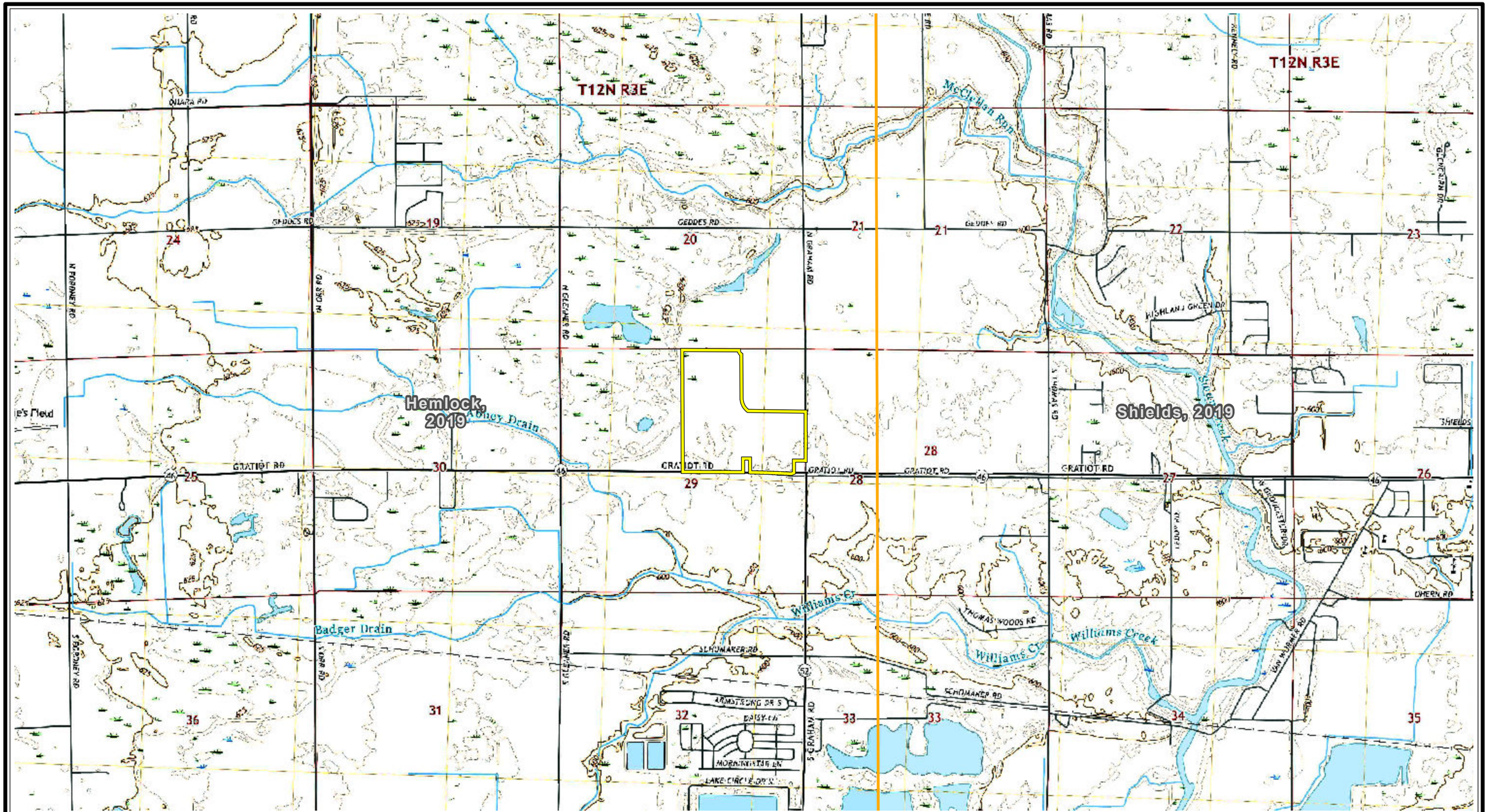
Base Layer: NAIP Imagery 2022

Figure 1
Site Location Map

Saginaw Future Great Lakes Tech Park Project
Saginaw County, MI

Date: 10/29/2024

ECT



Project Area (± 115.38 ac.)

USGS Topo Boundary

N

0 1,000 2,000

Feet

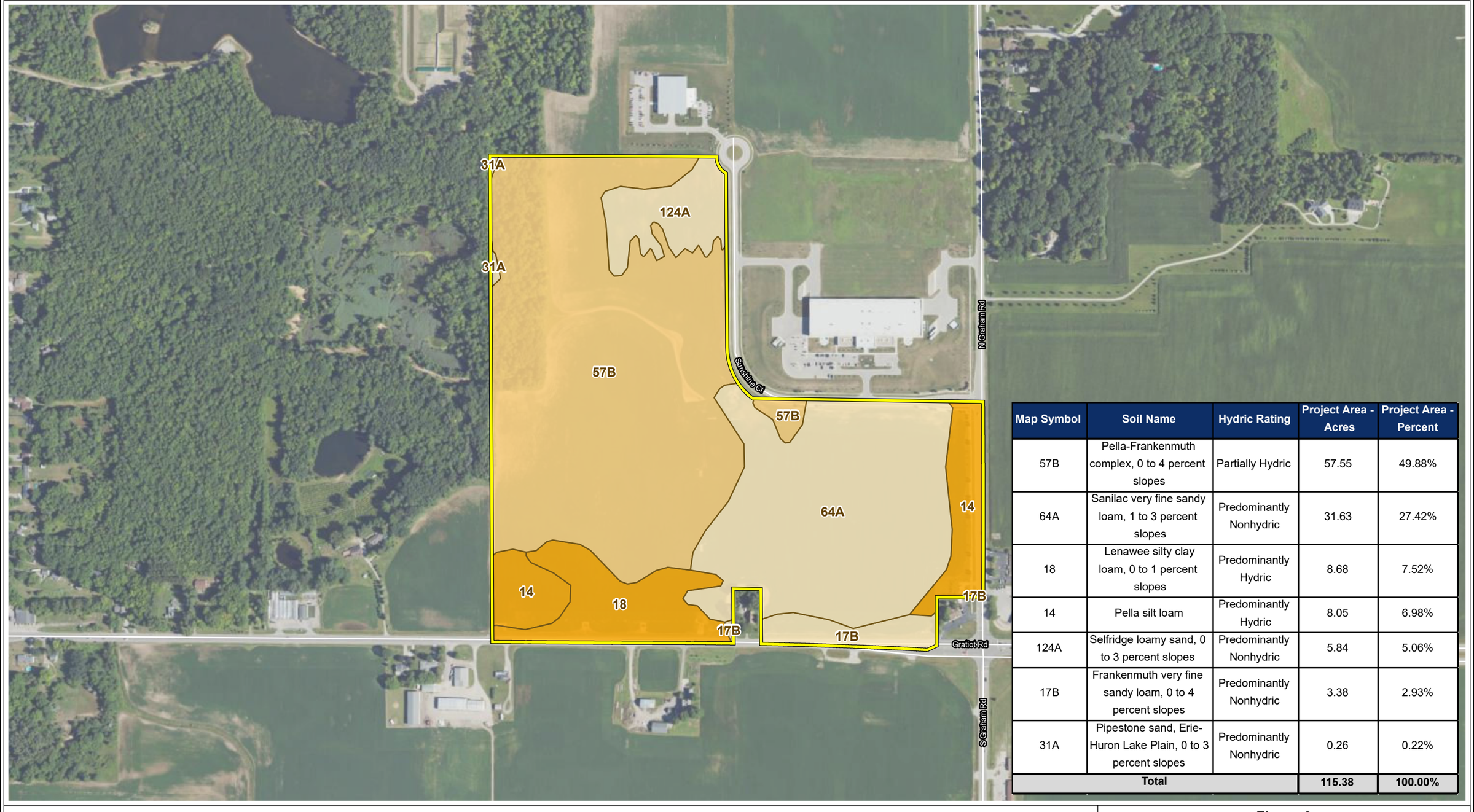
Base Layer: USGS Topographic Quad Hemlock, 2019

Figure 2
USGS Topographic Map

Saginaw Future Great Lakes Tech Park Project
Saginaw County, MI

Date: 10/29/2024

ECT



Map Symbol	Soil Name	Hydric Rating	Project Area - Acres	Project Area - Percent
57B	Pella-Frankenmuth complex, 0 to 4 percent slopes	Partially Hydric	57.55	49.88%
64A	Sanilac very fine sandy loam, 1 to 3 percent slopes	Predominantly Nonhydric	31.63	27.42%
18	Lenawee silty clay loam, 0 to 1 percent slopes	Predominantly Hydric	8.68	7.52%
14	Pella silt loam	Predominantly Hydric	8.05	6.98%
124A	Selfridge loamy sand, 0 to 3 percent slopes	Predominantly Nonhydric	5.84	5.06%
17B	Frankenmuth very fine sandy loam, 0 to 4 percent slopes	Predominantly Nonhydric	3.38	2.93%
31A	Pipestone sand, Erie-Huron Lake Plain, 0 to 3 percent slopes	Predominantly Nonhydric	0.26	0.22%
Total			**115.38**	**100.00%**

Project Area (± 115.38 ac.)

NRCS Hydric Rating

- Predominantly Hydric
- Partially Hydric
- Predominantly Nonhydric

N

0 250 500

Feet

Base Layer: NAIP Imagery 2022

Figure 3
NRCS Soils

Saginaw Future Great Lakes Tech Park Project
Saginaw County, MI

Date: 10/29/2024

ECT

Project Area (± 115.38 ac.)

National Hydrography Dataset (USGS)

Flowline

Waterbody

National Wetland Inventory (USFWS)

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

N

0 500 1,000

Feet

Base Layer: NAIP Imagery 2022

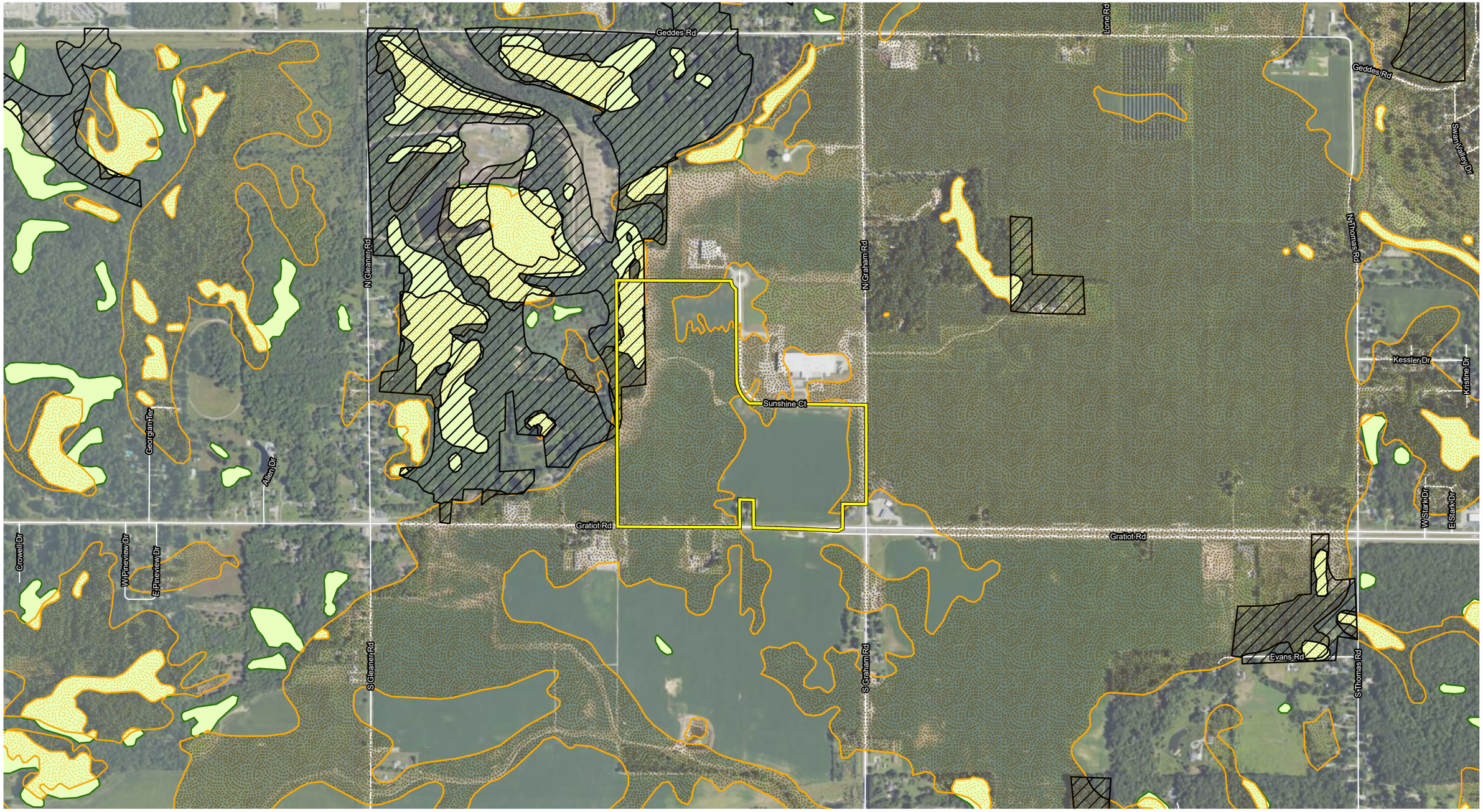
Figure 4

National Wetlands Inventory and National Hydrography Dataset

Saginaw Future Great Lakes Tech Park Project
Saginaw County, MI

Date: 10/29/2024

ECT



Project Area (± 115.38 ac.)

Part 303 State Wetlands Inventory

- Hydric Soils
- NWI
- 1978 MIRIS Wetland
- NWI & Hydric Soils
- NWI & 1978 MIRIS Wetland
- 1978 MIRIS Wetland & Hydric Soils
- NWI & 1978 MIRIS Wetland & Hydric Soils

N

0 500 1,000

Feet

Base Layer: NAIP Imagery 2022

Figure 5
Michigan Wetlands Inventory

Saginaw Future Great Lakes Tech Park Project
Saginaw County, MI

Date: 10/29/2024

ECT

Project Area (± 115.38 ac.)

Flood Zones (FEMA)

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Zone X (Shaded) - 500-year Floodplain
- Zone X - Area of Minimal Flood Hazard

N

0 500 1,000

Feet

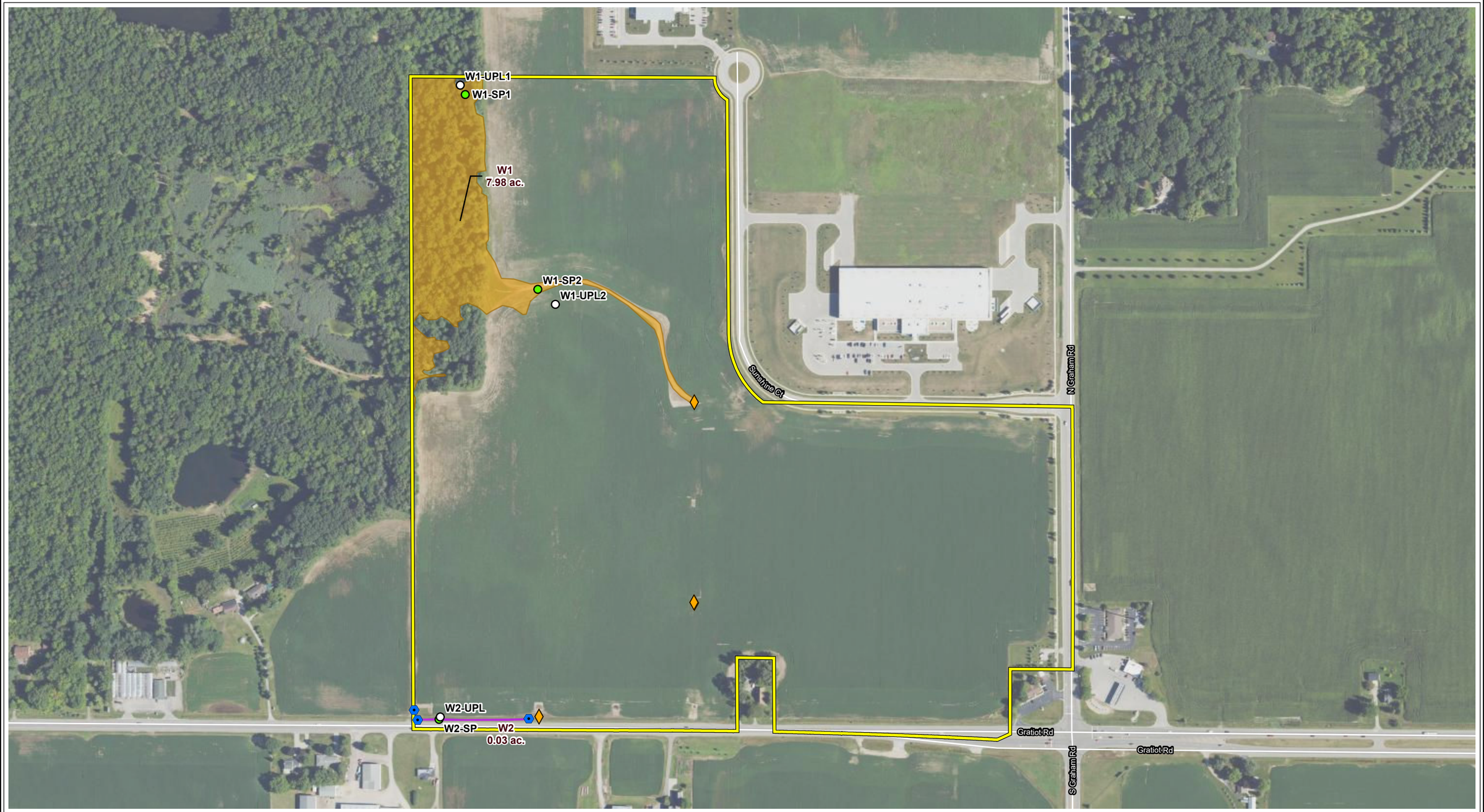
Base Layer: NAIP Imagery 2022

Figure 6
FEMA Flood Map

Saginaw Future Great Lakes Tech Park Project
Saginaw County, MI

Date: 10/29/2024

ECT



Project Area (± 115.38 ac.)
Upland Sample Point
Wetland Sample Point
Culvert
Tile Inlet

Delineated Wetland Type
PEM
PFO

N

0 200 400
Feet

Base Layer: NAIP Imagery 2022

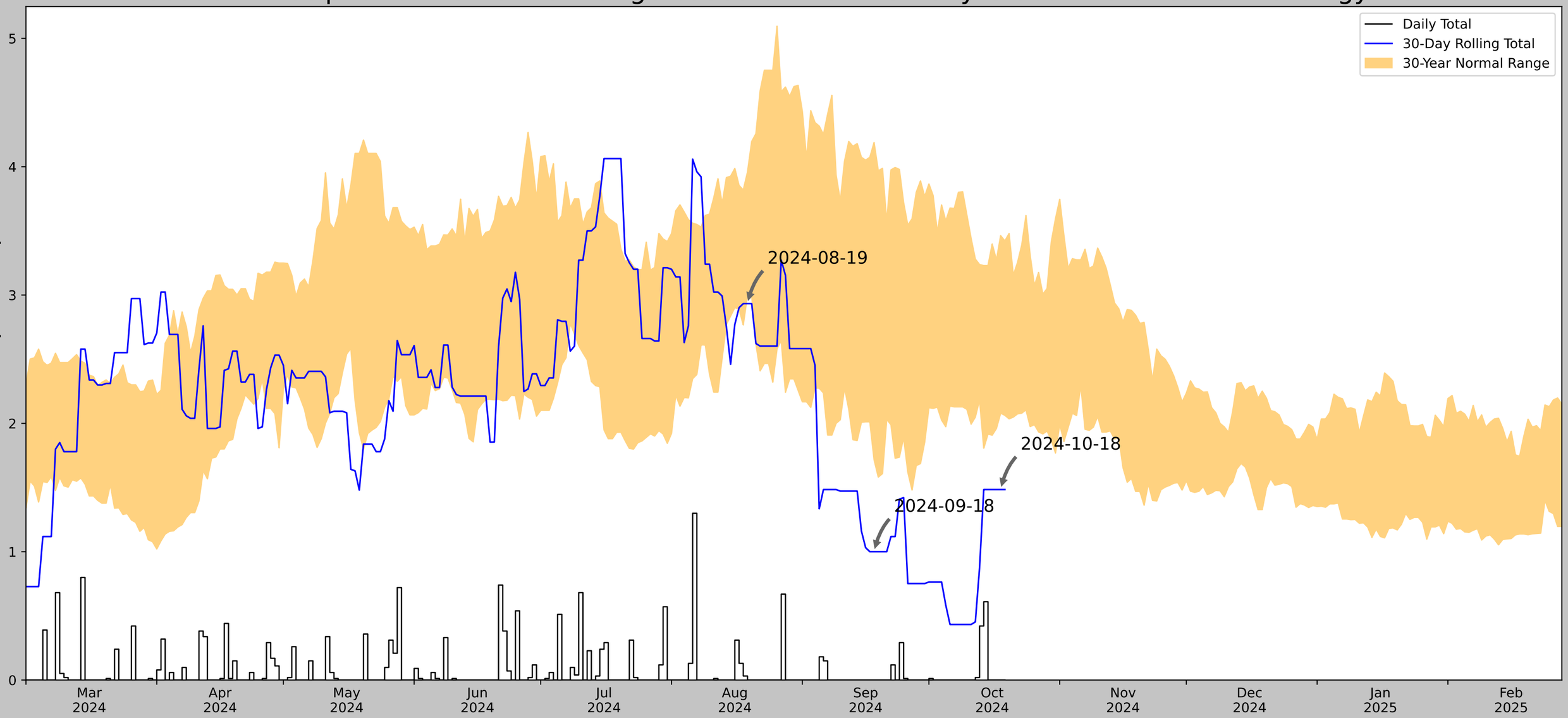
Figure 7
Delineation Map

Saginaw Future Great Lakes Tech Park Project
Saginaw County, MI

Date: 10/29/2024

ECT

Appendix B Antecedent Precipitation Tool Results



Coordinates	43.421152, -84.138553
Observation Date	2024-10-18
Elevation (ft)	606.734
Drought Index (PDSI)	Not available (2024-09)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-10-18	2.079528	3.462992	1.484252	Dry	1	3	3
2024-09-18	1.717323	4.188583	1.0	Dry	1	2	2
2024-08-19	2.997244	3.957874	2.933071	Dry	1	1	1
Result							Drier than Normal - 6

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

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

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
SAGINAW MBS INTL AP	43.5281, -84.0814	662.074	7.926	55.34	4.005	11353	90

Appendix C Photographic Log

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Saginaw	Saginaw County, Michigan	240704

Photo No.	Date:
1	10/18/2024

Direction Photo Taken:

South

Description:

This photo was taken within the forest portion of wetland W1 and depicts typical forested wetland conditions.

Photo No.	Date:
2	10/18/2024

Direction Photo Taken:

East

Description:

This photo was taken within the emergent portion of wetland W1 and depicts the agricultural drainage.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Saginaw Future	Saginaw County, Michigan	240704

Photo No.	Date:
3	10/18/2024

Direction Photo Taken:

West

Description:

This photo was taken at the eastern end of wetland W1 and depicts the catchment basin at the end of the wetland.

Photo No.	Date:
4	10/18/2024

Direction Photo Taken:

West

Description:

This photo was taken within the roadside ditch wetland W2 and shows typical conditions of the periodically mowed vegetation.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Saginaw Future	Saginaw County, Michigan	240704

Photo No.	Date:
5	10/18/2024

Direction Photo Taken:

North

Description:

At the norther edge of the Project Area and gives a representative view of the upland forest.

Photo No.	Date:
6	10/18/2024

Direction Photo Taken:

East

Description:

This photo was taken within the upland farmed portion of the Project Area and shows the recently harvested corn field.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Saginaw Future	Saginaw County, Michigan	240704

Photo No.	Date:
7	10/18/2024

Direction Photo Taken:

-

Description:

This photo was taken at sample location W1-SP2 and shows typical wetland/hydric soil.

Photo No.	Date:
8	10/18/2024

Direction Photo Taken:

-

Description:

This photo was taken at the sample location W1-UPL2 and shows typical upland soil.

Appendix D USACE Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Great Lakes Technology Park City/County: Saginaw County Sampling Date: 2024-10-18

Applicant/Owner: Saginaw Future State: Michigan Sampling Point: W1-SP1

Investigator(s): B. Huebner Section, Township, Range: S29 T12N R3E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Undulating Slope (%): 0

Subregion (LRR or MLRA): L 99 Lat: 43.42357898 Long: -84.14000896 Datum: WGS 84

Soil Map Unit Name: 57B - Pella-Frankenmuth complex, 0 to 4 percent slopes NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: W1

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

See wetland report for a description of conditions at the time of the site visit.

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)
- ___ Marl Deposits (B15)
- ___ 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)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ✔ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ✔ **No** ____

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

The delineation was conducted during the normal wet season and preceded by a period of drier than normal rainfall based on antecedent precipitation calculations (refer to wetland report).

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W1-SP1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer saccharinum	25	✔	FACW
2. Carpinus caroliniana	20	✔	FAC
3. Tilia americana	15		FACU
4. Carya ovata	10		FACU
5. Quercus rubra	10		FACU
6.			
7.			
	80	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Carpinus caroliniana	20	✔	FAC
2. Lindera benzoin	10	✔	FACW
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Cinna arundinacea	20	✔	FACW
2. Carex intumescens	5		FACW
3. Fraxinus pennsylvanica	5		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1. Vitis riparia	2		FAC
2.			
3.			
4.			
	2	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	65	x 2 =	130
FAC species	42	x 3 =	126
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	142 (A)		396 (B)

Prevalence Index = B/A = 2.78

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

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

See wetland report for photographs depicting typical conditions during the wetland delineation.

SOIL

Sampling Point: W1-SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/1	90	5YR 3/4	10	C	PL	Sandy Loam	Oxidized rhizospheres
4 - 11	10YR 5/2	60	10YR 4/4	15	C		Sandy Loam	
4 - 11	10YR 3/2	25					Sandy Loam	
11 - 18	10YR 5/2	80	10YR 4/6	20	C		Sandy Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ 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** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Great Lakes Technology Park City/County: Saginaw County Sampling Date: 2024-10-18

Applicant/Owner: Saginaw Future State: Michigan Sampling Point: W1-SP2

Investigator(s): B. Huebner Section, Township, Range: S29 T12N R3E

Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): L 99 Lat: 43.42131967 Long: -84.13880944 Datum: WGS 84

Soil Map Unit Name: 57B - Pella-Frankenmuth complex, 0 to 4 percent slopes NWI classification: PEM (not mapped on NWI)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: W1

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

See wetland report for a description of conditions at the time of the site visit. Part of Wetland W1 (represented by W1-SP2) is farmed land managed by tiling and/or ditching. Vegetation is a managed crop most recently planted with corn.

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)
- ___ Marl Deposits (B15)
- ___ 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)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✔ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

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

The delineation was conducted during the normal wet season and preceded by a period of drier than normal rainfall based on antecedent precipitation calculations (refer to wetland report).

Remarks:

Sample location in agricultural drainageway. Surface water from the wetland flows into a catch basin at the east/southeast end of the drainageway.

VEGETATION – Use scientific names of plants.

Sampling Point: W1-SP2

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

Herb Stratum (Plot size: 5 ft r)			
1. Setaria pumila	80	✔	FAC
2. Zea mays	70	✔	UPL
3. Panicum dichotomiflorum	10		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	160 = Total Cover		

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

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

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	80	x 3 =	240	
FACU species	0	x 4 =	0	
UPL species	70	x 5 =	350	
Column Totals:	160	(A)	610	(B)

Prevalence Index = B/A = 3.81

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

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

Managed crop most recently planted with corn. Crop recently harvested. Total cover is estimate based on previous standing crop. No indications of stressed crop. Hydrophytic vegetation presumed present under normal circumstances. See wetland report for photographs depicting typical conditions during the wetland delineation.

SOIL

Sampling Point: W1-SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 9	10YR 3/1	95	10YR 4/4	5	C	PL	Silty Clay Loam	Ap horizon with oxidized rhizospheres.
9 - 16	10YR 5/1	75	7.5YR 4/6	25	C		Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ 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: Clay

Depth (inches): 10

Hydric Soil Present? Yes ✔ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Great Lakes Technology Park City/County: Saginaw County Sampling Date: 2024-10-18

Applicant/Owner: Saginaw Future State: Michigan Sampling Point: W1-UPL1

Investigator(s): B. Huebner Section, Township, Range: S29 T12N R3E

Landform (hillslope, terrace, etc.): Microhigh Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): L 99 Lat: 43.42357029 Long: -84.14000601 Datum: WGS 84

Soil Map Unit Name: 57B - Pella-Frankenmuth complex, 0 to 4 percent slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No ✔	

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

See wetland report for a description of conditions at the time of the site visit.

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)
- ___ Marl Deposits (B15)
- ___ 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)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

The delineation was conducted during the normal wet season and preceded by a period of drier than normal rainfall based on antecedent precipitation calculations (refer to wetland report).

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W1-UPL1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	20	✔	FAC
2. Fraxinus pennsylvanica	10	✔	FACW
3. Betula papyrifera	5		FACU
4.			
5.			
6.			
7.			
	35	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft r)			
1. Hamamelis virginiana	25	✔	FACU
2. Carpinus caroliniana	15	✔	FAC
3. Fraxinus pennsylvanica	10		FACW
4. Lindera benzoin	10		FACW
5.			
6.			
7.			
	60	= Total Cover	

Herb Stratum (Plot size: 5 ft r)			
1. Dryopteris carthusiana	10	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft r)			
1. Vitis riparia	3		FAC
2.			
3.			
4.			
	3	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	38	x 3 =	114
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	108 (A)		314 (B)

Prevalence Index = B/A = 2.90

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

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

See wetland report for photographs depicting typical conditions during the wetland delineation.

SOIL

Sampling Point: W1-UPL1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 3	10YR 2/1	100					Loamy Sand	
3 - 8	10YR 2/2	100					Loamy Sand	
8 - 11	10YR 4/2	80					Loamy Sand	
8 - 11	10YR 6/3	20					Loamy Sand	
11 - 16	10YR 6/3	80	10YR 4/4	10	C	M	Loamy Sand	
11 - 16			10YR 3/2	10	MS		Loamy Sand	
16 - 20	7.5YR 4/3	60	10YR 4/6	40	C		Sandy Loam	
-								
-								
-								
-								
-								

[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)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ 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** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Great Lakes Technology Park City/County: Saginaw County Sampling Date: 2024-10-18

Applicant/Owner: Saginaw Future State: Michigan Sampling Point: W1-UPL2

Investigator(s): B. Huebner Section, Township, Range: S29 T12N R3E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Linear Slope (%): 2

Subregion (LRR or MLRA): L 99 Lat: 43.42115448 Long: -84.13855142 Datum: WGS 84

Soil Map Unit Name: 57B - Pella-Frankenmuth complex, 0 to 4 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No ✔	

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

See wetland report for a description of conditions at the time of the site visit. Sampled area is farmed land managed by tiling and/or ditching. Vegetation is a managed crop most recently planted with corn.

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)
- ___ Marl Deposits (B15)
- ___ 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)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

The delineation was conducted during the normal wet season and preceded by a period of drier than normal rainfall based on antecedent precipitation calculations (refer to wetland report).

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W1-UPL2

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Zea mays	100	✔	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✔

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

Sample point in a farmed area. It has been historically drained by a tile system. Vegetation is managed by agricultural activities. The area has been most recently planted with corn. No indications of stressed crop (stubble) due to wetness. See wetland report for photographs depicting typical conditions during the wetland delineation.

SOIL

Sampling Point: W1-UPL2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 10	10YR 2/1	100					Silty Clay Loam	Ap soil horizon.
10 - 16	10YR 5/1	75	7.5YR 4/6	25	C			
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ 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: Clay

Depth (inches): 10

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Great Lakes Technology Park City/County: Saginaw County Sampling Date: 2024-10-18

Applicant/Owner: Saginaw Future State: Michigan Sampling Point: W2-SP

Investigator(s): B. Huebner Section, Township, Range: S29 T12N R3E

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): L 99 Lat: 43.41660092 Long: -84.14030674 Datum: WGS 84

Soil Map Unit Name: 18 - Lenawee silty clay loam, 0 to 1 percent slopes NWI classification: PEM (not mapped on NWI)

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ____	**Is the Sampled Area within a Wetland?** **Yes** ✔ **No** ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	If yes, optional Wetland Site ID: W2

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

See wetland report for a description of conditions at the time of the site visit. Wetland formed in a roadside ditch that is periodically mowed.

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)
- ___ Marl Deposits (B15)
- ___ 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)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✔ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✔ Geomorphic Position (D2)
- ✔ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✔ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ✔ **No** ____

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

The delineation was conducted during the normal wet season and preceded by a period of drier than normal rainfall based on antecedent precipitation calculations (refer to wetland report).

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W2-SP

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	100	✔	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

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

See wetland report for photographs depicting typical conditions during the wetland delineation.

SOIL

Sampling Point: W2-SP

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 2/1	100					Silt Loam	
3 - 9	10YR 3/2	90	7.5YR 3/4	10	C		Silt Loam	Oxidized rhizospheres
9 - 15	7.5YR 5/2	60	7.5YR 4/6	35	C		Clay Loam	
9 - 15			5G 6/1	5	D	PL	Clay Loam	
-								
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ 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: Clay

Depth (inches): 9

Hydric Soil Present? Yes ✔ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Great Lakes Technology Park City/County: Saginaw County Sampling Date: 2024-10-18

Applicant/Owner: Saginaw Future State: Michigan Sampling Point: W2-UPL

Investigator(s): B. Huebner Section, Township, Range: S29 T12N R3E

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): L 99 Lat: 43.41662803 Long: -84.1403035 Datum: WGS 84

Soil Map Unit Name: 18 - Lenawee silty clay loam, 0 to 1 percent slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✔ (If no, explain in Remarks.)

Are Vegetation ✔, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ 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 ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No ✔	

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

See wetland report for a description of conditions at the time of the site visit. Area is mowed meadow along public road ROW.

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)
- ___ Marl Deposits (B15)
- ___ 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)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Vis ble on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

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

The delineation was conducted during the normal wet season and preceded by a period of drier than normal rainfall based on antecedent precipitation calculations (refer to wetland report).

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W2-UPL

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Bromus inermis	95	✔	UPL
2. Cirsium arvense	10		FACU
3. Asclepias syriaca	1		UPL
4. Equisetum arvense	1		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	107 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	1	x 3 =	3
FACU species	10	x 4 =	40
UPL species	96	x 5 =	480
Column Totals:	107 (A)		523 (B)

Prevalence Index = B/A = 4.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

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

See wetland report for photographs depicting typical conditions during the wetland delineation.

SOIL

Sampling Point: W2-UPL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 15	10YR 2/2	100					Silt Loam	Historically filled/graded roadside ditch shoulder (public road ROW).
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								
-								

[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)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ 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** ✔

Remarks:

Historically filled/graded area along public road ROW.