

**Secord Dam –
Gladwin County, Michigan**

**Four Lakes Task Force and Spicer Group,
Inc.**

Wetland Delineation Report

Prepared by:



April 2021

TABLE OF CONTENTS

1.0 INTRODUCTION..... 1

2.0 METHODS 3

 2.1 BACKGROUND INFORMATION..... 3

 2.2 INVESTIGATION METHODOLOGY 3

 2.2.1 Naming Protocol 3

 2.2.2 Site Photographs 3

 2.2.3 Delineation Data Sheets 4

 2.2.4 Survey of Wetland Boundary 4

3.0 RESULTS AND DISCUSSION 5

 3.1 DESKTOP REVIEW 5

 3.1.1 USGS Topographic Map..... 5

 3.1.2 Soil Survey..... 5

 3.1.3 Mapped Wetlands 5

 3.1.4 Current, Historic, and High-Resolution Aerial Imagery 5

 3.1.5 Recent Climatic Conditions and Precipitation Data 6

 3.2 GENERAL SITE CONDITIONS..... 6

 3.2.1 Uplands 6

 3.2.2 Wetlands..... 7

 3.3 WATERWAYS 9

 3.4 OTHER WATER RESOURCES IDENTIFIED 9

4.0 SUMMARY AND CONCLUSION..... 10

5.0 DISCLAIMER..... 11

6.0 LITERATURE CITED..... 12

LIST OF TABLES

Table 1-1 Summary of Wetlands 1

Table 3-1 Mapped Soil Units 5

Table 3-2 Mapped NWI Features 5

Table 3-3 WETS Water Station Data..... 6

Table 3-4 Delineated Wetlands 8

LIST OF FIGURES

Figure 1 Location Map

Figure 2 Topography

Figure 3 Hydrology

Figure 4 SSURGO Soil Type

Figure 5 Wetland Delineation

LIST OF APPENDICES

Appendix A Survey Photographs

Appendix B Wetland Delineation Data Forms – Northcentral and Northeast Region

ACRONYM LIST

ESRI	Environmental Systems Research Institute
FLTF	Four Lakes Task Force
GIS	Geographic Information System
GPS	Global Positioning System
Merjent	Merjent, Inc.
NHD	National Hydrography Dataset
NWI	National Wetland Inventory
OHWM	Ordinary High-Water Mark
PEM	Palustrine Emergent
PFO	Palustrine Forest
Spicer	Spicer Group, Inc.
USACE	U.S. Army Corps of Engineers
USDA-NRCS	U.S. Department of Agriculture-National Resource Conservation Service
USGS	U.S. Geological Survey
WETS	Climate Analysis for Wetlands Tables

1.0 INTRODUCTION

Merjent, Inc. (Merjent) performed a wetland delineation in Gladwin County, Michigan, for Four Lake Task Force (FLTF) and Spicer Group Inc.'s (Spicer) Secord Dam project (Project).

In May 2020, Midland and Gladwin Counties experienced an extreme rainfall event that led to the catastrophic failure of the Edenville and Sanford Dams on the Tittabawasee River. This event led to the drawdowns of Secord, Smallwood, Wixom, and Sanford Lakes. Following the dam failures, the FLTF was formed and acquired the Edenville, Sanford, Secord, and Smallwood Dams located along the Tittabawasee River. The FLTF retained Spicer to initiate a Recovery and Feasibility Study and Design Phase to explore options for maintenance at Secord and Smallwood Dams, and restoration at Edenville and Sanford Dams. This will be followed by a Restoration Phase planned to be completed by 2026.

The wetland delineation report will be used to support future maintenance and restoration activities, planning, and identify potential project permits. The associated survey area is depicted in all accompanying figures.

Based on a field investigation conducted by Merjent on March 11, 2021, and review of desktop resources, it is our professional opinion that eight wetlands totaling 1.37 acres (Table 1-1) exist within the 19.54-acre survey area.

Wetland ID	Cowardin Classification	Size (sq. ft.)	Size (acres)
w01	PEM	7,255	0.17
w02	PEM	4,014	0.09
w03	PEM	3,788	0.09
w04	PEM	4,226	0.10
w05	PFO	26,472	0.61
w06	PFO	1,161	0.03
w07	PFO	7,840	0.18
w08	PFO	4,916	0.11
Total		59,672	1.37

This report outlines the wetland delineation investigation, methodology, and its findings as completed by Merjent. This report has been compiled by the following staff that are trained and experienced in delineation methodologies and applicable regulations:

- **Erin Vander Stelt – Environmental Analyst; Report Author**

Erin Vander Stelt is an Environmental Analyst specializing in environmental field surveys and desktop reviews for threatened and endangered species, wetland delineations, and floristic quality inventories in the upper Midwest. She has over a decade of experience and training in plant identification and habitat assessments in the upper Midwest and six years of experience serving oil and gas, private, academic, electric, transportation, and development sectors as well as state and federal agencies.

- **Ken Leister – Senior Environmental Analyst; Field Lead**

Mr. Leister is a Senior Analyst, Project Manager, and Field Biologist with over 11 years of experience in ecological resource assessments and permitting for clients from various industries. His expertise includes providing project management and permitting services to clients regarding state and federal environmental laws and regulations, including the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, Endangered Species Act, Clean Water Act, National Pollution Discharge Elimination System, and National Environmental Policy Act. In addition to project management and permitting expertise, Mr. Leister is a Certified Wildlife Biologist and has experience conducting field surveys for a range of ecological resources. Past project work has included wetland delineation, general endangered species assessments and species-specific surveys for federally- and state- listed endangered species including bats, birds, reptiles, and plants.

- **Robb Roos – Senior Environmental Analyst; Field Manager**

Robb has worked in the fields of wetland ecology and ecological restoration for over ten years. He holds a Master of Science degree in Biology from Grand Valley State University. Robb has led wetland delineation and threatened and endangered species survey field teams for over ten years on projects throughout the Midwest and has also completed, and instructs, State- and USACE-based wetland delineation trainings. He is currently certified as a Wetland Professional by the Society of Wetland Scientists and leads wetland delineations, habitat surveys, report writing, and permitting while managing a variety of projects.

- **Becky Norris – Environmental Analyst; GIS Analyst**

Ms. Norris is a GIS Analyst and Field Biologist with over six years of experience in GIS, data analysis, and technical support for several projects throughout the United States. Ms. Norris regularly conducts and performs GIS management for wetland delineations, habitat assessments, and other field surveys. In particular, she specializes in preparing comprehensive environmental impact analysis reports for federal and state permit applications.

2.0 METHODS

2.1 BACKGROUND INFORMATION

Desktop resources were used to identify potential wetlands on the site. Sources of information that were consulted to identify potential wetlands within the survey area prior to field investigation are listed below:

- USGS Topographical Map (Figure 2)
- USDA-NRCS Web Soil Survey Database for Gladwin County, Michigan (Figure 4)
- NWI (Figure 3)
- NHD (Figure 3)
- ESRI Basemap 2016 Aerial Imagery (Figure 5)
- Google Earth™ Aerial Imagery (multiple years)

2.2 INVESTIGATION METHODOLOGY

The delineation of wetlands and other waters of the state were based on the methodology described in the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast, as required by current policy. Waterways were identified in accordance with the USACE Jurisdictional Determination Form Instructional Guidebook (USACE-U.S. Environmental Protection Agency, 2007).

Prior to the field work, background information was reviewed to establish the potential location of wetlands and waterways within the survey area. Next, a general reconnaissance of the entire survey area was conducted to evaluate site conditions. On March 11, 2021, the survey area was walked with the specific intent of determining wetland boundaries. Data points were sampled during this time at locations within and near the wetland areas to document soil characteristics, evidence of hydrology, and dominant vegetation. Vegetative community boundaries were identified according to the Cowardin Classification System (Cowardin et al., 1979).

2.2.1 Naming Protocol

Features identified in associated figures and appendices are named in the following manner:

- Wetlands (w01, w02, etc.)
- Streams (s01, s02, etc.)
- Data points (dp01, dp02, etc.)
- Photo points (pp01, pp02, etc.)

2.2.2 Site Photographs

Photographs (Appendix A) provide a visual representation of wetland communities and boundaries, as well as general site conditions at the time of inspection. Photos are geospatially referenced by their associated photo point location and presented with direction taken (e.g., “pp01 view West,” “pp02 view Northeast”). Photo point locations are depicted in the wetland delineation figure (Figure 5).

2.2.3 Delineation Data Sheets

The wetland determination data forms (Appendix B) are the written documentation of how representative data points meet or do not meet each of the wetland criteria (USACE, 2011). Plant species nomenclature follows the Regional Wetland Plant List (USACE, 2018). Soils were identified using the methods outlined in Field Indicators of Hydric Soils in the United States, Version 8.2 (USDA-NRCS, 2018).

2.2.4 Survey of Wetland Boundary

Merjent surveyed all data point locations and wetland boundaries using GPS technology capable of sub-meter accuracy. While these surveys provide reasonably accurate spatial data, they do not provide the same level of accuracy as a professional land survey. Wetland boundaries were flagged during the field survey where acquisition of more precise survey data by Spicer was required.

3.0 RESULTS AND DISCUSSION

3.1 DESKTOP REVIEW

3.1.1 USGS Topographic Map

The USGS topographic map (Figure 2) shows gently sloping areas on either side of the Tittabawassee River that become steeper as they approach the banks of the river. Steep slopes also exist along the southern and northern edges of the Secord Dam berm.

3.1.2 Soil Survey

The USDA-NRCS soil map of the survey area (Figure 4) identified five soil types, none of which are hydric (Table 3-1).

Symbol	Description	Hydric Soil Unit?	Acres
CT	Croswell-Au Gres association	No	1.23
CW	Croswell-Au Gres-Roscommon association	No	0.85
RUB	Rubicon-Croswell association, undulating	No	11.39
RWB	Rubicon-Ocqueoc-Ingalls association, undulating	No	1.21
W	Water	Unranked	4.86
		Total	19.54

3.1.3 Mapped Wetlands

The NWI map of the survey area (Figure 3) shows approximately 3.04 acres of wetlands (Table 3-2). The lacustrine wetland area is mapped in the historic lakebed above Secord Dam. The riverine wetland is mapped in the Tittabawassee River course.

Symbol	Description	Acres
L1UBH	Lacustrine limnetic, unconsolidated bottom, permanently flooded	3.02
R5UBH	Riverine unknown perennial, unconsolidated bottom, permanently flooded	0.02
	Total	3.04

3.1.4 Current, Historic, and High-Resolution Aerial Imagery

Multiple sources of historic aerial imagery were reviewed to evaluate the survey area for wetland signatures. Based on this review, possible wetland signatures were identified throughout the survey area.

3.1.5 Recent Climatic Conditions and Precipitation Data

Recent precipitation data were compared with historic precipitation data from a 50-year dataset (1971-2021) from a nearby WETS weather station (Gladwin, MI) to determine if normal hydrologic and climatic conditions were present on-site during the delineation (USDA, accessed March 2021). When compared, the observed precipitation data from three months prior to the delineation indicated normal precipitation conditions at the time of the delineation (Table 3-3).

TABLE 3-3

WETS Analysis									
Long-term rainfall records (1971-2021)									
WETS Station GLADWIN, MI	Month	<30%	Mean	>30%	Actual	Condition	Condition Value	Weight	Value X Weight
3rd Prior Month	December	1.47	2.16	2.58	2.54	Normal	2	1	2
2nd Prior Month	January	1.29	1.98	2.38	1.23	Dry	1	2	2
1st Prior Month	February	0.91	1.49	1.81	1.14	Normal	2	3	6
Sum:									10
If sum is:						Condition Values:			
6 to 9		then prior period has been drier than normal				(1) Dry			
10 to 14		then prior period has been normal				(2) Normal			
15 to 18		then prior period has been wetter than normal				(3) Wet			
Conditions On Site:						Normal			

3.2 GENERAL SITE CONDITIONS

Based on the field survey and review of desktop resources, it is our professional opinion that eight wetlands totaling 1.37 acres and two waterways exist within the survey area (Figure 5). Descriptions of the wetlands and waterways are provided below.

Land use on site includes Secord Lake to the north and the Tittabawassee River that runs north to south through the center of the survey area. To the west of the river is an undeveloped forested upland and wetland complex. East of the river is mowed/maintained lawn and gravel driving paths with prior converted wetlands alongside and in between these driving paths. The Secord Dam and spillway runs east-west along the southern edge of Secord Lake.

3.2.1 Uplands

Majority of the upland areas with the survey area are forested or mowed/maintained lawn and gravel drives. The forested areas are west of the Tittabawassee River. The tree stratum is dense with red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), northern red oak (*Quercus rubra*), and black cherry (*Prunus serotina*). The shrub layer is sparsely vegetated with saplings of northern red oak, red maple, and black cherry as well as American witch-hazel (*Hamamelis virginiana*) and flowering dogwood (*Cornus florida*). The herb layer is sparsely vegetated with eastern teaberry (*Gaultheria procumbens*), Pennsylvania sedge (*Carex pennsylvanica*), and Northern bracken fern (*Pteridium aquilinum*). Forested areas were topographically diverse with intermixed upland and wetland areas.

East of the Tittabawassee River, along the banks of the river, and along the Secord Dam berm was mowed/maintained lawn. The herb layer of these areas was densely vegetated with Kentucky

blue grass (*Poa pratensis*), smooth brome (*Bromus inermis*), English plantain (*Plantago lanceolata*), and orchard grass (*Dactylis glomerata*).

3.2.2 Wetlands

A total of eight wetlands were identified to community type within the survey area (Figure 5) according to Cowardin classification (Appendix C). Summaries of these features are provided below (Table 3-4), and more detailed information for associated data points may be found in wetland determination forms (Appendix B).

Secord Dam - Gladwin County, Michigan
Wetland Delineation Report

TABLE 3-4

Delineated Wetlands

Wetland ID	Community Type	Acreage	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicators	Associated Data Points
w01	PEM	0.16	Surface Water (A1), Geomorphic Position (D2), and FAC-Neutral Test (D5)	Pussy willow (<i>Salix discolor</i> , FACW) and hybrid cattail (<i>Typha X glauca</i> , OBL)	Sandy Mucky Mineral (S1) and Dark Surface (S7)	dp02
w02	PEM	0.09	Surface Water (A1), Geomorphic Position (D2), and FAC-Neutral Test (D5)	Hybrid cattail and black bent (<i>Agrostis gigantea</i> , FACW)	Sandy Mucky Mineral (S1) and Depleted Matrix (F3)	dp04
w03	PEM	0.09	Surface Water (A1) and FAC-Neutral Test (D5)	Pussy willow, balsam poplar (<i>Populus balsamifera</i> , FACW), red osier (<i>Cornus alba</i> , FACW), and lamp rush (<i>Juncus effusus</i> , OBL)	Soils assumed hydric, but soil pit not dug due to presence of surface water	dp06
w04	PEM	0.10	Wetland w04 was hydrologically connected to w01 and exhibited similar characteristics. A separate data point was not recorded for w04.	-	-	dp02
w05	PFO	0.61	High Water Table (A2), Saturation (A3), Stunted or Stressed Plants (D1), Geomorphic Position (D2), and FAC-Neutral Test (D5)	Red maple (<i>Acer rubrum</i> , FAC), paper birch (<i>Betula papyrifera</i> , FACU), speckled alder (<i>Alnus incana</i> , FACW), and lakebank sedge (<i>Carex lacustris</i> , OBL)	Stripped Matrix (S6)	dp08
w06	PFO	0.03	High Water Table (A2), Saturation (A3), Geomorphic Position (D2), and FAC-Neutral Test (D5)	Red maple, speckled alder, green ash (<i>Fraxinus pennsylvanica</i> , FACW), fowl manna grass (<i>Glyceria striata</i> , OBL), and eastern woodland sedge (<i>Carex blanda</i> , FAC)	Stripped Matrix (S6)	dp09
w07	PFO	0.18	Surface Water (A1), Sparsely Vegetated Concave Surface (B8), Geomorphic Position (D2)	Red maple	Soils assumed hydric, but soil pit not dug due to presence of surface water	dp11
w08	PFO	0.11	Wetland w08 was hydrologically connected to w07 and exhibited similar characteristics. A separate data point was not recorded for w08.	-	-	-

3.3 WATERWAYS

Merjent determined that two waterways exist within the survey area. The Tittabawassee River flows north to south through the Secord Dam. Stream s01 is a roadside drain which flows from east to west out of w01 and empties through a culvert into the Tittabawassee River. The OHWM of s01 is approximately 1.5 feet, and the depth is approximately three inches. Substrate within s01 is typically composed of sand with some gravel. Representative photographs of waterways are provided in Appendix A.

3.4 OTHER WATER RESOURCES IDENTIFIED

Secord Lake is located north of Secord Dam. The Tittabawassee River runs through the Secord Lake basin. The lake basin is reduced from its historic size on both the east and west edges due to a drawdown of the impoundment for maintenance purposes. Approximate current Secord Lake margins are shown in Figure 5.

4.0 SUMMARY AND CONCLUSION

On behalf of Spicer and the FLTF, Merjent performed a wetland delineation for the Secord Dam project in Gladwin County, Michigan.

Based on the field survey, it is our professional opinion that eight wetlands totaling 1.37 acres and two waterways exist within the 19.54-acre survey area. This report represents our best professional judgment based on our local knowledge and experience.

5.0 DISCLAIMER

The wetlands identified for this report may be subject to regulation by federal, state, and/or local jurisdiction. These authorities may require a professional land survey of the delineated boundaries to verify impacts for regulatory purposes.

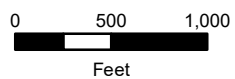
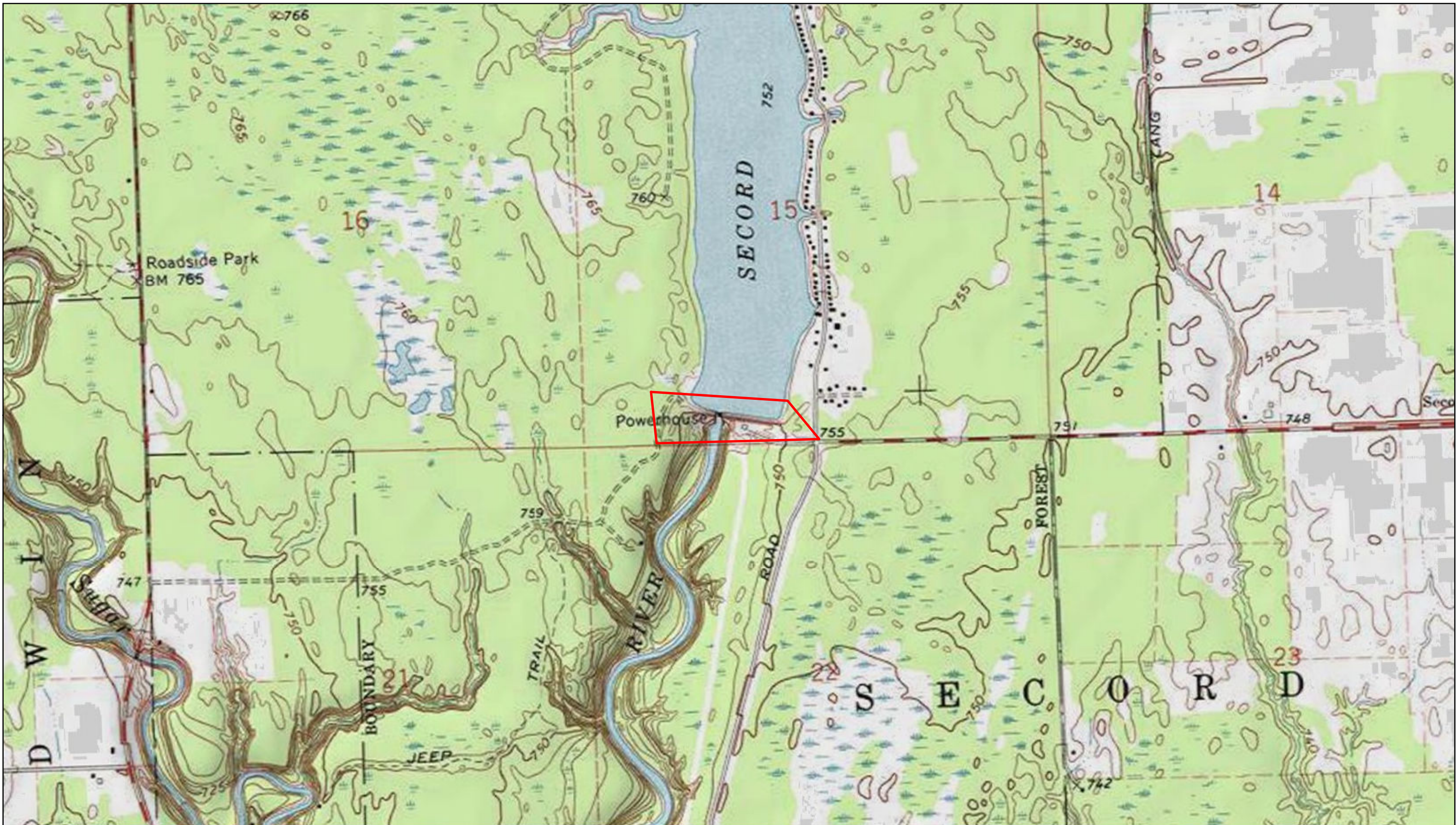
The field survey results presented herein apply to the existing and reasonably foreseeable site conditions at the time of the assessment. They cannot apply to site changes of which Merjent is unaware and has not had the opportunity to review. Changes in the condition of a property may occur with time due to the natural processes or human impacts at the project site or on adjacent properties. Changes in applicable standards may also occur as a result of legislation or the expansion of knowledge over time. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond the control of Merjent.

6.0 LITERATURE CITED

- Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 131pp.
- Environmental Laboratory. 1987. *U.S. Army Corps of Engineers' Wetland Delineation Manual*, Technical Report Y-87-1, U.S. Waterways Experiment Station, Vicksburg, MS.
- USACE. 2011. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, C. V. Noble, and J. F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- USACE. 2018. National Wetland Plant List, version 3.4. <http://wetland-plants.usace.army.mil/>
- USACE-U.S. Environmental Protection Agency. 2007. USACE Jurisdictional Determination Form Instructional Guidebook. https://www.nap.usace.army.mil/Portals/39/docs/regulatory/jd/jd_guidebook_051207final.pdf
- USDA. Field Office Climate Data. Available online at <http://agacis.rcc-acis.org/?fips=26051> accessed March 2021.
- USDA-NRCS. 2018. *Field Indicators of Hydric Soils in the United States*, Version 8.2. Edited by L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- USDA-NRCS. Web Soil Survey. *Soil Survey of Gladwin County, MI*. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm> Accessed March 2021.

Figure 1
Location Map

Figure 2
Topography



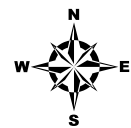
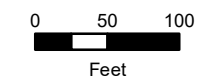
Topography
 Secord Dam Site
 Spicer Group
 Gladwin County, Michigan



Survey Area



Figure 3
Hydrology



**Hydrology
Secord Dam Site
Spicer Group
Gladwin County, Michigan**



Survey Area



NWI Wetland



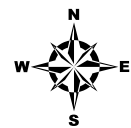
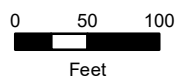
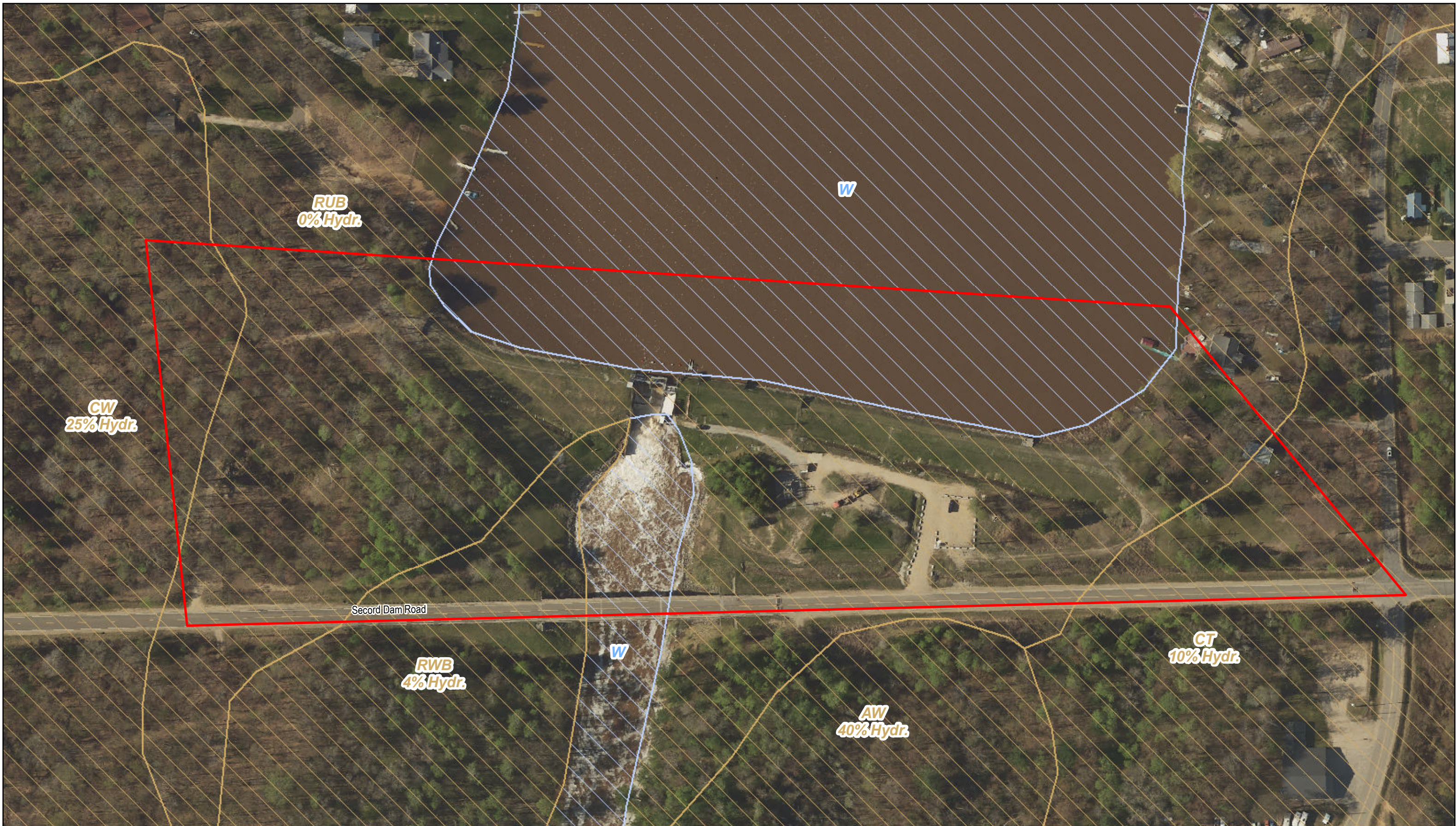
NHD Waterbody



NHD Waterway



Figure 4
SSURGO Soil Type



SSURGO Soil Type
 Secord Dam Site
 Spicer Group
 Gladwin County, Michigan



Survey Area



Non-Hydric Soil



Hydric Soil



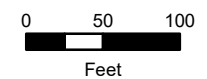
Water



Figure 5
Wetland Delineation



*Some delineated waterway boundaries are approximate; as unsafe/unstable terrain and steep slopes limited access to old lake bottom areas.



**Wetland Delineation
Secord Dam Site
Spicer Group
Gladwin County, Michigan**

- | | | | |
|--|---------------------|--|----------------------|
| | Survey Area | | PEM Wetland |
| | Photo Point | | PFO Wetland |
| | Wetland Data Point | | Delineated Waterway* |
| | Delineated Waterway | | |



Appendix A
Survey Photographs



Photograph pp01 view North toward dp10



Photograph pp02 view North



Photograph pp02 view West



Photograph pp03 view West



Photograph pp04 view East



Photograph pp04 view North



Photograph pp04 view South



Photograph pp05 view North



Photograph pp06 view South at dp07



Photograph pp07 view West at dp08



Photograph pp08 view East



Photograph pp08 view North



Photograph pp08 view South



Photograph pp08 view West



Photograph pp09 view East



Photograph pp09 view West



Photograph pp10 view East



Photograph pp11 view East



Photograph pp11 view North



Photograph pp11 view South



Photograph pp11 view West



Photograph pp12 view North



Photograph pp12 view South



Photograph pp12 view West



Photograph pp13 view East



Photograph pp13 view Northwest



Photograph pp14 view East



Photograph pp14 view West



Photograph pp15 view South



Photograph pp16 view East



Photograph pp17 view Northeast



Photograph pp17 view Northwest



Photograph pp18 view West



Photograph pp19 view South towards dp04



Photograph pp19 view West



Photograph pp20 view Northeast

Appendix B
Wetland Delineation Data Forms –
Northcentral and Northeast Region

VEGETATION – Use scientific names of plants.

Sampling Point: dp01

<u>Tree Stratum</u> (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ =Total Cover			
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u>)			
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ =Total Cover			
<u>Herb Stratum</u> (Plot size: <u>5'</u>)			
1. <u>Poa pratensis</u>	<u>80</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Plantago lanceolata</u>	<u>15</u>	<u>No</u>	<u>FACU</u>
3. <u>Medicago lupulina</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
4. <u>Fragaria virginiana</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
_____ =Total Cover			
<u>Woody Vine Stratum</u> (Plot size: <u>30'</u>)			
1. <u>N/A</u>			
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: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>99</u>	x 4 = <u>396</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>99</u> (A)	<u>396</u> (B)
Prevalence Index = B/A = <u>4.00</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators 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 diamet 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 X

Remarks: (Include photo numbers here or on a separate sheet.)
 Data point was located within a maintained lawn area.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp02
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope %: 0-2
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.0404245 Long: -84.3391525 Datum: WGS 84

Soil Map Unit Name: Croswell-Au Gres association 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>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> If yes, optional Wetland Site ID: <u> </u>
Hydic Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	

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

HYDROLOGY

Wetland Hydrology Indicators:	<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
<u>X</u> Surface Water (A1)	<u> </u> Surface Soil Cracks (B6)
<u> </u> High Water Table (A2)	<u> </u> Drainage Patterns (B10)
<u> </u> Saturation (A3)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> <u>X</u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Shallow Aquitard (D3)
<u> </u> Sparsely Vegetated Concave Surface (B8)	<u> </u> Microtopographic Relief (D4)
<u> </u> Water-Stained Leaves (B9)	<u> </u> <u>X</u> FAC-Neutral Test (D5)
<u> </u> Aquatic Fauna (B13)	
<u> </u> Marl Deposits (B15)	
<u> </u> Hydrogen Sulfide Odor (C1)	
<u> </u> Oxidized Rhizospheres on Living Roots (C3)	
<u> </u> Presence of Reduced Iron (C4)	
<u> </u> Recent Iron Reduction in Tilled Soils (C6)	
<u> </u> Thin Muck Surface (C7)	
<u> </u> Other (Explain in Remarks)	

Field Observations:		Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>3</u>		
Water Table Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u>		
Saturation Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u>		
(includes capillary fringe)		

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: dp02

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ =Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15'</u>)			
1. <u>Salix discolor</u>	<u>8</u>	<u>Yes</u>	<u>FACW</u>
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ =Total Cover			
Herb Stratum (Plot size: <u>5'</u>)			
1. <u>Typha X glauca</u>	<u>80</u>	<u>Yes</u>	<u>OBL</u>
2. <u>Juncus effusus</u>	<u>10</u>	<u>No</u>	<u>OBL</u>
3. <u>Alisma subcordatum</u>	<u>2</u>	<u>No</u>	<u>OBL</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
_____ =Total Cover			
Woody Vine Stratum (Plot size: <u>30'</u>)			
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
_____ =Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>92</u>	x 1 = <u>92</u>
FACW species <u>8</u>	x 2 = <u>16</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>100</u> (A)	<u>108</u> (B)
Prevalence Index = B/A = <u>1.08</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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 diamet 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 X No

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

VEGETATION – Use scientific names of plants.

Sampling Point: dp03

<u>Tree Stratum</u> (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ =Total Cover			
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u>)			
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ =Total Cover			
<u>Herb Stratum</u> (Plot size: <u>5'</u>)			
1. <u>Bromus inermis</u>	<u>15</u>	<u>Yes</u>	<u>UPL</u>
2. <u>Plantago lanceolata</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>
3. <u>Dactylis glomerata</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>
4. <u>Barbarea vulgaris</u>	<u>8</u>	<u>No</u>	<u>FAC</u>
5. <u>Fragaria virginiana</u>	<u>8</u>	<u>No</u>	<u>FACU</u>
6. <u>Medicago lupulina</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
7. <u>Symphyotrichum pilosum</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
8. <u>Setaria pumila</u>	<u>2</u>	<u>No</u>	<u>FAC</u>
9. <u>Taraxacum officinale</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
10. <u>Lathyrus latifolius</u>	<u>2</u>	<u>No</u>	<u>UPL</u>
11. _____			
12. _____			
<u>69</u> =Total Cover			
<u>Woody Vine Stratum</u> (Plot size: <u>30'</u>)			
1. <u>None</u>			
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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>10</u>	x 3 = <u>30</u>
FACU species <u>42</u>	x 4 = <u>168</u>
UPL species <u>17</u>	x 5 = <u>85</u>
Column Totals: <u>69</u> (A)	<u>283</u> (B)
Prevalence Index = B/A = <u>4.10</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators 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 diamet 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 X

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

SOIL

Sampling Point: dp03

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		
0-2	10YR 3/2	100					Loamy/Clayey	
2-24	10YR 4/3	100					Loamy/Clayey	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: 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)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- High Chroma Sands (S11) (**LRR K, L**)
- 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)
- Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils³:

- 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**)
- 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 (F22)
- Other (Explain in Remarks)

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 No

Remarks:
 This data form is revised from Northcentral and Northeast 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)
 Soil appears to be engineered fill related to dam.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp04
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 0-2
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.0405479 Long: -84.3392813 Datum: WGS 84

Soil Map Unit Name: Rubicon-Croswell association, undulating 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>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> If yes, optional Wetland Site ID: <u> </u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	

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

HYDROLOGY

Wetland Hydrology Indicators:	<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
<u>X</u> Surface Water (A1)	<u> </u> Surface Soil Cracks (B6)
<u> </u> High Water Table (A2)	<u> </u> Drainage Patterns (B10)
<u> </u> Saturation (A3)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> <u>X</u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Shallow Aquitard (D3)
<u> </u> Sparsely Vegetated Concave Surface (B8)	<u> </u> Microtopographic Relief (D4)
<u> </u> Water-Stained Leaves (B9)	<u> </u> <u>X</u> FAC-Neutral Test (D5)
<u> </u> Aquatic Fauna (B13)	
<u> </u> Marl Deposits (B15)	
<u> </u> Hydrogen Sulfide Odor (C1)	
<u> </u> Oxidized Rhizospheres on Living Roots (C3)	
<u> </u> Presence of Reduced Iron (C4)	
<u> </u> Recent Iron Reduction in Tilled Soils (C6)	
<u> </u> Thin Muck Surface (C7)	
<u> </u> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>2</u> Water Table Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
---	---

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: dp04

<u>Tree Stratum</u> (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ =Total Cover			
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u>)			
1. <u>Cornus alba</u>	<u>2</u>	<u>No</u>	<u>FACW</u>
2. <u>Salix discolor</u>	<u>2</u>	<u>No</u>	<u>FACW</u>
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
_____ =Total Cover			
<u>Herb Stratum</u> (Plot size: <u>5'</u>)			
1. <u>Typha X glauca</u>	<u>60</u>	<u>Yes</u>	<u>OBL</u>
2. <u>Agrostis gigantea</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>
3. <u>Eutrochium purpureum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>
4. <u>Juncus effusus</u>	<u>5</u>	<u>No</u>	<u>OBL</u>
5. <u>Alisma subcordatum</u>	<u>2</u>	<u>No</u>	<u>OBL</u>
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
_____ =Total Cover			
<u>Woody Vine Stratum</u> (Plot size: <u>30'</u>)			
1. <u>None</u>			
2. _____			
3. _____			
4. _____			
_____ =Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>67</u>	x 1 = <u>67</u>
FACW species <u>24</u>	x 2 = <u>48</u>
FAC species <u>10</u>	x 3 = <u>30</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>101</u> (A)	<u>145</u> (B)
Prevalence Index = B/A = <u>1.44</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - X 2 - Dominance Test is >50%
 - X 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators 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 diamet 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 X No

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

SOIL

Sampling Point: dp04

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 2/2	100					Mucky Sand	
4-10	10YR 4/2	90	5YR 3/4	10	C	PL	Loamy/Clayey	Prominent redox concentrations
10-24	10YR 5/2	85	7.5YR 4/6	15	C	PL/M	Loamy/Clayey	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: 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)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- High Chroma Sands (S11) (**LRR K, L**)
- 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)
- Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils³:

- 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**)
- 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 (F22)
- Other (Explain in Remarks)

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 X No _____

Remarks:
 This data form is revised from Northcentral and Northeast 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)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp05
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): Convex Slope %: 0-2
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.0405721 Long: -84.3398586 Datum: WGS 84

Soil Map Unit Name: Rubicon-Croswell association, undulating 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>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u> If yes, optional Wetland Site ID: <u> </u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	

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

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<u> </u> Surface Water (A1)	<u> </u> Water-Stained Leaves (B9)	<u> </u> Surface Soil Cracks (B6)
<u> </u> High Water Table (A2)	<u> </u> Aquatic Fauna (B13)	<u> </u> Drainage Patterns (B10)
<u>X</u> Saturation (A3)	<u> </u> Marl Deposits (B15)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Oxidized Rhizospheres on Living Roots (C3)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> Thin Muck Surface (C7)	<u> </u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Other (Explain in Remarks)	<u> </u> Shallow Aquitard (D3)
<u> </u> Sparsely Vegetated Concave Surface (B8)		<u> </u> Microtopographic Relief (D4)
		<u> </u> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
Surface Water Present?	Yes <u> </u> No <u>X</u>	Depth (inches):	<u> </u>	
Water Table Present?	Yes <u>X</u> No <u> </u>	Depth (inches):	<u>14</u>	
Saturation Present?	Yes <u>X</u> No <u> </u>	Depth (inches):	<u>7</u>	

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

Remarks:

SOIL

Sampling Point: dp05

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		
0-24	10YR 2/1	100					Sandy	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: 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)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- High Chroma Sands (S11) (**LRR K, L**)
- 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)
- Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils³:

- 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**)
- 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 (F22)
- Other (Explain in Remarks)

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

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
--	--

Remarks:
 This data form is revised from Northcentral and Northeast 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)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp06
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): None Slope %: 0
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.0405509 Long: -84.3398398 Datum: WGS 84
 Soil Map Unit Name: Rubicon-Croswell association, undulating 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>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> If yes, optional Wetland Site ID: <u>w03</u>
Hydic Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	

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

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>5</u> Water Table Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
---	---

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: dp06

<u>Tree Stratum</u> (Plot size: <u>30'</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Fraxinus pennsylvanica</u>	<u>2</u>	<u>No</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
<u>2</u> =Total Cover			
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u>)			
1. <u>Salix discolor</u>	<u>2</u>	<u>Yes</u>	<u>FACW</u>
2. <u>Populus balsamifera</u>	<u>2</u>	<u>Yes</u>	<u>FACW</u>
3. <u>Cornus alba</u>	<u>2</u>	<u>Yes</u>	<u>FACW</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
<u>6</u> =Total Cover			
<u>Herb Stratum</u> (Plot size: <u>5'</u>)			
1. <u>Juncus effusus</u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>
2. <u>Phalaris arundinacea</u>	<u>10</u>	<u>No</u>	<u>FACW</u>
3. <u>Typha x glauca</u>	<u>5</u>	<u>No</u>	<u>OBL</u>
4. <u>Onoclea sensibilis</u>	<u>5</u>	<u>No</u>	<u>FACW</u>
5. <u>Solidago altissima</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
6. <u>Rhynchospora macrostachya</u>	<u>2</u>	<u>No</u>	<u>OBL</u>
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
<u>64</u> =Total Cover			
<u>Woody Vine Stratum</u> (Plot size: <u>30'</u>)			
1. <u>None</u>			
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ =Total Cover			

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>47</u>	x 1 = <u>47</u>
FACW species <u>23</u>	x 2 = <u>46</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>2</u>	x 4 = <u>8</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>72</u> (A)	<u>101</u> (B)
Prevalence Index = B/A = <u>1.40</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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 diamet 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.)

SOIL

Sampling Point: dp06

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		

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"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> High Chroma Sands (S11) (LRR K, L) | <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Red Parent Material (F21) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Marl (F10) (LRR K, L) | <input type="checkbox"/> Very Shallow Dark Surface (F22) |
| <input type="checkbox"/> Stripped Matrix (S6) | | <input checked="" type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Dark Surface (S7) | | |

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"/>

Remarks:
 This data form is revised from Northcentral and Northeast 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)
 Soils were assumed to be hydric. Due to the depth of the surface water, a soil pit was not dug.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp07
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Summit Local relief (concave, convex, none): Convex Slope %: 1-3
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.0411927 Long: -84.343918 Datum: WGS 84

Soil Map Unit Name: Rubicon-Croswell association, undulating 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>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u> If yes, optional Wetland Site ID: <u> </u>
Hydic Soil Present?	Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>	

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

HYDROLOGY

Wetland Hydrology Indicators:	<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
<u> </u> Surface Water (A1)	<u> </u> Surface Soil Cracks (B6)
<u> </u> High Water Table (A2)	<u> </u> Drainage Patterns (B10)
<u> </u> Saturation (A3)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Shallow Aquitard (D3)
<u> </u> Sparsely Vegetated Concave Surface (B8)	<u> </u> Microtopographic Relief (D4)
<u> </u> Water-Stained Leaves (B9)	<u> </u> FAC-Neutral Test (D5)
<u> </u> Aquatic Fauna (B13)	
<u> </u> Marl Deposits (B15)	
<u> </u> Hydrogen Sulfide Odor (C1)	
<u> </u> Oxidized Rhizospheres on Living Roots (C3)	
<u> </u> Presence of Reduced Iron (C4)	
<u> </u> Recent Iron Reduction in Tilled Soils (C6)	
<u> </u> Thin Muck Surface (C7)	
<u> </u> Other (Explain in Remarks)	

Field Observations:	Wetland Hydrology Present? Yes <u> </u> No <u>X</u>
Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	
Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	
Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> (includes capillary fringe)	

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

Remarks:

SOIL

Sampling Point: dp07

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		
0-10	10YR 2/2	100					Sandy	
10-11	7.5YR 3/4	100					Sandy	
11-24	10YR 3/1	98	5YR 3/4	2	C	PL	Sandy	Prominent redox concentrations

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

²Location: 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)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- High Chroma Sands (S11) (**LRR K, L**)
- 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)
- Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils³:

- 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**)
- 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 (F22)
- Other (Explain in Remarks)

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 No

Remarks:

This data form is revised from Northcentral and Northeast 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)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp08
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 1-3
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.0411722 Long: -84.3438597 Datum: WGS 84

Soil Map Unit Name: Rubicon-Croswell association, undulating 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>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> If yes, optional Wetland Site ID: <u>w06</u>
Hydic Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	

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

HYDROLOGY

Wetland Hydrology Indicators:	<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
<u> </u> Surface Water (A1)	<u> </u> Surface Soil Cracks (B6)
<u> X</u> High Water Table (A2)	<u> </u> Drainage Patterns (B10)
<u> X</u> Saturation (A3)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Oxidized Rhizospheres on Living Roots (C3)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Presence of Reduced Iron (C4)
<u> </u> Iron Deposits (B5)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Thin Muck Surface (C7)
<u> </u> Sparsely Vegetated Concave Surface (B8)	<u> </u> Other (Explain in Remarks)
	<u> X</u> Stunted or Stressed Plants (D1)
	<u> X</u> Geomorphic Position (D2)
	<u> </u> Shallow Aquitard (D3)
	<u> </u> Microtopographic Relief (D4)
	<u> X</u> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes <u> </u> No <u> X</u>	Depth (inches): <u> </u>	Wetland Hydrology Present? Yes <u> X</u> No <u> </u>
Water Table Present?	Yes <u> X</u> No <u> </u>	Depth (inches): <u> 8</u>	
Saturation Present?	Yes <u> X</u> No <u> </u>	Depth (inches): <u> 0</u>	

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

Remarks:
Trees were exhibiting buttressing of roots.

SOIL

Sampling Point: dp08

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		
0-2	10YR 2/2	100					Sandy	
2-24	10YR 4/3	90	7.5YR 3/4	10	C	M	Sandy	Faint 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 Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Marl (F10) (LRR K, L)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input checked="" type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Dark Surface (S7)			

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

Restrictive Layer (if observed):	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Type: _____ Depth (inches): _____	

Remarks:
 This data form is revised from Northcentral and Northeast 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)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp09
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 1-3
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.041524 Long: -84.343794 Datum: WGS 84

Soil Map Unit Name: Rubicon-Croswell association, undulating 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>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> If yes, optional Wetland Site ID: <u>w07</u>
Hydic Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	

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

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<u> </u> Surface Water (A1)	<u> </u> Water-Stained Leaves (B9)	<u> </u> Surface Soil Cracks (B6)
<u>X</u> High Water Table (A2)	<u> </u> Aquatic Fauna (B13)	<u> </u> Drainage Patterns (B10)
<u>X</u> Saturation (A3)	<u> </u> Marl Deposits (B15)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Oxidized Rhizospheres on Living Roots (C3)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> Thin Muck Surface (C7)	<u>X</u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Other (Explain in Remarks)	<u> </u> Shallow Aquitard (D3)
<u> </u> Sparsely Vegetated Concave Surface (B8)		<u> </u> Microtopographic Relief (D4)
		<u>X</u> FAC-Neutral Test (D5)

Field Observations:				Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
Surface Water Present?	Yes <u> </u> No <u>X</u>	Depth (inches):	<u> </u>	
Water Table Present?	Yes <u>X</u> No <u> </u>	Depth (inches):	<u>7</u>	
Saturation Present?	Yes <u>X</u> No <u> </u>	Depth (inches):	<u>0</u>	

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

Remarks:

SOIL

Sampling Point: dp09

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		
0-2	10YR 2/1	100					Sandy	
2-5	10YR 4/2	100					Sandy	
5-24	10YR 4/4	90	7.5YR 4/6	10	C	PL/M	Sandy	Distinct redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: 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)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- 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)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 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)
- 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 (F22)
- Other (Explain in Remarks)

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

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
--	--

Remarks:
 This data form is revised from Northcentral and Northeast 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)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp10
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): Convex Slope %: 1-3
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.041569 Long: -84.343823 Datum: WGS 84
 Soil Map Unit Name: Rubicon-Croswell association, undulating 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>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u> If yes, optional Wetland Site ID: <u> </u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>	

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

HYDROLOGY

Wetland Hydrology Indicators:	<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
<u> </u> Surface Water (A1)	<u> </u> Surface Soil Cracks (B6)
<u> </u> High Water Table (A2)	<u> </u> Drainage Patterns (B10)
<u> </u> Saturation (A3)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Shallow Aquitard (D3)
<u> </u> Sparsely Vegetated Concave Surface (B8)	<u> </u> Microtopographic Relief (D4)
<u> </u> Water-Stained Leaves (B9)	<u> </u> FAC-Neutral Test (D5)
<u> </u> Aquatic Fauna (B13)	
<u> </u> Marl Deposits (B15)	
<u> </u> Hydrogen Sulfide Odor (C1)	
<u> </u> Oxidized Rhizospheres on Living Roots (C3)	
<u> </u> Presence of Reduced Iron (C4)	
<u> </u> Recent Iron Reduction in Tilled Soils (C6)	
<u> </u> Thin Muck Surface (C7)	
<u> </u> Other (Explain in Remarks)	

Field Observations:	Wetland Hydrology Present? Yes <u> </u> No <u>X</u>
Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	
Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	
Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> (includes capillary fringe)	

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: dp10

<u>Tree Stratum</u> (Plot size: <u>30'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Quercus rubra</u>	<u>60</u>	<u>Yes</u>	<u>FACU</u>
2.	<u>Acer rubrum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		<u>80</u>	<u>=Total Cover</u>	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Vaccinium angustifolium</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
2.	<u>Fraxinus pennsylvanica</u>	<u>2</u>	<u>No</u>	<u>FACW</u>
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		<u>4</u>	<u>=Total Cover</u>	
<u>Herb Stratum</u> (Plot size: <u>5'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Gaultheria procumbens</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
11.	_____	_____	_____	_____
12.	_____	_____	_____	_____
		<u>5</u>	<u>=Total Cover</u>	
<u>Woody Vine Stratum</u> (Plot size: <u>30'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>None</u>	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
		_____	<u>=Total Cover</u>	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>2</u>	x 2 = <u>4</u>
FAC species <u>20</u>	x 3 = <u>60</u>
FACU species <u>67</u>	x 4 = <u>268</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>89</u> (A)	<u>332</u> (B)
Prevalence Index = B/A = <u>3.73</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators 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 diamet 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 X

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

SOIL

Sampling Point: dp10

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 2/1	100					Sandy	
3-6	10YR 3/2	100					Sandy	
6-8	10YR 3/4	100					Sandy	
8-24	10YR 5/4	100					Sandy	

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

²Location: 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)

- Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- High Chroma Sands (S11) (**LRR K, L**)
- 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)
- Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils³:

- 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**)
- 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 (F22)
- Other (Explain in Remarks)

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 No

Remarks:

This data form is revised from Northcentral and Northeast 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)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp11
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 1-3
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.041511 Long: -84.344443 Datum: WGS 84

Soil Map Unit Name: Croswell-Au Gres-Roscommon association 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>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u> If yes, optional Wetland Site ID: <u>w08</u>
Hydic Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	

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

HYDROLOGY

Wetland Hydrology Indicators:	<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
<u>X</u> Surface Water (A1)	<u> </u> Surface Soil Cracks (B6)
<u> </u> High Water Table (A2)	<u> </u> Drainage Patterns (B10)
<u> </u> Saturation (A3)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> <u>X</u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Shallow Aquitard (D3)
<u> </u> <u>X</u> Sparsely Vegetated Concave Surface (B8)	<u> </u> Microtopographic Relief (D4)
<u> </u> Water-Stained Leaves (B9)	<u> </u> FAC-Neutral Test (D5)
<u> </u> Aquatic Fauna (B13)	
<u> </u> Marl Deposits (B15)	
<u> </u> Hydrogen Sulfide Odor (C1)	
<u> </u> Oxidized Rhizospheres on Living Roots (C3)	
<u> </u> Presence of Reduced Iron (C4)	
<u> </u> Recent Iron Reduction in Tilled Soils (C6)	
<u> </u> Thin Muck Surface (C7)	
<u> </u> Other (Explain in Remarks)	

Field Observations:	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>2</u>	
Water Table Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u>	
Saturation Present? Yes <u> </u> No <u> </u> Depth (inches): <u> </u> (includes capillary fringe)	

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: dp11

<u>Tree Stratum</u> (Plot size: <u>30'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Acer rubrum</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>
2.	<u>Betula papyrifera</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		<u>85</u>	<u>=Total Cover</u>	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Acer rubrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>
2.	<u>Alnus incana</u>	<u>5</u>	<u>No</u>	<u>FACW</u>
3.	<u>Amelanchier arborea</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		<u>40</u>	<u>=Total Cover</u>	
<u>Herb Stratum</u> (Plot size: <u>5'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>None</u>	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
11.	_____	_____	_____	_____
12.	_____	_____	_____	_____
		_____	<u>=Total Cover</u>	
<u>Woody Vine Stratum</u> (Plot size: <u>30'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>None</u>	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
		_____	<u>=Total Cover</u>	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>110</u>	x 3 = <u>330</u>
FACU species <u>10</u>	x 4 = <u>40</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>125</u> (A)	<u>380</u> (B)
Prevalence Index = B/A = <u>3.04</u>	

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

 3 - Prevalence Index is ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators 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 diamet 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 X No

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Secord Dam City/County: Gladwin Sampling Date: 11 Mar 2021
 Applicant/Owner: Four Lakes Task Force State: MI Sampling Point: dp12
 Investigator(s): K. Leister Section, Township, Range: Sec. 15, T19N R1E

Landform (hillside, terrace, etc.): Shoulder Local relief (concave, convex, none): Convex Slope %: 1-3
 Subregion (LRR or MLRA): LRR K, MLRA 94A Lat: 44.041557 Long: -84.344326 Datum: WGS 84

Soil Map Unit Name: Croswell-Au Gres-Roscommon association 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>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u> If yes, optional Wetland Site ID: <u> </u>
Hydic Soil Present?	Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>	

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

HYDROLOGY

Wetland Hydrology Indicators:	<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
<u> </u> Surface Water (A1)	<u> </u> Surface Soil Cracks (B6)
<u> </u> High Water Table (A2)	<u> </u> Drainage Patterns (B10)
<u> </u> Saturation (A3)	<u> </u> Moss Trim Lines (B16)
<u> </u> Water Marks (B1)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Sediment Deposits (B2)	<u> </u> Crayfish Burrows (C8)
<u> </u> Drift Deposits (B3)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Iron Deposits (B5)	<u> </u> Geomorphic Position (D2)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Shallow Aquitard (D3)
<u> </u> Sparsely Vegetated Concave Surface (B8)	<u> </u> Microtopographic Relief (D4)
<u> </u> Water-Stained Leaves (B9)	<u> </u> FAC-Neutral Test (D5)
<u> </u> Aquatic Fauna (B13)	
<u> </u> Marl Deposits (B15)	
<u> </u> Hydrogen Sulfide Odor (C1)	
<u> </u> Oxidized Rhizospheres on Living Roots (C3)	
<u> </u> Presence of Reduced Iron (C4)	
<u> </u> Recent Iron Reduction in Tilled Soils (C6)	
<u> </u> Thin Muck Surface (C7)	
<u> </u> Other (Explain in Remarks)	

Field Observations:	Wetland Hydrology Present? Yes <u> </u> No <u>X</u>
Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	
Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u>	
Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u> </u> (includes capillary fringe)	

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: dp12

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
<u>60</u> =Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15'</u>)			
1. <u>Hamamelis virginiana</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Acer rubrum</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>
3. <u>Cornus florida</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>
4. <u>Prunus serotina</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
<u>45</u> =Total Cover			
Herb Stratum (Plot size: <u>5'</u>)			
1. <u>Gaultheria procumbens</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Carex pensylvanica</u>	<u>2</u>	<u>Yes</u>	<u>UPL</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
<u>7</u> =Total Cover			
Woody Vine Stratum (Plot size: <u>30'</u>)			
1. <u>None</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ =Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>70</u>	x 3 = <u>210</u>
FACU species <u>40</u>	x 4 = <u>160</u>
UPL species <u>2</u>	x 5 = <u>10</u>
Column Totals: <u>112</u> (A)	<u>380</u> (B)
Prevalence Index = B/A = <u>3.39</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators 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 diamet 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 X

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

SOIL

Sampling Point: dp12

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		
0-1	10YR 2/1	100					Sandy	
1-3	10YR 5/2	100					Sandy	
3-6	10YR 3/4	100					Sandy	
6-24	7.5YR 4/6	100					Sandy	

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

²Location: 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)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- 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)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 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)
- 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 (F22)
- Other (Explain in Remarks)

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 No

Remarks:

This data form is revised from Northcentral and Northeast 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)