

JURISDICTIONAL WATERS DELINEATION – FINAL

**Coldwater Road Landfill
Mt. Morris, Genesee County, Michigan**

Racer Trust

December 10, 2018



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1. INTRODUCTION

This report presents the findings of a jurisdictional waters of the United States (WOTUS) identification and boundary delineation conducted for an approximately 35.5-acre, environmental remediation area located within the Coldwater Road Landfill property, north of Horton Street, Mt. Morris, Genesee County, Michigan (*i.e.*, the Site). This delineation report was prepared by O'Brien & Gere (OBG) for RACER Trust. The Site is entirely within the Coldwater Road Landfill property and the Notice of Approved Environmental Remediation (NAER) and Declaration of Restrictive Covenant area for the Coldwater Road Landfill (MID 005 356 860), see [Appendix A](#). In order to maintain compliance with the NAER, a Closure Plan and wetland restoration plan was implemented at the Site in 1992 (See "Attachment VI" of [Appendix A](#)). The remainder of the Coldwater Road Landfill property to the south is the landfill area (artificial upland hillside).

The objective of this report is to provide information regarding the presence and location of freshwater wetlands and other regulated waters that may exist on the Site. This information will be used to assist RACER Trust with its Site planning and permit requirements to the Michigan Department of Environmental Quality (MDEQ) under activities regulated by Section 303, Wetland Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451.

1.1 SITE DESCRIPTION

The Site is irregular-shaped and situated between Klein Street (to the south) and E. Stanley Road (to the north), surrounded by a mixed-use area. The remainder of the Coldwater Road Landfill Property to the southeast is a landfill adjacent to an open concrete slab area used for the storage of metal racks used for storing and transporting parts. Adjacent property to the north, west and southwest is occupied by residential and commercial areas. A railroad line, undeveloped area and a residential community are located to east of the Site. Areas immediately adjacent to the Site include other undeveloped areas that fall within the Coldwater Road Landfill property. The undeveloped areas are surrounded by a 6-ft high chain link fence with a 10-ft wide gravel road running along the fence for access to the property. The undeveloped areas surrounding the Site are dominated by a variety of tall grasses and shrubs with sparsely forested areas of mid-successional trees.

The Site topography generally slopes towards the west. Surface elevation ranges from approximately 800 feet above mean sea level (msl) at the southeast corner of the Site, to approximately 770 feet msl in the southwest corner of the Site. Three water retention areas (constructed open ponds) with constructed embankments on the western edges occupy a majority of the Site (~53%). Both embankments are cleared of trees and appear to be maintained. The areas along the edge of Wetland D have sparse areas of mid-successional Cottonwood trees (*Populus deltoides*) ranging from 10-ft to 30-ft in height, as well as, areas of dense saplings and shrubs. The embankments of both Wetland D and C are occupied by primarily tall grasses and shrubs:

- Open water ponds with fringe wetland areas (~53%)
- Maintained embankments/berms and gravel roads (<1%)
- Deciduous wooded/scrub-shrub and grassy areas (~46%).

The Site is located within the Brent Run watershed (HUC#040802040503).

The surface water connection of the on-Site wetlands and open water areas are managed by both existing surface storm water control features (maintained embankments/berms) and subsurface storm water drainage systems (concrete subsurface drainage pipes). The surface water control features were constructed to isolate the Site's surface waters from the surrounding upland areas and to prevent surface water from entering the local storm water system, except in very limited circumstances (e.g., high precipitation rate) (See [Appendix A](#)).

2. DELINEATION METHODS

Wetland delineation field activities were conducted by OBG in accordance with the USACE *Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region, Version 2.0* (USACE 2010) (Regional Supplement). Appended to this report are the hydric soils list for Genesee County ([Appendix B](#)), Wetland Data Forms ([Appendix C](#)) generated during this effort, the monthly precipitation report for Genesee County, Michigan, dated November 2018 ([Appendix D](#)), a photographic log ([Appendix E](#)) depicting the wetland and stream habitats observed, and completed Michigan Rapid Assessment Method (MiRAM) forms ([Appendix B](#)). County soil survey information and national wetlands inventory mapping of the project area are also included in this report ([Figures 2](#) and [3](#), respectively).

2.1 WETLANDS

The USACE and the United States Environmental Protection Agency (USEPA) jointly define wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions [33 CFR 328.3(b), 40 CFR 230.3(t)]. Criteria used to identify a wetland, as defined therein, consist of the following:

- The prevalent vegetation is hydrophytic (water tolerant)
- The soils observed have been classified as hydric, and/or anaerobic (reducing) conditions have developed in the soils
- The area is either permanently or periodically inundated at mean water depths less than or equal to 6.6 feet, or the soil is permanently or periodically saturated to the surface during the growing season.

To make a positive wetland determination, a minimum of one wetland indicator from each criterion (vegetation, soil, and hydrology) must be identified. The Routine Determination Method outlined in the Manual (USACE 1987) was used in conjunction with procedures outlined in the Regional Supplement (USACE 2010) to identify and delineate wetlands within the survey area. Routine determinations involve simple, rapidly applied methods that result in sufficient qualitative data for identifying wetland and non-wetland areas. The Routine Determination Method consists of a combination of off-site data review and on-site inspection.

Desk-top review activities included an evaluation of available information regarding environmental conditions within the survey area. On-site activities consisted of collecting the field data required to identify and delineate wetland boundaries. Field data were gathered at sample plots (referred to herein as test sites) chosen in potential wetland areas, as well as in corresponding adjacent upland areas. While information obtained from off-site sources such as the National Wetland Inventory Map and the Soil Survey Map for Genesee County (USFWS 2018) were consulted during this wetland delineation, final wetland determinations were made based on information observed in the field. The following describes the approach used to complete the wetland identification and delineation effort:

2.1.1 Vegetation

Plant community types were visually recognized and their dominant component species identified. Wetland indicator status was obtained, if available, for each species identified and recorded on the field data sheet. If greater than 50% of the dominant species in the plant community were observed to have an indicator status of facultative (FAC) or wetter (FACW, OBL), then a hydrophytic vegetative community was determined to be present.

The criterion for wetland vegetation is a dominance of hydrophytic (water tolerant) species. A species is considered hydrophytic per USACE methodology if it is classified either as obligate (OBL), facultative wet (FACW), or facultative (FAC) in The National Wetland Plant List (Lichvar et al 2016). A dominance of hydrophytes requires that more than 50% of the vegetative species in an area are classified as hydrophytic. In accordance with USACE methodology, observations of vegetation focus on dominant vegetative species in four categories: trees (3-inch diameter at breast height), saplings/shrubs (less than 3-inch diameter and greater than 3.28 ft tall), herbs, and

woody vines. Botanical and common names are referenced from The National Wetland Plant List (Lichvar et al 2016).

2.1.2 Hydrology

Prospective wetland areas were examined for the presence of hydrology in the areas occupied by the hydrophytic plant community. According to USACE methodology, wetland hydrology may include (but is not limited to) one or more of the following parameters; permanent or periodic inundation, water marks, aquatic fauna, reducing conditions, drift deposits, high water table, sparsely vegetated concave surface, sediment deposits, water stained leaves, or soil saturation to the surface during the growing season. If wetland hydrologic indicators were observed, then the area was considered to possess wetland hydrology.

2.1.3 Soils

Samples of the soil substrate in the prospective wetland areas were examined at each location. The characteristics of the soil were compared to hydric soil indicators as prescribed by the Manual and Regional Supplement (USACE 2010). If the soils were observed to have positive hydric soil indicators (histosol, aquatic moisture regime, low chroma colors, etc.), then hydric soil was considered to be present.

Observed soil characteristics in the field were compared to the descriptions from the mapped soil survey since characteristics can vary from mapped description due to the scale at which the soil mapping was performed. Soil physical characteristics were evaluated up to 20 inches below ground surface (bgs) unless shallower refusal occurred. Soil color was evaluated using *Munsell Soil Color Charts* (Munsell 2000). Soil characteristics were compared to hydric soil criteria from the USACE methodologies.

If all of the above characteristics (hydrophytic vegetation, wetland hydrology, and hydric soils) were found to be present in a potential wetland area, the area was identified as a wetland. If any of the above characteristics were found to be absent in a prospective wetland area, then the area was not considered a wetland. The point between the area where all three of these criteria are present and the area where at least one of these criteria was absent was defined as the wetland border.

2.1.4 Michigan Rapid Assessment Method for Wetlands

The regulation of wetlands under Michigan's state wetlands law and Sections 401 and 404 of the Clean Water Act requires an evaluation of the function and quality of wetlands in order to facilitate decisions throughout the wetland permitting process. The Michigan Rapid Assessment Method for Wetlands (MiRAM) is a tool to determine the "functional value" of a particular wetland and to assign a rating level to that wetland as compared to other wetlands. The goal of this rating system is to assess individual wetlands on an equal scale regardless of ecological type which is regulated by the Michigan Department of Environmental Quality's (MDEQ's) Part 303 Wetland Protection under the Natural Resources and Environmental Protection Act, 1994 PA 451. The latest approved version of the MiRAM methodology is Version 2.1 (DNRE 2010).

The MiRAM evaluation consists of a narrative wetland evaluation based on the elements of Part 303(m) including legislative findings provided in Section 30302 and the permit application review criteria of Section 30311 physical and ecological features that serve as indicators of wetland quality. This qualitative evaluation is used to classify the wetland into an MiRAM 'high functional value' based on affirmative responses.

If the MiRAM qualitative rating is negative then a quantitative rating score is calculated and must be considered in light of other available information on the nature of the wetland. MiRAM scores allow the evaluator to compare the functional value of a wetland to other wetlands within Michigan.

2.2 NON-WETLAND WOTUS

In addition to wetlands, other potential WOTUS were identified and delineated during this study. In accordance with USACE and USEPA Clean Water Act regulations (33 CFR 328.3(a)), other 'waters of the U.S.' may include streams, drainages, and ponds. Potential streams were evaluated using current USACE methods, the USACE Jurisdictional Determination Form Instructional Guidebook (USEPA/USACE 2007), and regulatory guidance

provided in response to the Rapanos decision (EPA/USACE 2008). Streams were classified as either perennial, intermittent, or ephemeral systems, based on observed conditions in the field, desk-top information, evidence of bed and bank characteristics (*i.e.*, ordinary high water mark) and other hydrologic indicators.

3. DELINEATION FINDINGS

Presented below are the findings based on the desk-top review and on-Site activities that were completed for this project.

3.1 OFF-SITE FINDINGS

Off-site investigation included review of available information from the following sources:

- Genesee County Soil Survey
- Genesee County, Michigan Hydric Soil List
- National Wetlands Inventory (NWI) Map.

3.1.1 Genesee County Soil Survey

Soil survey information for Genesee County, Michigan was obtained from the United States Department of Agriculture/National Resource Conservation Service online soil survey mapping website (USDA/NRCS 2018). The following soil types and descriptions were identified for the Site, as shown on [Figure 2](#):

EtmaaE: Udorthents and Udipsamments, nearly level to hilly- This soil type is characterized as a silt loam to clay loam soil (within the upper 39 inches of the soil profile) that is well-drained and not typically subject to flooding or ponding.

CvrabA: Conover loam, 0 to 3 percent slopes - This soil type is characterized as a low-slope (0 to 3 percent) loam soil (within the upper 79 inches of the soil profile) and is somewhat poorly drained. The depth to water table typically ranges between 7 and 14 inches below ground surface.

CvracB: Conover-Williamstown loams, 0 to 6 percent slopes - This soil type is characterized as a sloping loam soil (within the upper 79 inches of the soil profile) and is somewhat poorly drained. The depth to water table typically ranges between 7 and 14 inches below ground surface.

W: Water - This soil indicator characterizes an area of open surface water.

3.1.2 Hydric Soils of Genesee County

According to the USDA/NRCS, the following soil types are listed as hydric soils in Genesee County:

- Conover loam (CvrabA), 0 to 3 percent slopes

A copy of the Hydric Soil List for Genesee County, Michigan is presented in [Appendix B](#).

3.1.3 National Wetlands Inventory (NWI) Map

The U.S. Fish & Wildlife Service (USFWS, 2018) NWI map ([Figure 3](#)) shows two Freshwater ponds within the Site, surrounded by freshwater emergent wetlands. Both ponds are part of the remediation of former waste water treatment activities and were likely constructed in upland areas.

3.2 ON-SITE FINDINGS

Two OBG biologists trained in wetland and stream delineation and assessment performed the field activities on November 28-29, 2018. On-Site activities include the evaluation of vegetative communities, the soil substrate, and hydrologic characteristics to identify and delineate wetland boundaries within the limits of the Site. Field data were gathered at representative sample plots. Wetland were identified based on presence of three parameters:

- Hydric soils
- A vegetative community dominated by hydrophytes
- Inundated or saturated soil conditions, and/or indicators of hydrologic patterns.

Field data were recorded on Wetland Determination Data Forms adapted from the Regional Supplement (USACE 2010) and presented in [Appendix C](#).

3.2.1 Soils

As previously reported, one mapped hydric soil units were documented for the Site. A total of 7 soil test site locations (*i.e.*, soil pits) to depths of approximately 14 to 15 inches bgs were investigated, unless shallower refusal was noted. In general, the soil characteristics observed were consistent with USDA/NRCS soil map unit descriptions. The soil units encountered were described as silt loam, clay loam, silty clay loam or clay loam.

3.2.2 Vegetation

In general, the majority of the on-Site wetlands consist of large predominately scrub/shrub and emergent wetland habitats on the fringe of open water features that are situated within the Site. The wetlands appear to be inundated year-round and generally contain the following species: narrow leaf cattail (*Typha angustifolia*), broad leaf cattail (*Typha latifolia*), eastern cottonwood (*Populus deltoides*), *Phragmites australis*, false nettle (*Boehmeria cylindrica*) and sandbar willow (*Salix interior*). Using the NWI nomenclature, the wetlands are most representative of a palustrine scrub-shrub (PSS), persistent, and palustrine open water (POW) habitat.

3.2.3 Hydrology

The observed and documented hydrologic indicators for the Site consisted of surface water, high water table, saturation, oxidized rhizospheres, and FAC-neutral test.

The Monthly Precipitation Report for Michigan reported that precipitation in area of the Site (Genesee County) was 1.76 inches for November 2018. A copy of the precipitation report for November 2018 is included as [Appendix D](#).

3.3 DELINEATED WETLANDS

When all three wetland criteria (hydric soils [as qualified above], dominance of hydrophytes and wetland hydrology) were met, the area represented by the sample plot was identified as wetland. The wetland boundaries within the survey area were delineated in the field with sequentially numbered (WA-1, WA-2, WA-3, *etc.*) orange surveyor markers (flagging tape tied to vegetation). Wetland test site locations were also identified with blue striped surveyor flagging and labeled TS-1 through TS-7.

At the time of the survey the depth of the surface water within portions of the wetland areas exceeded 3-feet in depth. Due to safety constraints, OBG personnel were prohibited from entering water greater than 3-feet in depth, therefore areas of the wetland community that transitioned into an open water pond were inaccessible to OBG biologists.

The wetland boundary and sample plot flagging locations were surveyed by the field biologists using a hand-held Trimble Global Positioning System (GPS) unit and subsequent post processing of the raw data. The post-processed GPS data represent sub-meter accuracy. Boundaries of the wetland community that were inaccessible to OBG biologists were flagged and a GPS location was taken at the nearest practicable location with a noted observation of an approximate distance and cardinal direction to the wetland boundary. Post-processing of flagged wetland boundaries included adjusting the GPS locations which were noted as inaccessible to OBG biologists during the field survey by using the field observations and high resolution aerial photographs from July 2017 and 2018 to map an accurate wetland boundary. Post-processing of the representative photographs and boundaries of delineated wetland areas are presented in [Appendix E](#) and [Figure 4](#).

A total of three wetland and three open water feature areas totaling approximately 18.86 acres, were identified and delineated within the limits of the Site. These features are listed in [Table 1](#). The location of the surveyed

wetland boundaries and wetland sample plots are presented on the Wetland Location Map included herein as **Figure 4**.

Table 1 - Delineated Wetland Habitats

Wetland ID	Acreage	Wetland Type	General Location
A	1.99	POW	Western portion of the Site
B	0.06	PSS	Western portion of Site
C	3.54	PSS	Western portion of Site
D	4.85	PSS	Central and Eastern portion of Site
E	0.54	PSS	Central portion of Site
F	0.66	POW	Eastern portion of Site
G	7.22	POW	Eastern portion of Site
Total Acreage	18.86		

3.3.1 Open Water Feature A

Palustrine open water (POW) A consists of a palustrine open water feature. OBG observed surface water within POW A that was greater than 3-feet in depth. No vegetation was observed at the time within the open water feature. Using the NWI classification system, this wetland is most representative of a POW habitat.

3.3.2 Wetland B

Wetland B consists of a palustrine scrub/shrub wetland community dominated by Sandbar willow (*Salix interior*) and eastern cottonwood saplings (*Populus deltoides*). Wetland B is located adjacent to the POW A, however the existing western berm creates an upland barrier between Wetland B, Wetland C and POW A. The hydrology of Wetland B is from precipitation and groundwater. Approximately 1-4 inches of surface water was observed by OBG, and saturation was observed from the soil surface to 16 inches bgs. Using the NWI classification system, this wetland is most representative of a palustrine scrub/shrub (PSS) habitat.

3.3.3 Wetland C

Wetland C consists predominately of a palustrine scrub/shrub wetland community dominated by black willow (*Salix nigra*) and narrowleaf cattail (*Typha latifolia*). Areas of Wetland C were observed to be dominated by narrowleaf cattail and *Phragmites australis*, however these areas were largely inaccessible to OBG biologists and existed as a complex mosaic. OBG biologist were unable to delineate the individual PSS and PEM communities within Wetland C due to the lack of accessibility. OBG observed that Wetland C is a fringe wetland to the POW A. OBG observed 1-24 inches of surface water throughout Wetland C. Using the NWI classification system, this wetland is most representative of a PSS habitat.

3.3.4 Wetland D

Wetland D consists of a palustrine scrub/shrub wetland community dominated by sandbar willow (*Salix interior*), Eastern cottonwood (*Populus deltoides*) and broadleaf cattail (*Typha angustifolia*). Wetland D is a fringe wetland to the Open Water Features F and G. Similar to Wetland C, areas of Wetland D were observed to be dominated by narrowleaf cattail and *Phragmites australis*, however these areas were largely inaccessible to OBG biologists and existed as a complex mosaic. Surface water of approximately 1-24 inches was observed by OBG. Using the NWI classification system, this wetland is most representative of a PSS habitat.

3.3.5 Wetland E

Wetland E was inaccessible to OBG biologists for a wetland determination data point and OBG biologists were only able to visually observe the wetland from a distant of approximately 100 ft. Wetland E is encompassed by POW F. Wetland E was observed to be dominated by narrowleaf cattail, sandbar willow and *Phragmites australis*.

3.3.6 Open Water Feature F and G

POW features F and G both consist of an open water pond, no known or observed hydrological connection to another waterbody could be determined. Surface water was observed by OBG at each feature of greater than 2-ft in depth. Using the NWI classification system, these wetlands are representative of a POW habitat.

3.4 MIRAM EVALUATION

In accordance with the guidelines of MiRAM, the wetlands hydrologically connected to the palustrine open water features and wetlands separated by less than 100 linear feet of an upland area were scored together as a single wetland evaluation area. The narrative rating of all the wetland areas within the Site did not qualify them as 'high functional value' wetlands.

Table 2 provides the quantitative MiRAM scores for on-Site wetlands:

Table 2 – MiRAM Findings	
Wetland ID	MiRAM Score
A/B/C	57
D/E/F/G	58

A copy of the completed MiRAM forms is presented as [Appendix B](#).

3.5 OTHER REGULATED WATERS OF THE U.S.

OBG biologists did not observe any other water features within the Site boundary.

4. CONCLUSIONS

OBG completed a wetland delineation for an approximate 35.5-acre area located within the Coldwater Road Landfill Facility in Mt. Morris, Genesee County, Michigan. The Site is currently owned by RACER Trust. Field activities were completed on November 28-29, 2018 by two trained wetland biologists using USACE methodology presented in the 1987 USACE Manual and Regional Supplement.

Three palustrine emergent wetlands and three palustrine open water features, totaling approximately 18.86 acres, were delineated within the limits of the Site. The wetlands ranged in size from 0.01 (Wetland B) to 7.23 acre (Open Water G) and are situated within the central area of the Site. The wetlands scored 57 and 58 using the MiRAM scoring method.

The Site is located within the Brent Run watershed (HUC 040802040503).

A jurisdictional determination by MDEQ will be needed in order to confirm the wetland boundaries presented in this report. A Site jurisdictional determination is valid for a period of five years.

5. REFERENCES

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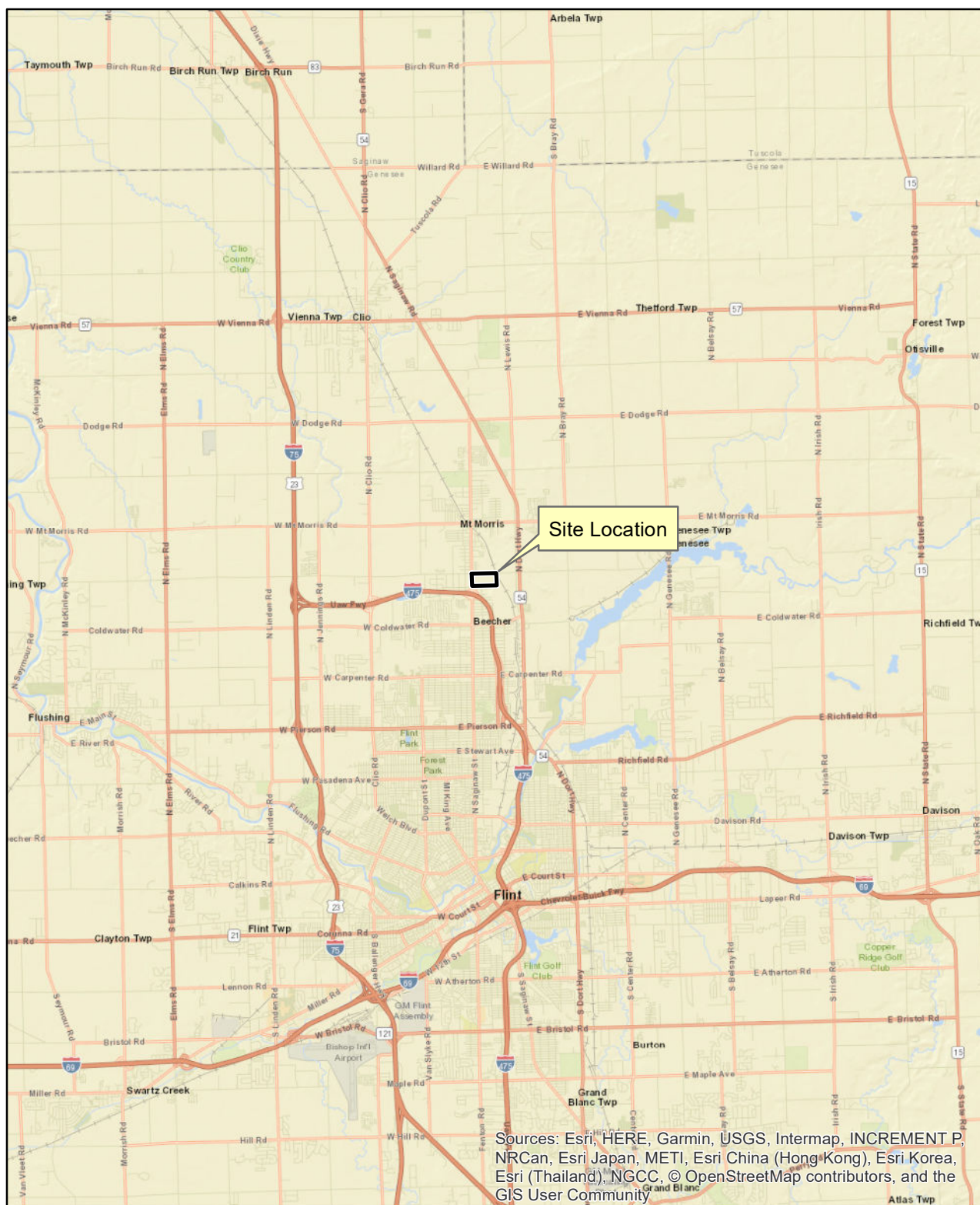
<http://www.fws.gov/wetlands/data/mapper.html>.



Figures

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LEGEND

 Site Vicinity

RACER TRUST COLDWATER ROAD LANDFILL FACILITY MT. MORRIS, MICHIGAN SITE VICINITY

15388/68545/002
DECEMBER 2018

0 5,000 10,000 20,000
Feet

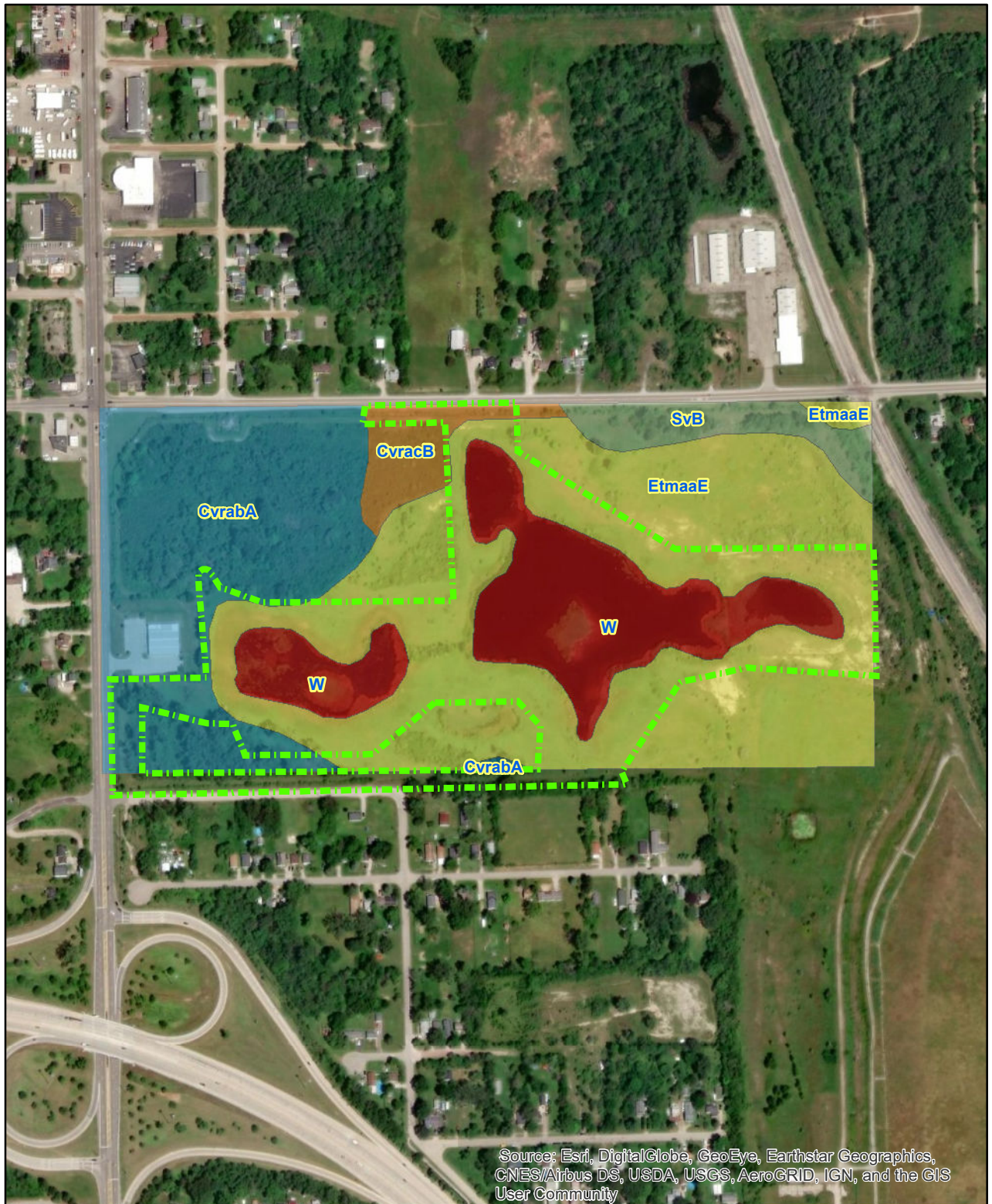


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LEGEND

Jurisdictional Waters Delineation Survey Area

CvrabA
 CvracB
 EtmaaE
 SvB
 W

RACER TRUST COLDWATER ROAD LANDFILL FACILITY MT. MORRIS, MICHIGAN USDA SOIL SURVEY

0 100 200 400
 Feet



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LEGEND

- Jurisdictional Waters Delineation
- Survey Area
- Freshwater Emergent Wetland
- Freshwater Pond

RACER TRUST
COLDWATER ROAD
LANDFILL FACILITY
MT. MORRIS, MICHIGAN
NATIONAL WETLANDS INVENTORY

15388/68545/002
DECEMBER 2018

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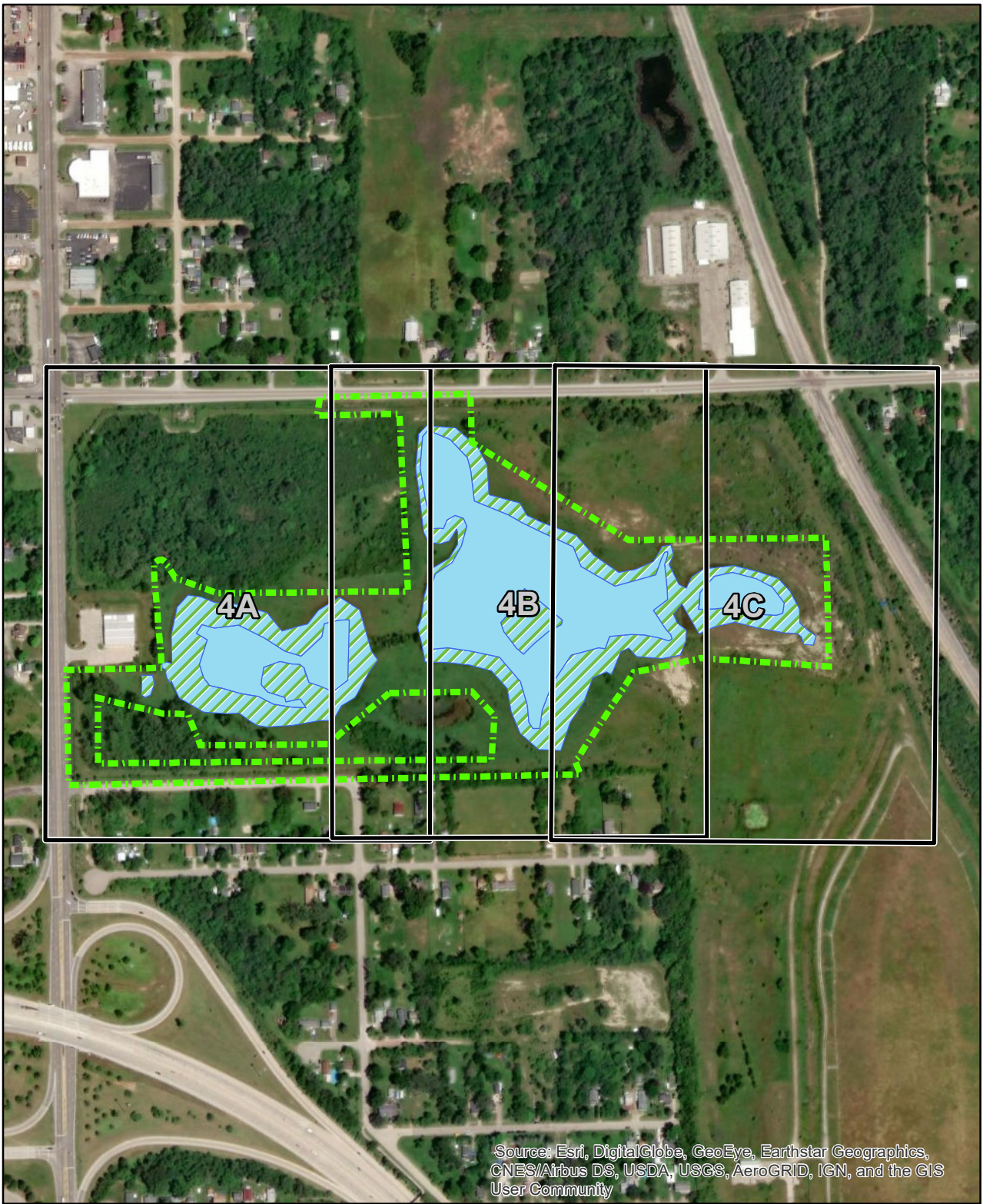


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LEGEND

- Jurisdictional Waters Delineation Survey Area
- Palustrine Scrub/Shrub Wetland
- Palustrine Open Water
- Index Map Boundary

RACER TRUST
COLDWATER ROAD
LANDFILL FACILITY
MT. MORRIS, MICHIGAN

INDEX MAP



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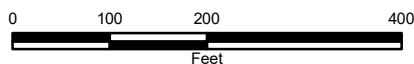


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGEND

- Jurisdictional Waters Delineation Survey Area
- Photo Point
- Palustrine Scrub/Shrub Wetland
- Palustrine Open Water
- Test Site

RACER TRUST COLDWATER ROAD LANDFILL FACILITY MT. MORRIS, MICHIGAN JURISDICTIONAL WATERS SURVEY

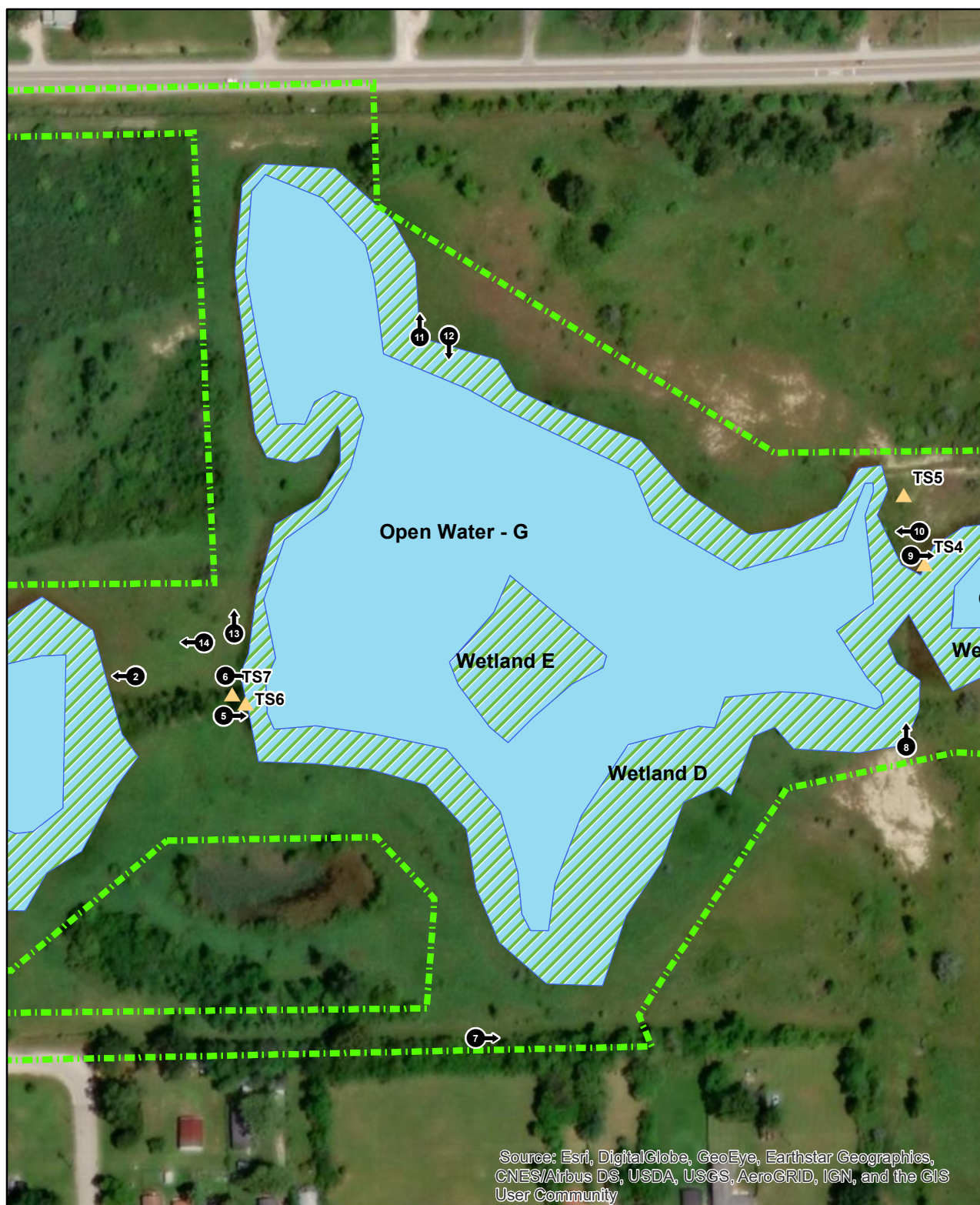


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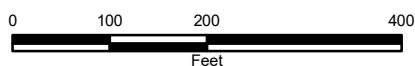
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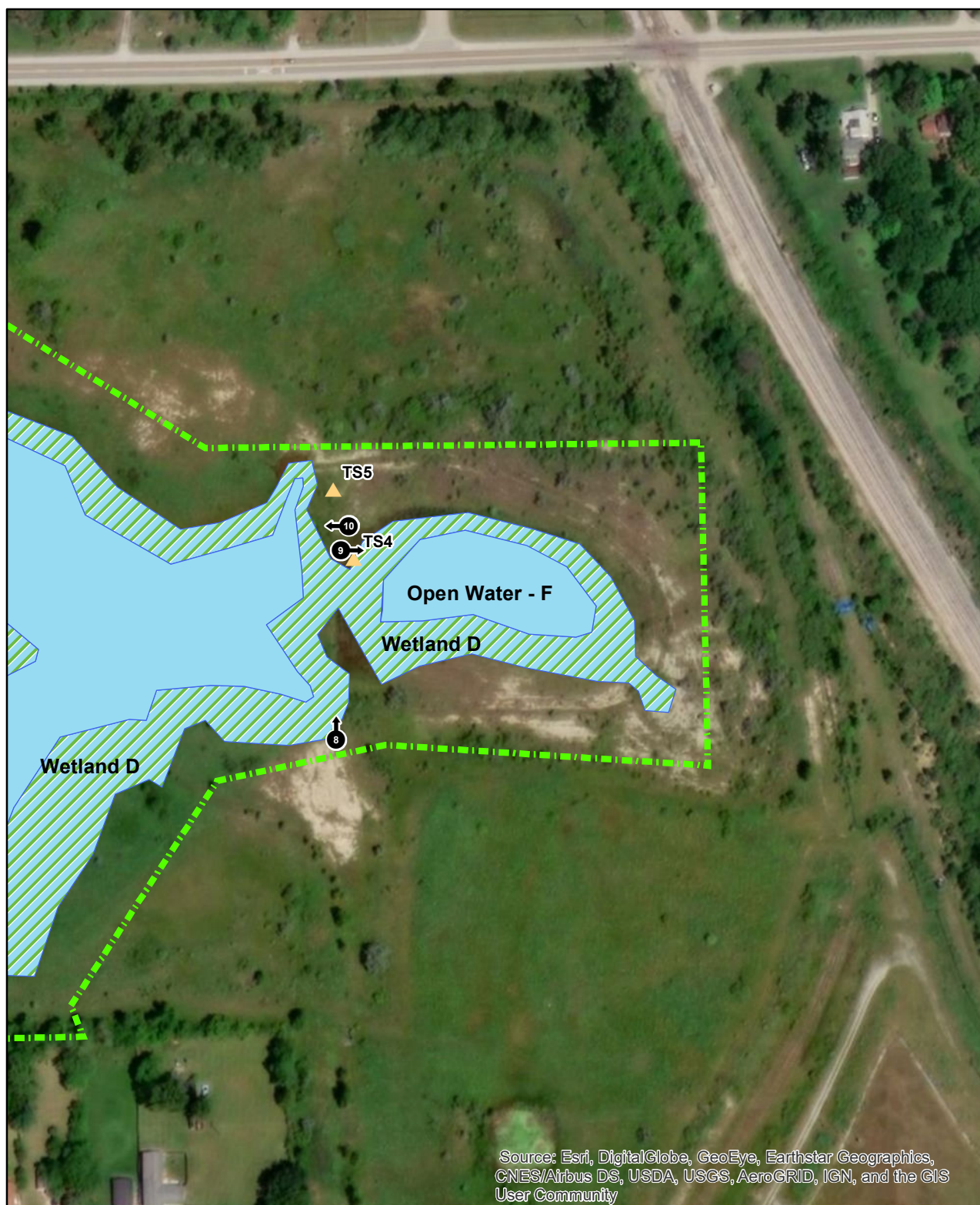
- Jurisdictional Waters Delineation Survey Area
- Photo Point
- Palustrine Scrub/Shrub Wetland
- Palustrine Open Water
- Test Site

RACER TRUST
COLDWATER ROAD
LANDFILL FACILITY
MT. MORRIS, MICHIGAN
JURISDICTIONAL WATERS SURVEY



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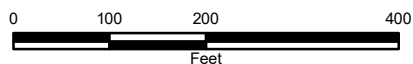


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGEND

-  Jurisdictional Waters Delineation Survey Area
-  Photo Point
-  Palustrine Scrub/Shrub Wetland
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RACER TRUST COLDWATER ROAD LANDFILL FACILITY MT. MORRIS, MICHIGAN JURISDICTIONAL WATERS SURVEY



O'BRIEN & GERE ENGINEERS, INC.



Appendix A
Coldwater Road Landfill
Information

Pursuant to this Consent Order, the MDNR will not require the Company to obtain a Wetland Protection Act permit for closure/cleanup activities and restoration of the marshy area west of the ditch outlet. The Company shall define the extent of contamination in the marshy area west of the ditch outlet, in accordance with the sampling and analytical procedures in the approved Closure Plan as modified by this Consent Order. The Company shall perform excavation and treatment of contaminated sediments and soils, in accordance with the approved Closure Plan as modified by this Consent Order. The Company shall implement the final wetland restoration plan in accordance with Exhibit A to this Attachment. Attachment VI and Exhibit A shall be deemed incorporated into and is an enforceable part of the Consent Order.

1. The Company shall provide adequate construction measures to protect adjacent wetlands. The Company shall also ensure that appropriate measures are taken to control soil erosion and that excavated material is properly disposed. This provision shall not waive state authority under the Water Resources Commission Act, 1929 PA 245, or federal authority under the Federal Water Pollution Control Act.
2. Any changes affecting wetlands regulated under the jurisdiction of the statute or other material changes necessitated by unforeseen site conditions which may arise during restoration described by this Consent Order, other than emergency situations, shall be submitted to the MDNR for review and approval prior to implementation of such changes. The Company shall notify the MDNR immediately by telephone of any emergency condition on site during wetland restoration that would necessitate changes to the approved restoration plans. The Company shall notify the MDNR by contacting Mr. Tom Kolhoff, Land and Water Management, District 11, Imlay City, at 517-724-2015.
3. The Company, in performing under the authority granted by this Consent Order, shall not cause any unlawful discharge into the waters of the state as set forth in MCL 323.1 et seq., and shall perform the construction, operation, and maintenance of the wetland restoration in a manner which will prevent unacceptable impact on water quality.
4. The Company shall secure required permits and approvals prior to the initiation of each phase of wetland restoration, including the necessary permits for soil erosion and sedimentation control from the Genesee County Drain Commission.
5. Within 15 days prior to implementation of the approved wetland restoration plans, the Company shall provide to the MDNR two (2) copies of the approved soil erosion and sedimentation control plan describing those provisions necessary to meet the criteria of the Soil Erosion and Sedimentation Control Act, 1972 PA 347. That plan shall contain provisions to address the wetland restoration project as presented in Exhibit A. The soil erosion and sedimentation control plan shall include a seeded cross sectional sketch and plan view of the wetland area, an identification of the seed bed material to be applied to slopes and the seed mixture and application schedules of seed on treated slopes.

6. Within 30 days of the effective date of the Consent Order, the Company shall provide to the MDNR two (2) sets of plans to evaluate and monitor the restored wetland for five years from the date of completion and provide the following within an annual report:
 - i. Plant identification, diversity, and percent cover by species occurring in the spring and late summer of each year as shown along permanently established transects or study plots as located on a site plan. Photographic record of each permanently located study or transect for each monitoring data. The report and photograph record must be submitted to the MDNR by December 1 of each year upon completion of the wetland restoration.
 - ii. Depth to permanent static water level (if below grade) and characterization of the soil moisture content of the area as a whole.
 - iii. Identification of any failure of the area to exhibit wetland conditions.
 - iv. Recommendations as to the corrective steps necessary to successfully establish wetland on Company property or the immediate vicinity. Corrective steps, if necessary, shall be implemented pursuant to paragraph 2.
7. Prior to implementation of the approved wetland restoration plans in Exhibit A, the MDNR shall meet with the Company and its consulting agent to finalize the proposed wetland restoration. A preconstruction meeting shall be held on the site with the MDNR, the Company, and its construction agent to discuss the construction sequence, techniques and restrictions. The MDNR will provide authorization to proceed upon closure of the preconstruction meeting. The Company shall perform or cause to be performed all the tasks herein described, including any provisions identified by the approved plans and/or incorporated by MDNR approvals. The Company shall commence construction as soon as possible following completion of closure activities, contingent upon suitable weather conditions, and construction shall be completed within 90 days of the MDNR authorization to proceed. The Company shall notify the MDNR of the project initiation date in the event that the Company cannot immediately initiate construction. In the event such restoration cannot be completed within 90 days due to adverse weather conditions, the Company shall notify the MDNR as soon as the Company has knowledge that the restoration will not be completed within 90 days, and provide the MDNR with a reasonable date by which the restoration will be completed.
8. All wetland construction shall be supervised by the Company's wetland consultant and implemented at their direction except as otherwise required by the Consent Order. Should deviation from the designed work be determined necessary by the wetland consultant due to unforeseen circumstances or design failure, the Company shall request a revision to the approved wetland restoration plans. The Company shall submit in written form complete documentation supporting any revision request to the MDNR which shall evaluate the submitted information and either approve, approve with modifications or disapprove the request.

9. The Company shall notify in writing the MDNR (Land and Water Management Division) within 10 days upon completion of the wetland restoration specified by this Consent Order. Upon completion of construction of the wetland, the Company shall provide one copy of the as-built construction plans for the wetland restoration project to the Land and Water Management Division and one copy to the Waste Management Division. Performance pursuant to this Consent Order shall include performance of the wetland evaluation and monitoring program and implementation of those corrective steps necessary in the event of failure of the wetland restoration project as provided by the wetland evaluation plan identified in paragraph 6, as appropriate. The wetland restoration must be certified complete by the Land and Water Management Division of the MDNR.
10. The Company shall not dredge or remove soils from wetland, deposit or place fill in wetland, drain water from a wetland, or perform any construction or operation in a wetland as defined by the Wetland Protection Act, except as provided in the approved closure plan, or upon proper application and issuance of the requisite permit by the MDNR.
11. The Company shall allow any authorized representative or contractor of the MDNR, upon presentation of proper credentials, to enter upon the premises for purposes of compliance monitoring of the terms of this Consent Order pursuant to the Wetland Protection Act and rules promulgated thereunder, or any other applicable statutory provision.
12. Any notice, report, documentation, or recitation required by paragraphs 5, 6, and 9 of this Attachment shall be submitted to the attention of:

Mr. Tom Kolhoff
Land and Water Management Division
Imlay City District Office
715 S. Cedar St.
Imlay City, MI 48444

EXHIBIT A

**TECHNICAL SPECIFICATIONS
FOR
WETLAND RESTORATION II
AT THE
GENERAL MOTORS CORPORATION
COLDWATER ROAD PLANT**

Prepared by
Johnson Johnson & Roy/inc
110 Miller
Ann Arbor, Michigan 48104

30 April 1992

1. SOIL EROSION AND SEDIMENTATION CONTROL

A. Permits

- 1) Soil Erosion and Sedimentation Control Act 347, amended by Act 197, 1974, State of Michigan, requires that all sitework be in compliance with the requirements of the act.
- 2) The Contractor shall be responsible for obtaining and abiding to all state and county erosion control permits.
- 3) In addition to the conditions of the soil erosion and sedimentation control permits, the Contractor shall:
 - a) Install temporary erosion control measures as indicated on the drawings prior to starting construction.
 - b) Conduct earth changes in a manner which will prevent accelerated soil erosion and resulting sedimentation from leaving the site or from entering adjacent wetland areas. In the event that erosion does occur, the Contractor shall immediately remove all materials.
 - c) Provide straw bales as temporary soil erosion control to eliminate sedimentation from entering sewers and open ditches.
 - d) Maintain temporary soil erosion control devices until wetland seeding has been accepted by the Owner's representative.
 - e) If dewatering of work space is required, water will be pumped into a gravel filter located in an upland area to dissipate water velocity and trap sediments as shown on detail sheet. No water will be pumped into an existing wetland area.
4. The Contractor shall maintain all erosion and sedimentation control until the contract has been completed and accepted.

2. TEMPORARY FENCE

A. Protection

- 1) Prior to commencing clearing operations, vegetation to be saved shall be protected by erecting a barrier in the location indicated on the plans or as approved in the field by the Owner's representative. The barrier shall be a minimum of 20 feet from each trunk or at the drip line, whichever is greater. The barriers shall remain in place until the Owner's representative approves its removal.

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B. Materials

- 1) Protection barriers shall be constructed of wood and wire snow fence or orange vinyl material.
- 2) Fence shall be a minimum of 4 feet in height. Material shall be approved by the Wetland Consultant.
- 3) Fencing shall be strung on 6-foot steel posts set at a maximum spacing of 8 feet center to center as shown on detail drawing.
- 4) Maintain all fencing in a sound working condition. Repair or replace all fencing damaged by construction activities.
 - a) Repair or replacement of all damaged installations.
 - b) Removal of collected silts and sedimentation periodically as required or directed to maintain effectiveness of the silt traps, filters, and basins.

3. EARTHWORK

A. Field Engineering

- 1) The Contractor shall retain a Michigan registered surveyor or civil engineer to perform the following survey requirements:
 - a) Establish a grid-coordinate system for the entire work limits to conduct all field engineering as described below.
 - b) Prior to commencing earthwork activities, the work limits shall be staked on 100-foot intervals and all existing elevations recorded on the stakes.
 - c) After rough grading has been completed, but prior to topsoil spreading, the entire work limits shall be surveyed on 50-foot grid points at all spot elevations, and the elevations recorded on the stakes. The Owner's representative shall approve all rough grade operations prior to spreading surface materials.
 - d) After finish grading (topsoil and riprap), the entire work limits shall be surveyed on 100-foot grid points at all spot elevations, and the elevations recorded on the stakes.

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- e) Prior to seeding, the surveyor shall stake all seeding edges along 100-foot grid lines and the elevations recorded on the stakes. The Owner's representative shall adjust all bed edges to ensure seed species are located at the proper grades. This adjustment shall be at no additional cost to the Owner.
- f) All elevations identified above shall be recorded in standard bound and indexed field notebooks which will become the property of the Owner.
- g) Upon project completion, all stakes shall be removed.

B. Site Preparation/Excavation

- 1) The 'Interim Grading Plan' identifies approximate existing grades at the time the earthwork under this contract begins. These proposed grades represent approximate conditions that will be present on the site after the removal of all contaminated soils has been completed.
- 2) The Contractor shall install all construction fencing as specified under "Temporary Fence".
- 3) The Contractor shall clear and grub all vegetation within the work limits and legally dispose all materials off-site.
- 4) Contours and spot elevations indicated on the grading plan are finish grades. Finish grades shall be:
 - a) Within a tolerance of 1 inch from the specified grades;.
 - b) Smooth uniform and free of irregularities between points where elevations are given or between such points and existing grades, or at the specified slopes.
 - c) Lightly compacted by the equipment used to create the finish grades.
 - d) Approved by the Owner's representative prior to seeding or planting operations.
 - e) Protected from traffic and erosion. Before final acceptance of the work, repair, and reestablish grades in settled, washed away, or rutted areas.

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- 6) Rough grades shall be:
 - a) Graded smooth and continuous, and suitable for topsoil spreading.
 - b) Three inches below finish grades for all areas to receive topsoil.
 - c) Eighteen inches below finish grade for all areas to receive riprap.
 - d) Approved by Owner's representative prior to the placement of topsoil or riprap.

B. TOPSOIL

- 1) Topsoil shall be installed over all areas within the work limits identified on the grading plan, except where riprap is specified.
- 2) Scarify and loosen surface of approved subgrade to a depth of 4 inches prior to installing topsoil.
- 3) The wetland shall be covered with 3 inches of topsoil to consist of clean, off-site commercial topsoil. Topsoil source to be approved by Owner's representative.
- 4) The topsoil shall consist of a fertile, friable, sandy, loamy surface soil without mixture of subsoil and free of stones, stumps, root, trash, debris, and other materials greater than 2 inches in diameter deleterious to plant growth.
- 5) Prior to starting work, submit two certified copies of soil tests to Owner's representative for approval of topsoil. The certified analysis shall include the following:
 - a) The Contractor shall utilize a certified facility normally engaged in agronomic soil testing.
 - b) Required topsoil chemical analysis includes: pH, nitrate, nitrogen, ammonia nitrogen, phosphate phosphorus, potassium, calcium, magnesium, zinc, iron and manganese.
 - c) Nutrient data to be given in parts per million (ppm) per parts dry soil.
- 6) The pH range shall be 6.5 to 8.4. Topsoil that does not meet this pH range shall not be approved.

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- 7) Organic content shall not be less than 3 percent and not greater than 10 percent determined by loss through ignition.

C. RIPRAP

- 1) Prior to placement of riprap, install granular fill bedding as shown on the detail.
- 2) Bedding material shall be placed over the approved subgrade and spread free of mounds, dips and windrows, graded to the elevations and thicknesses shown on the plans and compacted in place.
- 3) Riprap to be installed around all spillways.
- 4) All stone shall be highly resistant to weathering and disintegration under freezing and thawing and wetting and drying conditions and shall be of a quality to insure permanence of the structure in the climate in which it is to be used. The stone shall be durable, sound, free from detrimental cracks, seams, and other defects which tend to increase deterioration from natural causes or cause breakage in handling and/or placing.
- 5) The rock fragments shall be angular to sub-rounded in shape. Broken concrete will be unacceptable.
- 6) The rock shall be placed by equipment on the surfaces and to the sizes and depths specified. The riprap shall be constructed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying materials. The rock shall be delivered and placed in a manner that will ensure that the riprap in place shall be reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks filling the voids between the larger rocks.
- 7) Riprap shall be placed in a manner to prevent damage to structures. Hand placing may be required to the extent necessary to prevent damage to the permanent works.

4. WETLAND SEEDING

A. General

- 1) The work in this section shall be performed by a qualified contractor specializing in wetland and native grassland seeding.
- 2) Wetland seeding shall include seed installation, maintenance operations and warranty, as indicated on plans and specified herein.

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- 3) At least two weeks prior to the start of work, submit a seeding schedule and description of seeding equipment and methods for approval by the Owner's representative.
- 4) At least two weeks prior to start of work, submit schedule and description of work items for wetland seeding maintenance.
- 5) Within two weeks of notification to proceed, the Contractor shall submit for approval the following:
 - 1) Name and location of all seed and plant material suppliers.
 - 2) Origin of all seed and plant material species.
 - 3) The estimated number of pure live seeds per pound of each of the types of seed to be furnished.
- 6) All seeds shall be packed and covered in such a manner as to ensure adequate protection against damage and maintain dormancy while in transit, storage and during planting operations.

B. Materials

- 1) Seed shall be fresh, clean, dry new-crop seed as identified in planting schedule.
- 2) The seed counts indicated per acre in these specifications shall mean the total amount of pure live seed per acre for all species listed.
- 3) Plant materials shall be true to name and variety described in "Hortus Third", Cornell University, 1976.

C. Installation

- 1) Do not sow seed when weather conditions are not favorable, such as during drought or high winds. Sow seed between 1 September and 15 October, unless otherwise approved by the Wetland Consultant.
- 2) Immediately before seeding, scarify, loosen, float and drag topsoil as necessary to bring it to the proper condition. All rills and ruts greater than 2 inches deep shall be regraded.
- 3) Drill or broadcast seeds such that all seeds, regardless of size and weight, are evenly distributed throughout areas indicated on plans.
- 4) Water thoroughly and immediately with a fine mist until soil is soaked to a depth of 3 inches. Maintain soil in this moist condition until seeds have sprouted and reach a height of one inch. Water thereafter at least once every 14 days unless natural rainfall has provided equivalent watering.

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- 5) Areas which do not meet the contract requirements shall be reseeded.
- 6) Seed zones indicated on plans according to the specified seed mixes.

5. MULCHES AND EROSION CONTROL MATTING

A. Mulch

- 1) Provide stalks from oats, wheat, rye, barley, or rice that are free of weeds, mold or other objectionable material.
- 2) Mulch only side banks of the basin in emergent and shrub areas starting at an elevation of 769 and extending up to the work limits.
- 3) Spread mulch evenly at the rate of 2 tons per acre. Place all mulch on given areas within 24 hours after seeding. A mechanical blower may be used to apply mulch material, provided the machine has been specifically designed and approved for this purpose.
- 4) Anchor all mulch using a light serrated disc.

B. Erosion Control Matting

- 1) Install erosion control matting within 24 hours after seeding.
- 2) Do not install mulch in locations designated to receive erosion control matting.
- 3) Erosion control matting shall be installed in the locations shown on the plans. Matting shall maintain uniform contact over the entire seed bed. Folds or air pockets shall not be permitted.
- 4) Matting shall be installed perpendicular to the flow to water and all ends shall be overlapped 4 inches.
- 5) The entire perimeter of the matting shall be installed within a 6-inch deep, 6-inch wide trench and anchored within 6-inch long steel staples.
- 6) Six-inch steel staples shall be installed 24 inches on center across the entire matting.
- 7) All overlapped edges shall be anchored 6 inches on center.
- 8) After installation of erosion control matting, reseed all areas disturbed by the activity.

6. TACKIFIER/FERTILIZER

- A. Tackifiers shall not be used for wetland seeding.
- B. Fertilizers shall not be used for wetland seeding.

7. WETLAND PLANTING

A. Certification

- 1) Phytosanitary certification: All plant material inspection certificates required by federal, state or other governing authorities will accompany each shipment and be turned over to the Wetland Consultant upon delivery.
- 2) Invoice: Vendor or grower's invoice for each shipment of plants shall show sizes, quantities, and root treatment of plants.

B. Protection

- 1) If delays beyond the Contractor's control occur after delivery, plants shall be kept watered and protected from sun, wind, and mechanical damage; root balls shall be covered with topsoil or mulch. Do not remove container-grown stock from containers until planting time. "Heel in" bare root plants in moist soil immediately upon delivery. Open bundles of plants and separate the plants before the roots are covered. Take care to prevent air pockets among roots when heeling in. Keep the roots constantly moist until planted. The heeling-in grounds shall be a well-protected, shaded area.
- 2) All plants inadequately protected will be subject to rejection.

C. Required Compliance

- 1) All materials and work shall comply with applicable sections of the following references:
 - a) American Association of Nurserymen, Inc. (ANN) Standard: American Standard for Nursery Stock (ANSI Z60.1-1990).
 - b) Hortus Third, Cornell University, 1976.
- 2) Shipping shall be scheduled to minimize on-site storage of plants. Stock shall not be shipped until the planting preparations have been completed.
- 3) Where planting occurs in close proximity to other site improvements or those areas identified for protection by the Owner's representative, adequate protection shall be given to all features prior to commencing work. Any items damaged during planting operations shall be promptly repaired to their original condition.

D. Plant Material and Installation

- 1) Location of individual woody plants shall be staked on the project site in accordance with the planting plan before any planting pits are dug. All staking shall be reviewed and approved by the Owner's representative prior to installation. The Owner's representative shall have the authority to adjust bed locations at no cost to the Owner.
 - a) Planting pits shall be round, with vertical sides and flat bottoms, and sized in accordance with outlines and dimensions shown on the drawings.
 - b) Loosen or scarify in the bottom of all plant pits to a depth of 4 inches.
- 2) Bare root stock: Bare root stock shall be planted so that the roots are arranged in a natural position. Remove damaged roots with a clean cut. Planting soil mixture shall be carefully worked in among the roots. Remainder of backfill of planting soil mixture shall be tamped and thoroughly watered. Earth saucers shall then be formed around isolated plants. Bare root material should be planted in early spring.

Bare root plants shall have a root spread sufficient to ensure full recovery and development of the plant. Take care to avoid injury to or removal of fibrous roots. Carefully protect roots with wet straw, moss, or other materials so that the plants arrive with their roots in a moist and healthy condition. Remove broken and injured roots prior to planting.
- 3) Tubers: Randomly plant tubers within each mix, in newly created emergent and submergent wetlands as indicated on the plans. Tubers must be weighted and planted by hand. A minimum of two-inch depth soil cover is recommended for all tubers. Plant material shall be subject to final approval by the Owner's representative. Tubers shall be planted in the spring.
- 4) All planting stock shall be nursery-grown in accordance with good horticultural practice. Plants shall be free of disease, insects, eggs, larvae, and defects such as knots, sunscald, injuries, abrasions, or disfigurement. They shall be sound, healthy and vigorous, of uniform growth, typical of the species and variety, well-formed, free from irregularities, with the minimum quality conforming to American Standard for Nursery Stock.
- 5) Plants furnished in containers shall have the roots well established in the soil mass and shall have grown in the container for at least one growing season. Containers shall be large enough to provide earth-root mass of adequate size to support the plant tops being grown. Plants over-established in the container, as evidenced by pot-bound root ends, will not be accepted.

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- 6) All seeded areas disturbed by plant installation shall be repaired and reseeded at no additional cost to the Owner.

8. MAINTENANCE

A. Woody Plants and Tubers

- 1) Planting maintenance shall begin immediately after each plant is installed and shall continue as required until final acceptance at the end of the warranty period.
- 2) Maintain plants in a vigorous and neat condition during the warranty period. Water, repair saucers and mulch required to maintain plants in a vigorous condition.
- 3) Water as required to supplement natural rainfall so that all wetlands receive sufficient water for normal plant growth. The Contractor shall furnish all water from off-site sources.

B. Wetland Seeding

- 1) Maintain wetlands for at least one growing season after installation or until the substantial completion inspection of the entire project, whichever is greater. Maintenance to include watering and reseedling.
- 2) Fill any depressions or settlement that occurs within 90 days following installation. Bare spots greater than 50 square feet which occur during the maintenance period shall be reseeded as directed by the Owner's representative.
- 3) Zones 1, 2 and 3 shall be mowed once during the first growing season. Mowing shall occur during a dry period in the spring or as directed by the Owner's representative.

9. CLEAN UP

A. General

- 1) All temporary erosion control measures shall be removed at the completion of construction, unless ordered by the Owner's representative to remain in place. Care shall be taken during removal to minimize siltation of nearby drainage courses.
- 2) Upon completion of wetland seeding, remove from the site and legally dispose of all excess trash and debris.
- 3) Repair existing wetlands and areas damaged by operations under the contract. Repair shall include finish grading as required to match existing grade and/or wetlands, seeding and maintenance of repaired areas.

- 4) When planting in an area has been completed, the area shall be cleared of all debris, soil piles and containers.

10. GUARANTEE/ACCEPTANCE

A. General

- 1) Guarantee all nursery-grown plant material to be true to botanical name, specified size, and in a vigorous condition during and at the end of one year after planting.
- 2) Notify the Owner's representative in writing of the completion of planting/seeding. Within 10 days after notification of completion of work, the Owner's representative shall inspect the work and prepare a Notice of Provisional Acceptance, along with a list of items that require completion or correction.
- 3) Issuance of the Notice of Provisional Acceptance shall constitute the start of the warranty period for portion accepted.
- 4) If, in the opinion of the Owner's representative, it is advisable to extend warranty for a second growing season, an inspection at the end of extended warranty period will be made to determine acceptability of the items involved.
- 5) The final inspection of all planting or phase planting work under the contract will be made by the Owner, Contractor and Owner's representative.
- 6) The Contractor will not be responsible for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents beyond Landscape Installer's control which result from natural causes such as floods, lightning, storms, freezing rains, or winds over 60 miles per hour, fires, predation or vandalism.

B. Wetland Seeding

1. All plant material shall be true to botanical name.
2. The Contractor shall establish a dense cover of herbaceous species on all wet meadow and emergent areas (zones 1, 2, 3 and 6), and partial cover in the shrub areas. These areas shall be maintained until final acceptance of the work.
3. The Wetland Consultant shall conduct a field inspection of all seeded areas at the end of the first growing season. The field inspection shall consist of a random search of the seeded areas. Acceptance will be granted if the seeded areas meet the following parameters:

Final Acceptance

Zone 1	80% of species seeded are present, 85% total cover
Zone 2	45% of species seeded are present, 85% total cover
Zone 3 and 6	60% of species seeded are present, 80% total cover

In the event these requirements are not achieved, supplemental seeding shall be required based on actual site conditions and the percentages noted above(?).

4. Within all seeded areas, any bare areas 50 square feet or greater shall be reseeded. These areas shall be reseeded as originally specified at no additional cost to the Owner.

C. Wetland Planting

1. Notify the Wetland Consultant in writing of the completion of planting/seeding. Within 10 days after notification of completion of work, the Wetland Consultant will inspect the work and prepare a Notice of Provisional Acceptance, along with a list of items that require completion or correction.
2. Issuance of the Notice of Provisional Acceptance shall constitute the start of the warranty period for portion accepted.
3. The Contractor will not be responsible for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents beyond Landscape Installer's control which result from natural causes such as floods, lightening, storms, freezing rains, or winds over 60 miles per hour, fires, predation or vandalism.
4. Final inspection of shrub planting shall occur in the fall one growing season after planting. The Wetland Consultant shall assess the percentage of material lost. The Contractor shall be required to replant the percentage lost greater than 85 percent during the following spring. No additional replacements will be required.
5. Final inspection of tuber plantings shall occur in the spring. The Wetland Consultant shall assess the percentage of material lost. The Contractor shall be required to replant the percentage lost greater than 85 percent during the following spring. No additional replacements will be required.

END OF SPECIFICATIONS



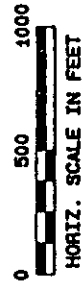
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PROPERTY BOUNDARY

ACTIVE WASTE MANAGEMENT UNITS

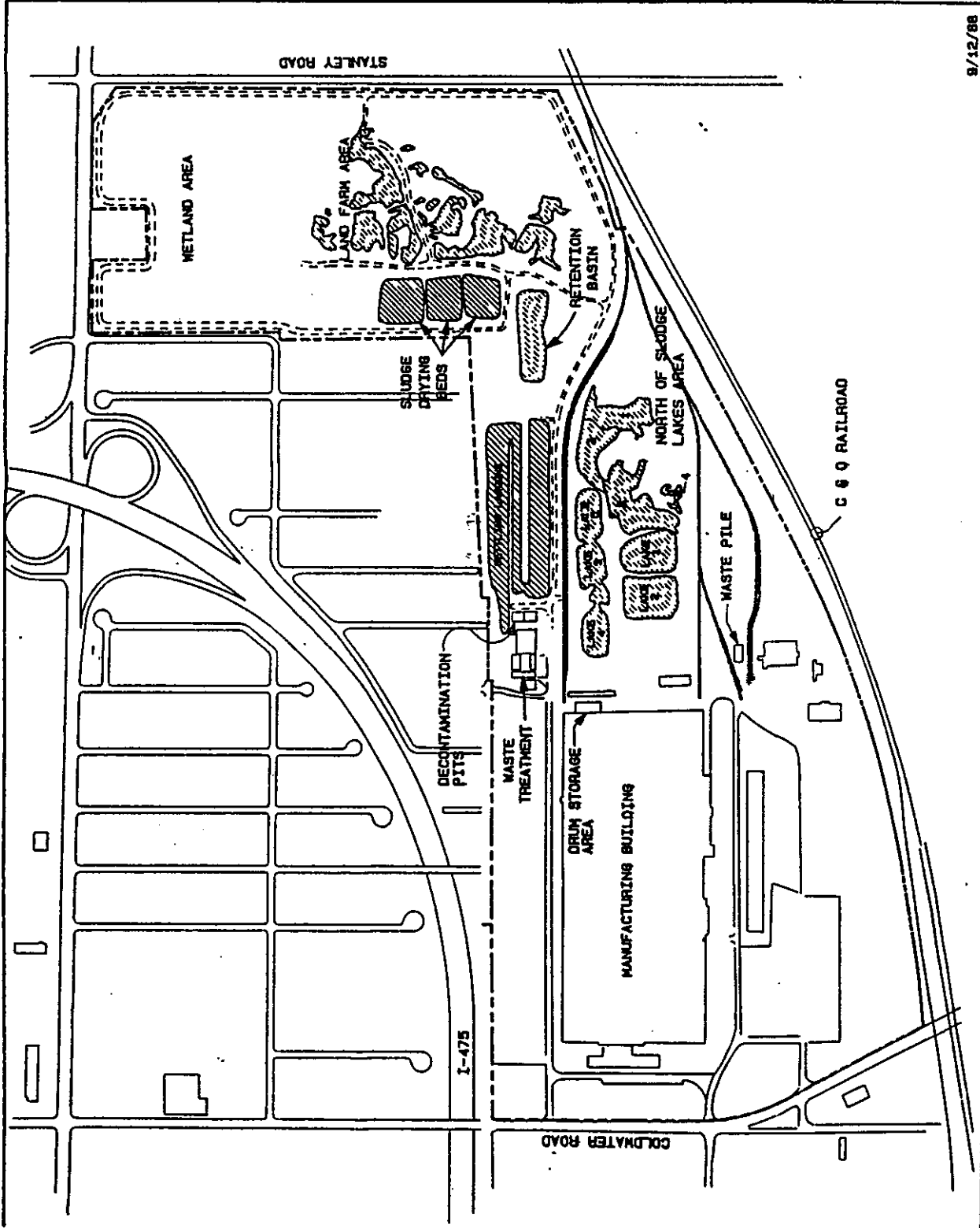
INACTIVE WASTE MANAGEMENT UNITS

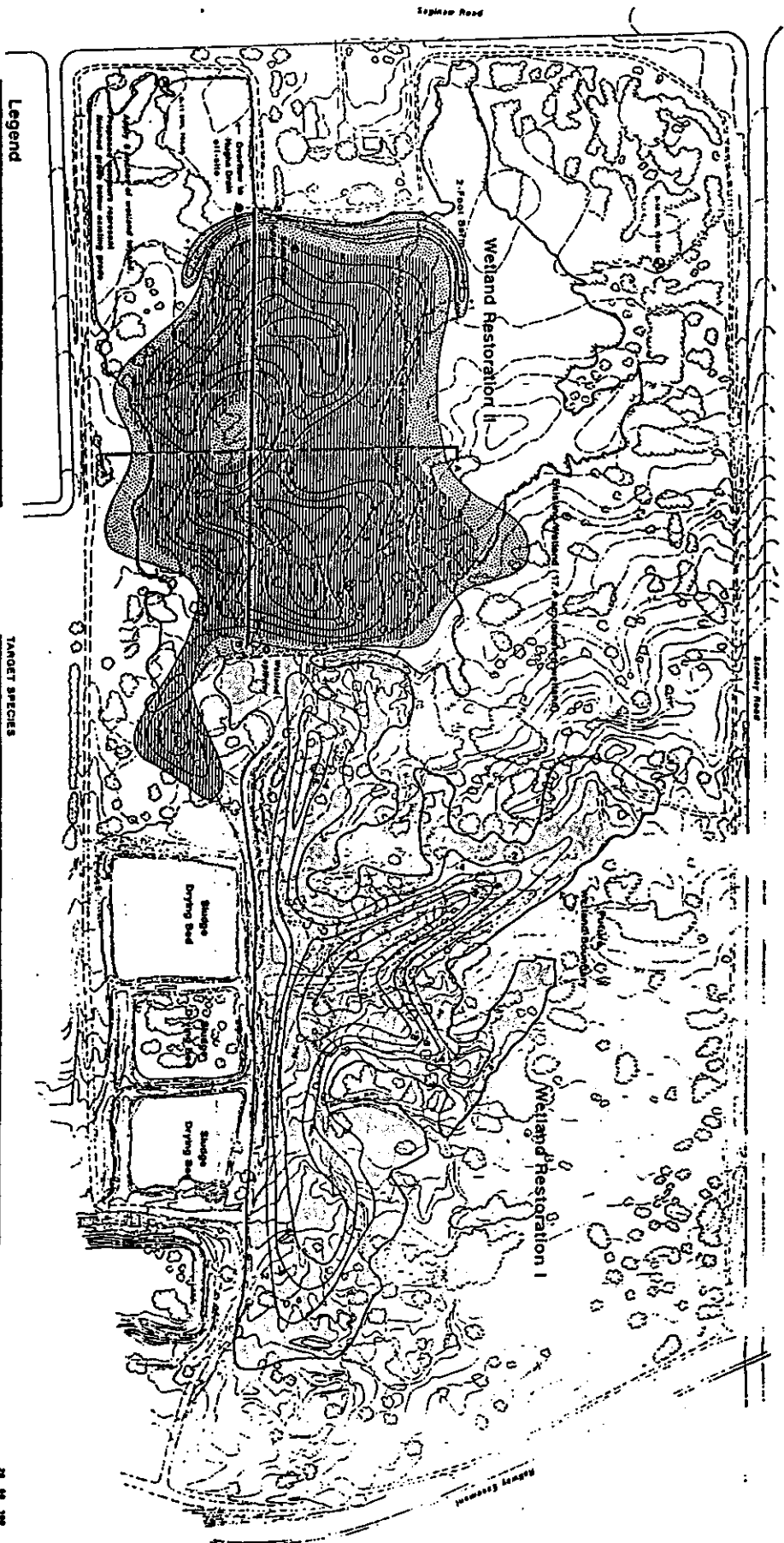
GM FISHER GUIDE COLDWATER ROAD CLOSURE



O'BRIEN & GERE
ENGINEERS, INC.

9/12/88





Legend

- Monitoring Well
- Ornamental Structure
- Existing Wetland Boundary
- Shrub-Scrub Wetland/Wet Meadow
- Emergent Wetland (0-5)
- Shallow Water Wetland (2-5)
- Wetland Restoration II
- 15.0 ac. Approx.

TARGET SPECIES

- | | | |
|------------------------------|-------------------|----------------------|
| Shrub / Scrub and Wet Meadow | Emergent Wetland | Shallow Water |
| Bottlebrush | Wetland | Pickering |
| Red cedar dogwood | Sorrel | Dense lower emergent |
| Winterberry | Sorrel | Duck pond |
| Arrowwood | Arrowwood | Arrow pond |
| Swamp milkweed | Swamp milkweed | |
| Joe Pye weed | Joe Pye weed | |
| New England aster | New England aster | |

Conceptual Wetland Restoration Plan

General Motors Corporation Coldwater Road Plant

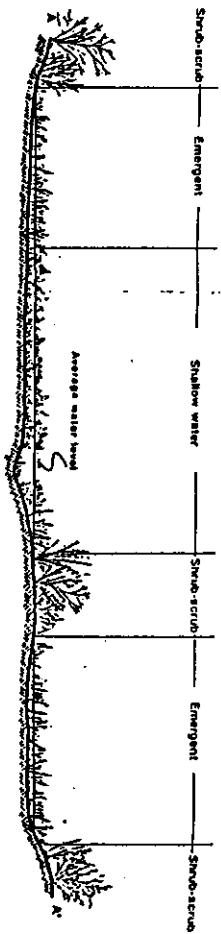
Inland Fisher Guide Division

March 30, 1992

Genesee Twp., Genesee County

Not For Construction Purposes

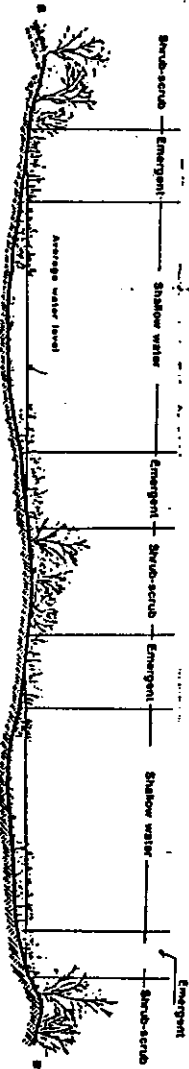
Vegetation Zones



Scale Horizontal 1" = 50' Vertical 1" = 10'

Section A - A'

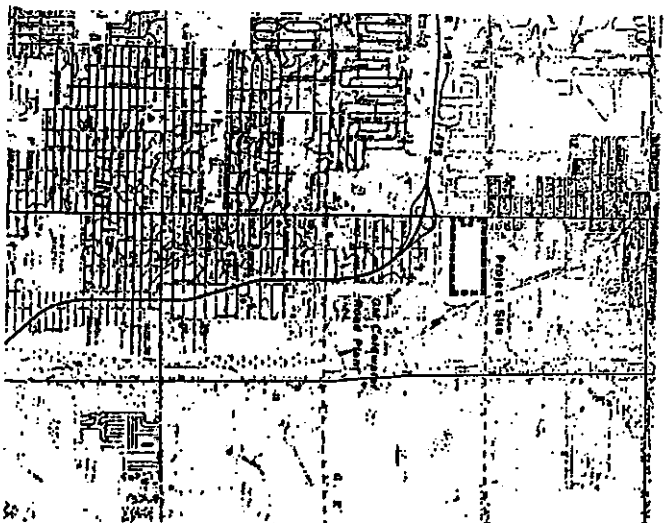
Vegetation Zones



Scale Horizontal 1" = 50' Vertical 1" = 10'

Section B - B'

Location Map



Scale 1/4 mile

Conceptual Wetland Restoration Plan

General Motors Corporation Coldwater Road Plant

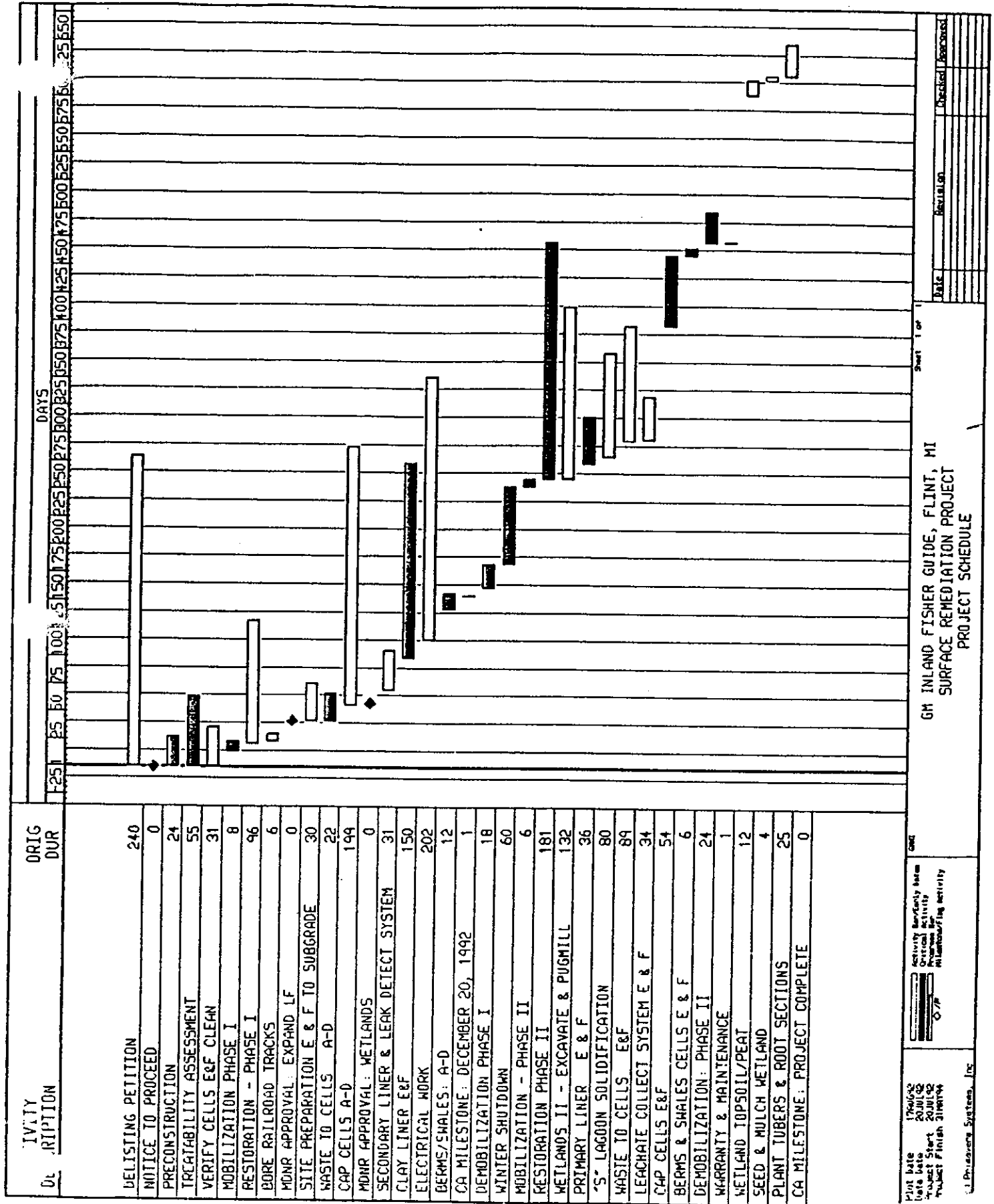
Inland Fisher Guide Division

Not For Construction Purposes

Genesee Twp., Genesee County

March 30, 1992

JWR



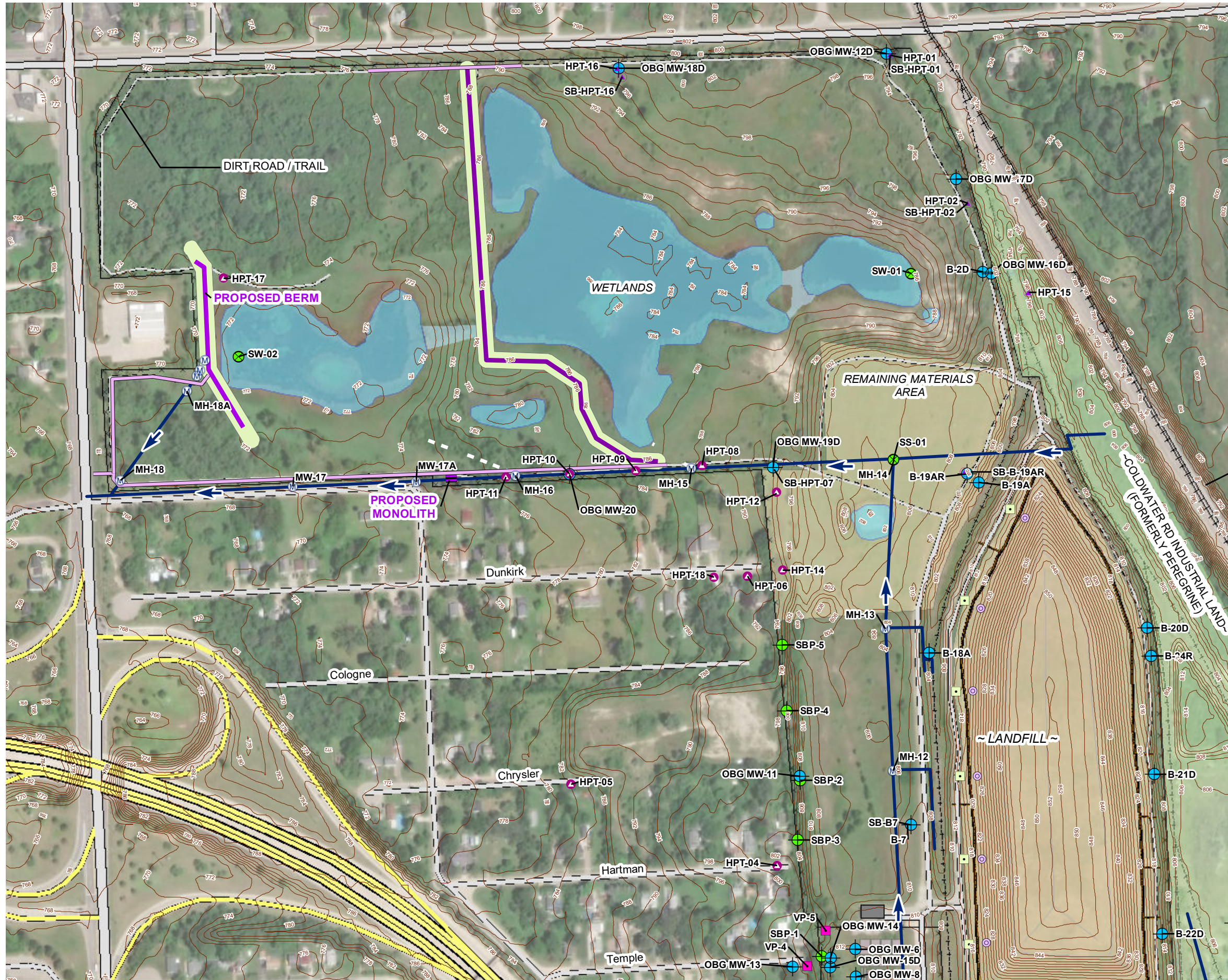
REFERENCES

1. Exposure Information Report - The Chester Engineers (no date) - possibly 8/85?
2. Report: Hydrogeological Investigation - Coldwater Road Plant Waste Management Area; June 27, 1980 - Dames & Moore.
3. Report on the Inactive Unit Waste Quantification Study; January 1988 - The Chester Engineers.
4. Closure Plan and Post Closure Plan; September 1986 - The Chester Engineers.
5. Sampling Plan for the Inactive Unit Waste Quantification Study; September 16, 1987 - The Chester Engineers.
6.
 - a. 1986 Annual Report RCRA Ground Water Monitoring; February 1987 - The Chester Engineers.
 - b. 1987 Annual Report; February 1988.
7. Report on Ground Water Quality Assessment Plan; May 29, 1984 - The Chester Engineers.
8. Final Report on Ground Water Quality Assessment Program; Revised November 1986 - The Chester Engineers.
9. Report on Sludge Sampling and Analysis for the Active Waste Management Areas; July 1987 - The Chester Engineers.
10. Site Evaluation; May 1987 - The Chester Engineers.
11. Amplification of April 1982 Petition for Delisting of Wastewater Treatment Plant Sludge; December 13, 1984 - Draft - The Chester Engineers.
12. Hazardous Waste Delisting Petition; April 1982 - The Chester Engineers.
13. Work Plan for Monitoring Well Installation and Well B-6 Investigation; November 1987 - The Chester Engineers.
14. Interim Report on Ground Water Quality Assessment Program; November 1984 - Preliminary - The Chester Engineers.
15. RCRA Ground Water Monitoring Program Sampling and Analysis Plan; November 1987 - The Chester Engineers.

al

16. Memos from Chester Engineers to Mr. Raymond C. Betham of GMC describing on-site treatability studies; April 18, 1983 - The Chester Engineers.
17. Part B Application Hazardous Waste Facilities Permit; November 1984 - The Chester Engineers.
18. Letter from OJF to MDNR regarding July 1987 Spilt well samples - October 16, 1987.
19. Letter from CE to OJF (GMC) regarding MDNR telephone conversations - December 11, 1987.
20. Transmittal from CE to OJF (GMC) regarding MW analytical results - June 14, 1985.
21. Letter from CE to WH (GMC) regarding aerial photos - May 6, 1985.
22. Letter from CE to OJF (GMC) concerning MW well analyses - December 31, 1986.
23. JPC (GMC) memo regarding lagoon closure - March 8, 1985.
24. EPA letter to GDC (GMC) regarding delisting petition - December 5, 1985.
25. EPA letter to RWD (GMC) regarding delisting petition - January 31, 1984.
26. Transmittal from CE to OJF (GMC) regarding sludge sampling and analytical - February 10, 1987.
27. MDNR memo regarding Comprehensive Monitoring Evaluation (CME) - August 6, 1987.
28. Letter from MDNR to OJF (GMC) regarding annual GW report - January 13, 1988.
29. Letter from CE to SC (GMC) regarding ground water sampling - February 12, 1988.
30. Letter from SLC (GMC) to MDNR regarding ground water sampling - February 25, 1988.
31. Hydrogeology and Ground Water Quality GMC Coldwater Road 1987 CME; Don Slayton 1A. Taylor - no date.
32. Letter from MDNR to OJF (GMC) concerning Hydrogeo Studies Unit - October 23, 1987.
33. NPDES Permit MI 0025194 - October 4, 1985.

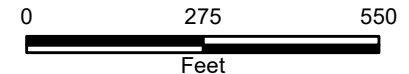
34. MDNR Memo regarding CME Summary - September 30, 1987.
35. MDNR Environmental Lab Analysis Report - July 20, 1987.
36. MDNR Monitoring Well/Ground Water Sampling Forms - July 20, 1987.
37. MDNR letter to OJF (GMC) regarding CME - June 19, 1987.
38. Chemical, Physical and Biological Survey of the Fisher Body Coldwater Road Hardware Plant Receiving Waters and Wastewater Lagoons; September 29, 1981 - TRAC.
39. Outfall Analytical Data.
40. Closure Plan and Post-Closure Plan (Volume I and II) - August 1989, O'Brien & Gere Engineers, Inc.



- N
- LEACHATE COLLECTION SUMP
 - ACCESS PORT FOR LEAK DETECTION VAULT
 - ⊕ MONITORING WELL LOCATION
 - ⊕ DEEP BORING LOCATION
 - ⊕ SHALLOW BORING LOCATION
 - ⊕ VAPOR PROBE LOCATION
 - ⊕ TEMPORARY MONITORING WELL LOCATION
 - ⊕ SURFACE/STORM WATER SAMPLE LOCATION
 - ⊕ STORM MANHOLES
 - PROPOSED BERM 25' BUFFER
 - PROPOSED BERM
 - PROPOSED MONOLITH
 - PROPOSED OVERFLOW DITCH
 - ADDITIONAL PROPOSED BERM
 - HAUL ROAD
 - ELEVATION CONTOURS (2 FT INTERVAL)
 - STORM SEWER LINE
 - SANITARY SEWER LINE

RACER TRUST
COLDWATER ROAD
LANDFILL FACILITY
FLINT, MICHIGAN

**STORMWATER SYSTEM
MODIFICATIONS**



AUGUST 2018
15388/68545/002



O'BRIEN & GERE ENGINEERS, INC.



June 30, 2005

Mr. Richard A. Conforti, Jr., P.E.
Michigan Department Environmental Quality
525 West Allegan Street
Atrium - North Tower
P.O. Box 30241
Lansing, MI 48909-7741

Re: REALM Coldwater Road Landfill
MID 005 356 860
Notice of Approved Environmental
Remediation and Declaration of Restrictive
Covenant Forms

File: 4966/32223 #2

Dear Mr. Conforti:

This letter is written to document the recording of the Michigan Department of Environmental Quality (MDEQ)- Notice of Approved Environmental Remediation (NAER) and Declaration of Restrictive Covenant forms for the Coldwater Road Landfill (MID 005 356 860) located in Flint, Michigan. These forms were recorded with the Genesee County Register of Deeds on June 24, 2005 in accordance with the MDEQ March 24, 2005 closure certification approval letter and the Consent Order for this site.

Attached are copies of the NAER and Declaration of Restrictive Covenant forms recorded with the Genesee County Register of Deeds and a receipt from this office confirming the recording.

As previously discussed, easement holder Consumers Energy did not provide a signed consent form to be included with the Declaration of Restrictive Covenant by the date the form was submitted and therefore is not included. We will continue to pursue a signed consent form and will amend the Declaration of Restrictive Covenant when this form is received. If Consumers Energy refuses to provide a signed consent form we will send them a letter documenting we have notified them that they are an easement holder on a site which has restricted use based on environmental contamination remaining in soil and will copy you on this correspondence.

If you have any questions regarding the attached forms, please call Scott Cormier, O'Brien and Gere Engineers, Inc. at 248-661-3745 or me at 517-885-1155.

Sincerely,

GENERAL MOTORS CORPORATION/REALM

Kurt D. Blizzard
Project Manager

NAO Flint Complex

General Motors Corporation 902 E. Hamilton Avenue Flint, Michigan 48550
Lerth St.

Richard Conforti
June 21, 2005
Page 2

cc: Joe Rogers – MDEQ
John McCabe – MDEQ
Jean Caufield – GM/REALM
Tony Finch- O'Brien & Gere
Scott Cormier- O'Brien & Gere



Instr: 200506240064431 06/24/2005
P: 1 of 11 F: \$44.00 12:24PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

NOTICE OF MDEQ-APPROVED ENVIRONMENTAL REMEDIATION

MDEQ Reference No.: NAER-WHMD-111-05-001

This Notice of Approved Environmental Remediation (Notice) has been recorded with the Genesee County Register of Deeds for the purpose of protecting public health, safety and welfare and the environment by describing the land-use category that is consistent with the environmental contamination present at the property located at 6220 Horton Street, Genesee Township, Genesee County and legally described in Exhibit 1 attached hereto ("Property"). The Property is associated with Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Landfill MID 005 356 860 for which a Closure Plan designed to meet 40 CFR Part 264 has been conducted. The Closure Plan and Modifications to the Closure Plan that were implemented to address environmental contamination are fully described in the Closure Plan and Post-Closure Plan dated August 1989, 1992 Corrective Action Consent Order (No. 64-05-92) (hereafter referred to as Consent Order), Final Closure Certification Documentation Package Decontamination Pits and Sump, Chromium Reduction Basins at the WWTP dated September 1998, Subsurface Investigation of Decontamination Pits/Sump and Chromium Reduction Basins Report dated June 1999, Final Closure Certification Drum Storage Area and Waste Pile Pad dated June 1999, Final Closure Certification Documentation- Part I dated November 2000, Final Closure Certification Documentation- Part II dated November 2000, Addendum to the June 1999 Closure Certification Report for the Former Drum Storage Area at the REALM Former Peregrine U.S., Inc. Property at the Coldwater Road facility dated January 2005 (these documents hereafter referred to as Closure Documents) and submitted by William J. McFarland. The Michigan Department of Environmental Quality ("MDEQ") approved the Closure Documents as noted above, pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.20101 et seq.

The Closure Documents required the recording of this Notice to restrict exposures to hazardous substances located on the Property and to assure that the use of the Property is consistent with the exposure assumptions utilized in the development of cleanup criteria pursuant to the approved Closure Documents. The restrictions contained in this Notice are based upon information available to the MDEQ at the time the closure documents were approved by the MDEQ. Failure of the response activities to achieve and maintain the criteria, exposure controls, and requirements specified in the Closure Documents; future changes in the environmental condition of the Property or changes in the cleanup criteria developed under the Closure Documents; discovery of environmental conditions at the Property that were not accounted for in the MDEQ-approved Closure Documents; or use of the Property in a manner inconsistent with the restrictions described herein may result in this Notice not being protective of public health, safety, and welfare, and the environment and may necessitate further

Quit Claim Deed Instr # 200207020077696

evaluation of potential risks to the public health, safety, or welfare, or to the environment.

The "*Limits of Land Use Restrictions*," attached hereto as Exhibit 2, provides a survey of the Property and additional legal descriptions that distinguishes those portions of the Property that are subject to land use restrictions as specified herein.

Definitions

"MDEQ" means the Michigan Department of Environmental Quality, its successor entities, and those persons or entities acting on its behalf.

"Owner" means at any given time the then current title holder of the Property or any portion thereof.

All other terms used in this document which are defined in Part 3, Definitions, of the NREPA; Part 201 of the NREPA; or the Part 201 Administrative Rules ("Part 201 Rules"), 1990 AACRS R 299.5101 *et seq.*, shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Rules, as of the date of filing of this Restrictive Covenant.

Summary of Response Activities

Hazardous substances including listed wastes F001, F003, F006, D001, D002, D003 and D007 were generated and stored on site from 1953 to 1987. Prior to recording of this Notice, response activities have been undertaken to remove and mitigate potential exposures to these wastes.

A hazardous waste landfill was constructed on-site which contains approximately 530,000 cubic yards of these hazardous wastes. The wastes were solidified using lime kiln dust, cement kiln dust, Portland cement or Class F flyash to support handling and transportation to a pugmill unit for final stabilization/solidification treatment. Soils and sludges were then treated with various reagents to meet land disposal treatment standards. The landfill was constructed in accordance with Michigan Act 64 requirements with an original design capacity of 170,000 cubic yards. Due to additional waste volume found in the closure units the landfill capacity was increased with a final closed volume of 530,000 cubic yards. The landfill is constructed with a liner system which includes a secondary 60 mil HDPE liner and leak detection systems, 5 ft thick clay liner, primary 60 mil HDPE liner and leachate collection system. The landfill cap consists of 60 mil HDPE with 3 ft of clay cover. The clay is overlain with 1.5 ft of granular drainage material and 6 inches of topsoil that was seeded to provide a vegetative cover.

At an area known as the Remaining Materials Area (RMA) substantial material was removed, however concentrations of chromium, copper, nickel and zinc still exceeded the closure standard, therefore, the RMA was closed by placement of a soil cover. The soil cover consisted of a minimum of 6 inches of clean topsoil and grass seed was planted to provide a vegetative cover. An additional 46,000 cubic yards of material was delisted, excavated and disposed in a licensed landfill in Utah.

The landfill and RMA, identified in Exhibit 2, may contain hazardous substances in excess of the concentrations developed as the unrestricted residential criteria under Section 20120a(1)(a) or (17) of the NREPA that have not been addressed through the response activities undertaken pursuant to the MDEQ-approved IRDC. The MDEQ recommends that prospective purchasers or users of the Property undertake appropriate due diligence prior to acquiring or using this



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P: 3 of 11 F: \$44.00 12:24PM
Melvin Phillip McGree T20050019942
Genesee County Register MLOBRIEN &

Property, and undertake appropriate actions to comply with the requirements of Section 20107a of the NREPA.

The Owner also acknowledges that:

1. Surface and subsurface soils found on the Property must be managed in accordance with the requirements of Section 20120c of NREPA and other applicable state and federal laws.
2. Contaminated groundwater is known to be present on areas of the Property. Cleanup criteria applicable to the Property at the time of filing this Notice did not anticipate any below grade structures at the Property. Prior to construction of any below grade structures which will be occupied (e.g., basements) or connected to an occupied building (e.g., crawl spaces, utility and pipe galleries, equipment sumps, etc.) on the Property, an evaluation of the potential for hazardous substances in the groundwater to volatilize into indoor air should be undertaken to assure the protection of persons who may be present in the buildings and compliance with Section 20107a of the NREPA.

Access

The Owner shall grant to the MDEQ and its designated representatives the right to enter the Property at reasonable times for the purpose of determining and monitoring compliance with the Closure Documents, including the right to take samples, inspect the operation and maintenance of the response activities, and inspect any records relating thereto.

Term and Enforcement of Notice

This Notice shall run with the Property and shall be binding all future owners; successors; lessees; or assigns and their authorized agents, employees, or persons acting under their direction and control. This Notice may only be modified or rescinded with the written approval of the MDEQ.

The State of Michigan, through the MDEQ, Waste and Hazardous Materials Division may enforce the restrictions set forth in this Notice by legal action in a court of competent jurisdiction.

Severability

If any provision of this Notice is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof, and all such other provisions shall continue unimpaired and in full force and effect.

Authority to Execute Notice

The undersigned person executing this Notice is the Owner, or has the express written permission of the Owner, and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Notice.

AGREED AND CONSENTED TO BY OWNER:

REALM

By: William J. McFarland
Signature

Name: William J. McFarland
Type or Print Name

Its: President
Title

Date: 6-17-05

Instr: 200506240064431 06/24/2005
P: 4 of 11 F: \$44.00 12:24PM
Melvin Phillip McCrea T20050019942
Genesee County Register MLOBRIEN &

STATE OF MICHIGAN
COUNTY OF Genesee

The foregoing instrument was acknowledged before me this 17 day of June, 2005
by William J. McFarland of REALM, in Pontiac, Michigan, on behalf of the corporation.

Rebecca Lynn Najor
Notary Public

REBECCA LYNN NAJOR
Notary Public - Michigan
Macomb County
My Commission Expires
December 09, 2010

IN WITNESS WHEREOF, William J. McFarland has caused this Notice to be executed
on this 17 day of June, 2005.

William J. McFarland

By: William J. McFarland
Signature

Name: William J. McFarland
Type or print name

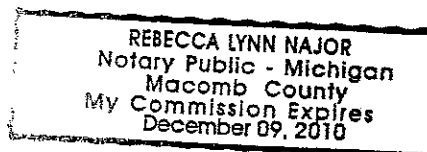
Its: President
Title

Date: 6-17-05

STATE OF Michigan
COUNTY OF Genesee

The foregoing instrument was acknowledged before me this 17 day of June, 2005
by William J. McFarland of REALM, in Pontiac, Michigan, on behalf of the corporation.

Rebecca Lynn Najor
Notary Public



Prepared By:

Tony Finch

O'BRIEN + GERE Engineers, Inc.

33469 West 14 Mile Rd, Suite 150

FARMINGTON Hills, MI

48331

44.00


Instr: 200506240064431 06/24/2005
P: 6 of 11 F: \$44.00 12:24PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

EXHIBIT 1

**LEGAL DECRIPTION AND SURVEY OF PROPERTY
(Attached)**

CERTIFICATE OF SURVEY

Being a part of
Section 18, T8N., R7E.
Genesee Township, Genesee County, Michigan

Certify to
General Motors Corporation
a Delaware Corporation



Instr: 200506240064431 06/24/2005
P: 7 of 11 F: \$44.00 12:24PM
Melvin Phillip McGree T20050619942
Genesee County Register MLOBRIEN &

Situated in the Township of Genesee, Genesee County, Michigan, described as:

Being all that real property situated in Section 18, Town 8 North, Range 7 East, Genesee Township, Genesee County, State of Michigan, and described as follows:

Commencing at the South 1/4 corner of said Section 18 and thence running South 88°30'19" East 50.20 feet along the South line of the Southeast quarter of said Section 18; thence North 00°29'38" East 2169.31 feet to the Point of Beginning; thence North 00°29'38" East, 87.79 feet; thence North 89°36'47" West, 30.00 feet; thence North 00°29'38" East along the vacated centerline of Horton Street (formerly Alfred Street) a distance of 409.70 feet; thence South 89°24'18" West, 40.90 feet; thence North 01°20'14" West along the East line of Buick Subdivision as recorded in plat book 10, page 1 a distance of 1329.30 feet; thence North 88°49'39" West, 993.43 feet; thence North 00°30'24" East, 29.75 feet; thence North 89°09'44" West, 981.68 feet to the East right of way line of Saginaw Highway; thence North 01°33'22" East along the East 280.00 feet; thence along said East right of way line of Saginaw Highway 376.81 feet; thence South 89°10'38" East, West, 280.00 feet; thence along said East right of way line of Saginaw Highway North 01°33'17" East, 438.08 feet; thence North 35°20'14" East, 210.22 feet; thence South 88°00'30" East along the South line of Stanley Road, 1808.31 feet; thence continuing along the South line of said Stanley Road South 89°48'49" East, 468.72 feet to the West right of way line of the CSX Railroad; thence South 25°29'59" East along said South 10°07'00" East, 541.14 feet; thence South 13°18'36" East, 234.78 feet; thence South 16°56'25" East, 292.15 feet; thence South 82°24'45" East, 69.33 feet; thence South 20°25'09" East, 224.26 feet; thence South 26°45'51" East, 312.89 feet; thence South 00°43'40" East, 190.42 feet; thence South 08°54'02" East, 114.92 feet; thence thence South 00°27'36" West, 1175.70 feet; thence North 89°34'30" West, 696.84 feet; thence South 00°27'36" West, 129.91 feet; thence North 89°32'24" West, 170.00 feet; thence North 82°29'52" West, 170.82 feet to the Point of Beginning. Containing 118.5 acres more or less. Subject to easements, restrictions, reservations, rights of way, leases and agreements of record if any.

I hereby certify that I have located and mapped the land hereon platted and/or described, on the date noted hereon, that I have complied with the requirements of Act 132, P.A. of 1970 and that the error of closure of the unadjusted field observation is within the limits established for the profession.

There are encroachments as shown.

Signed: *Eugene L. Goss*

Eugene L. Goss P.S.

Michigan No. 16040

LEGEND

Scale 1" = 500'

All dimensions are in feet and decimals thereof.

○ 1/2" x 18" steel bar set.

● Indicates corner monuments found unless noted

— Indicates fence line

WE. Indicates waters edge

OH Indicates overhead utilities

M Measured

R Recorded

C Computed

⊙ Section Corner

Project No. 971226

Field book no.

Field work by MEG

Dated: 2-10-98

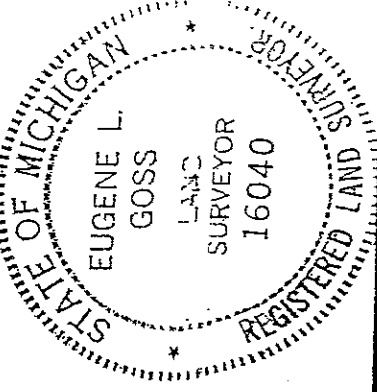
Drawn by: DJD

Calculated by: DJD

Checked by: ELG

Sheet 1 of 2

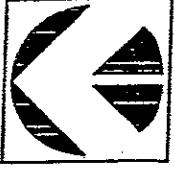
Bartow & King Engineers
2500 E. Midland Road, Bay City, Michigan 48706
Tel. (517) 684-8850
Fax. (517) 684-8404



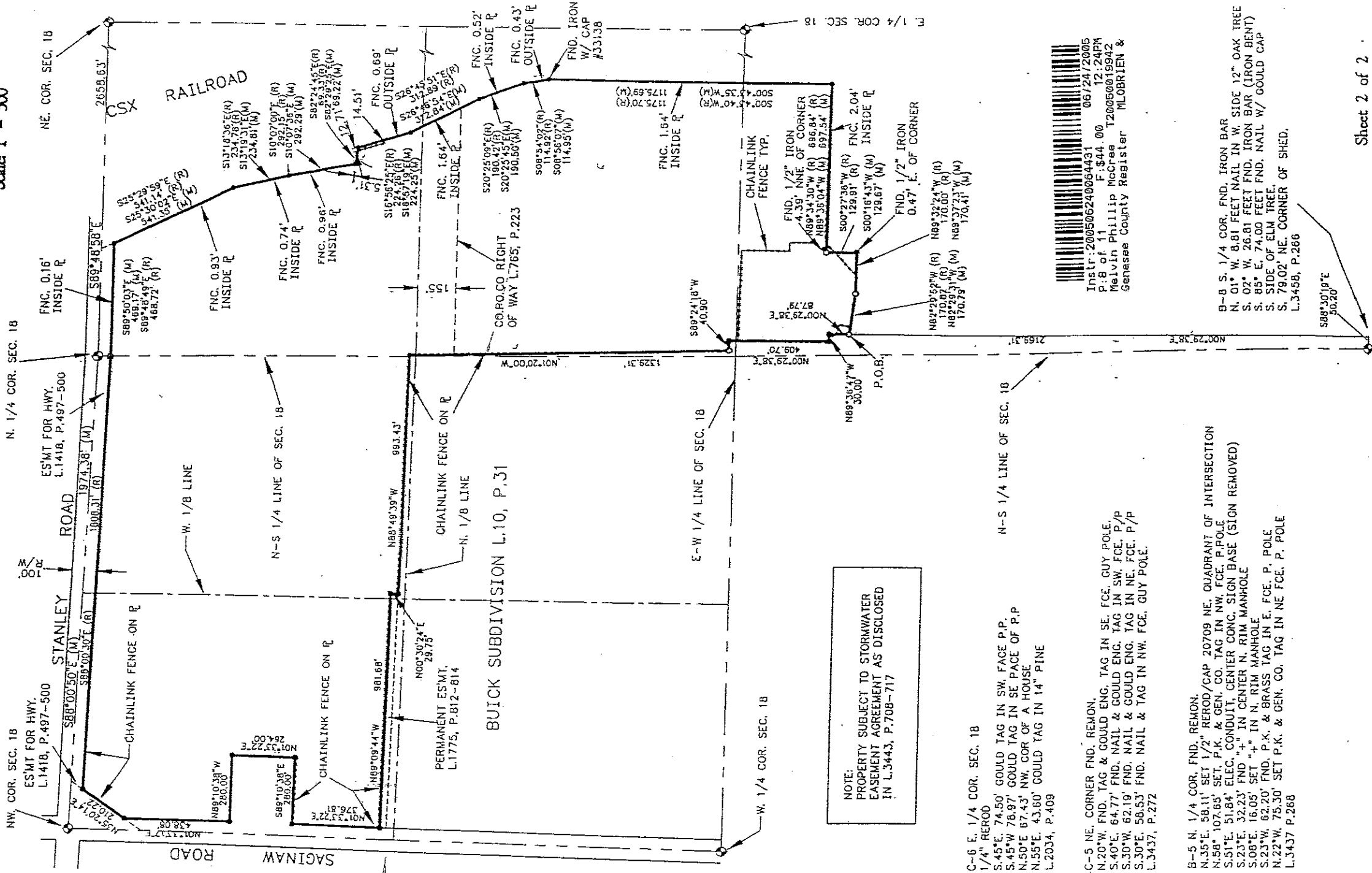
CERTIFICATE OF SURVEY

Being a part of
Section 18, T8N., R7E.
Genesee Township, Genesee County, Michigan

Certify to:
General Motors Corporation
a Delaware Corporation



Scale 1" = 500'



NOTE:
PROPERTY SUBJECT TO STORMWATER
EASEMENT AGREEMENT AS DISCLOSED
IN L.3443, P.708-717

- C-6 E. 1/4 COR. SEC. 18
1/4" REROD
S.45°E. 74.50' GOULD TAG IN SW. FACE P.P.
S.45°W 78.97' GOULD TAG IN SE. FACE OF P.P.
N.50°E 67.43' NW. COR. OF A HOUSE
N.55°E. 43.60' GOULD TAG IN 14" PINE
L.2034, P.409
- C-5 NE. CORNER FND. REMON.
N.20°W. FND. TAG & GOULD ENG. TAG IN SE. FCE. GUY POLE.
S.40°E. 64.77' FND. NAIL & GOULD ENG. TAG IN SW. FCE. P.P.
S.30°W. 62.19' FND. NAIL & GOULD ENG. TAG IN NE. FCE. P.P.
S.30°E. 58.53' FND. NAIL & TAG IN NW. FCE. GUY POLE.
L.3437, P.272
- B-5 N. 1/4 COR. FND. REMON.
N.35°E. 58.11' SET 1/2" REROD/CAP 20709 NE. QUADRANT OF INTERSECTION
N.58°E. 107.65' SET. P.K. & GEN. CO. TAG IN NW. FCE. P.P.OLE
S.51°E. 51.84' ELEC. CONDUIT. CENTER CONC. SIGN BASE (SIGN REMOVED)
S.23°E. 32.23' FND. "+" IN CENTER N. RIM MANHOLE
S.08°E. 16.05' SET "+" IN N. RIM MANHOLE
S.23°W. 62.20' FND. P.K. & BRASS TAG IN E. FCE. P. POLE
N.22°W. 75.30' SET P.K. & GEN. CO. TAG IN NE FCE. P. POLE
L.3437 P.268

Instr: 200506240064431 06/24/2005
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Melvin Phillip McCree 120050019942
Genesee County Register MLOBRIEN &

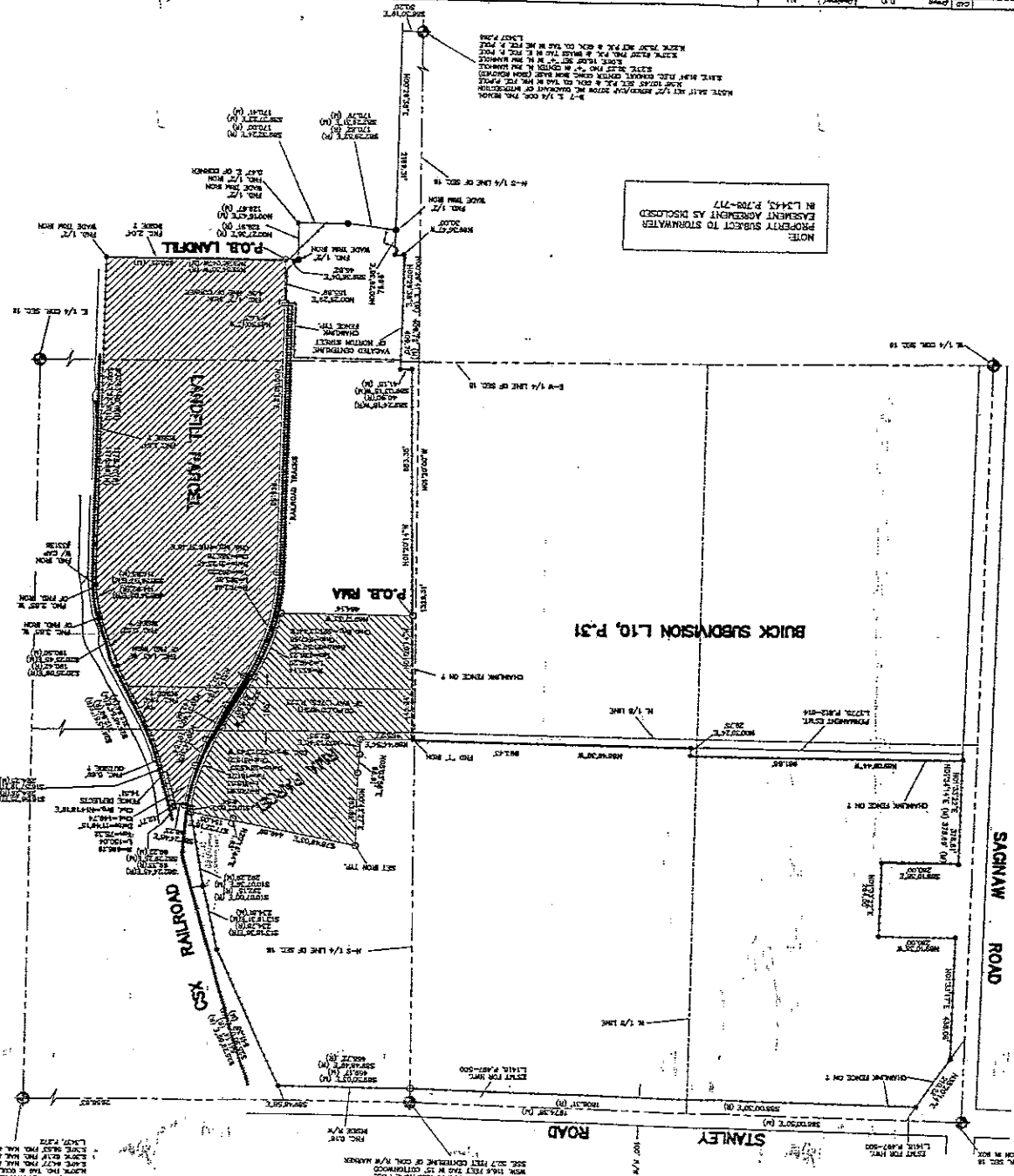
B-B S. 1/4 COR. FND. IRON BAR
N. 01° W. 8.81 FEET NAIL IN W. SIDE 12" OAK TREE
S. 02° W. 26.81 FEET FND. IRON BAR (IRON BENT)
S. 85° E. 74.00 FEET FND. NAIL W/ GOULD CAP
S. SIDE OF ELM TREE.
S. 79.02' NE. CORNER OF SHED.
L.3458, P.266


Instr: 20050624006431 06/24/2005
P.9 of 11 F: \$44.00 12:24PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

EXHIBIT 2

**LIMITS OF LAND USE RESTRICTIONS
(Attached)**

LEGEND	Scale "1" = 200' W.E. indicates workers edge All dimensions are in feet and dimensions thereof. Masses recorded Indicates center monument Indicates known line Section Corner
Project No. 010215 Drawn by DUD Field book No. Checked by ELC Field work UACB/DJ2 Date: 04-15-01	Barlow & King Engineers 1000 17th Street, N.W. Washington, D.C. 20036

[illegible]

Inst: 2005062400654431 06/24/2005 12:24PM
P: 10 of 11 F: \$44.00
Melvin Phillip McCrea T20050619942
Genesee County Register MLOBBRIEN &

DATE	APRIL 2001	Bortow & King Engineers 2806 E. Williams Blvd., King City, Michigan 48706 Tel. (517) 634-8554 Fax (517) 634-8554
DRAWN BY		GORDON & CORE ENGINEERS, INC. 39830 GRAND RIVER AVE., SUITE B-2 N.W., MI 48375 GENERAL MOTORING LANDFILL & RAIA SITE Kalamazoo County, Michigan

EXHIBIT 3

Instr: 200506240064431 06/24/2005
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Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

DESCRIPTION OF ALLOWABLE USES

The Coldwater Road Landfill site is zoned as an M-2/I-2 (general industrial) by Article XII of the Genesee Township Zoning Ordinance. This designation establishes the use of the site for manufacturing, assembling and fabrication activities including large scale or specialized industrial operations. However, no manufacturing operations are planned for the site and it will remain inactive with operation and maintenance activities performed in accordance with the Post-Closure care Plan. The zoning will not change in the foreseeable future.

The area depicted as the Coldwater Road Landfill in Exhibit 2 has been used to manage hazardous wastes and its use is restricted under 40 CFR 264.117 (c) which is adopted by reference in R 299.11003. Post-closure use of the landfill in which hazardous wastes remain after final closure will never be allowed to disturb the integrity of the final cover, liners or any other components of the containment system, or the function of the facilities monitoring and leachate collection systems, unless the Director finds that the disturbance:

- (1) Is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or
- (2) Is necessary to reduce the threat to human health or the environment.

The area depicted as the Remaining Materials Area (RMA) in Exhibit 2 contained materials above the closure standard, however, has been closed by placement of a soil cover. Post-closure use of this area in which impacted soil remains, will not be allowed to disturb the integrity of the final cap, unless the Director finds that the disturbance:

- (1) Is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or
- (2) Is necessary to reduce the threat to human health or the environment.

All Post-Closure care activities will be in accordance with the approved Post-Closure Care Plan as specified in 40 CFR 264.118 which is adopted by reference in R 299.11003.

Instr: 200506240064432 06/24/2005
P: 1 of 18 F: \$65.00 12:25PM
Melvin Phillip McGree T20050019942
Genesee County Register MLOBRIEN &

DECLARATION OF RESTRICTIVE COVENANT

MDEQ Reference No.: RC-WHMD-111-05-002

This Declaration of Restrictive Covenant ("Restrictive Covenant") has been recorded with the Genesee County Register of Deeds for the purpose of protecting public health, safety, and welfare, and the environment by prohibiting or restricting activities that could result in unacceptable exposure to environmental contamination present at the property located at 6220 Horton Street, Genesee Township, Genesee County and legally described in Exhibit 1 attached hereto ("Property"). The Property includes the Remediation and Liability Management Company, Inc. (REALM) Coldwater Road Landfill MID 005 356 860 for which a remedial action was implemented to satisfy a Closure Plan and a Corrective Action Consent Order (No. 64-05-92) dated October 29, 1992. The remedial actions that have been completed to address environmental contamination are fully described in the: Closure Plan and Post-Closure Plan dated August 1989, Closure Plan Modification dated April 23, 1997, 1992 Corrective Action Consent Order (hereafter referred to as Consent Order), Final Closure Certification Documentation Package Decontamination Pits and Sump, Chromium Reduction Basins at the WWTP dated September 1998, Subsurface Investigation of Decontamination Pits/Sump and Chromium Reduction Basins Report dated June 1999, Final Closure Certification Drum Storage Area and Waste Pile Pad dated June 1999, Final Closure Certification Documentation- Part I and II dated November 2000, Final Closure Certification Documentation- Part II dated November 2000, Addendum to the June 1999 Closure Certification Report for the Former Drum Storage Area at the REALM Former Peregrine U.S., Inc. Property at the Coldwater Road facility dated January 2005 (these documents hereafter referred to as Closure Documents) and submitted by William J. McFarland. The Michigan Department of Environmental Quality ("MDEQ") approved the August 1989 Closure Plan and Post-Closure Care Plan including subsequent submittals, pursuant to the Consent Order and Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.20101 et seq.

The Consent Order required the recording of this Restrictive Covenant with the Genesee County Register of Deeds to: 1) restrict unacceptable exposures to hazardous substances located on the Property; 2) assure that the use of Property is consistent with the exposure assumptions utilized in the development of cleanup criteria pursuant to the Closure Documents and the exposure control measures relied upon in the Closure Documents which include soil cover over the RMA, and maintenance and monitoring of the on-site landfill cap as described in the Post Closure Care Plan dated April 16, 2004; and 3) to prevent damage or disturbance of any element of the response activity constructed on the Property. The restrictions contained in this Restrictive Covenant are based upon information available to the MDEQ at the time the Closure Documents were approved by the MDEQ. Failure of the response activities to achieve and maintain the criteria, exposure controls, and requirements specified in the Closure Documents; future changes in the environmental condition of the Property or changes in the

18
9

cleanup criteria developed under the Closure Documents, Part 201, Environmental Remediation, of the NREPA, MCL 324.20101 et seq. and the exposure control measures relied upon in the Closure Documents; the discovery of environmental conditions at the Property that were not accounted for in the Closure Documents; or use of the Property in a manner inconsistent with the restrictions described herein, may result in this Restrictive Covenant not being protective of public health, safety, and welfare, and the environment.

The "Limits of Land Use Restrictions," attached hereto as Exhibit 2, provides the legal descriptions and a survey that distinguishes those portions of the Property that are subject to land use or resource use restrictions as specified herein.

Summary of Response Activities

Hazardous substances including listed wastes F001, F003, F006, D001, D002, D003 and D007 were generated and stored on the Property from 1953 to 1987. Prior to recording of this Restrictive Covenant, response activities have been undertaken to remove and mitigate potential exposures to these wastes.

A hazardous waste landfill was constructed on-site which contains approximately 530,000 cubic yards of these hazardous wastes. The wastes were solidified using lime kiln dust, cement kiln dust, Portland cement or Class F flyash to support handling and transportation to a pugmill unit for final stabilization/solidification treatment. Soils and sludges were then treated with various reagents to meet land disposal treatment standards. The landfill was constructed in accordance with Michigan Act 64 requirements with an original design capacity of 170,000 cubic yards. Due to additional waste volume found in the closure units the landfill capacity was increased with a final closed volume of 530,000 cubic yards. The landfill is constructed with a liner system which includes a secondary 60 mil HDPE liner and leak detection systems, 5 ft thick clay liner, primary 60 mil HDPE liner and leachate collection system. The landfill cap consists of 60 mil HDPE with 3 ft of clay cover. The clay is overlain with 1.5 ft of granular drainage material and 6 inches of topsoil that was seeded.

At an area known as the Remaining Materials Area (RMA) substantial material was removed, however concentrations of chromium, copper, nickel and zinc still exceeded the closure standard, therefore, the RMA was closed by placement of a soil cover. The soil cover consisted of a minimum of 6 inches of clean topsoil and grass seed was planted to provide a vegetative cover. An additional 46,000 cubic yards of material was delisted, excavated and disposed in a licensed landfill in Utah.

These areas of the Property shown on the Survey map in Exhibit 2 may contain hazardous substances in excess of the concentrations developed as the unrestricted residential criteria under Section 20120a(1)(a) or (17) of the NREPA that have not been addressed through the response activities undertaken pursuant to the MDEQ-approved closure documents. The MDEQ recommends that prospective purchasers or users of the Property undertake appropriate due diligence prior to acquiring or using this Property, and undertake appropriate actions to comply with the requirements of Section 20107a of the NREPA.

Definitions

"MDEQ" means the Michigan Department of Environmental Quality, its successor entities, and those persons or entities acting on its behalf.

"Owner" means at any given time the then current title holder of the Property or any portion thereof.

All other terms used in this document which are defined in Part 3, Definitions, of the NREPA; Part 201 of the NREPA; or the Part 201 Administrative Rules ("Part 201 Rules"), 1990 AACRS R 299.5101 et seq., shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Rules, as of the date of filing of this Restrictive Covenant.

NOW THEREFORE,

Declaration of Land Use or Resource Use Restrictions

Pursuant to the Closure Documents, REALM hereby declares and covenants that the Property shall be subject to the following restrictions and conditions:

1. The Owner shall prohibit all uses of the portions of the Property designated in Exhibit 2 as the RMA Parcel and the Landfill Parcel that are not compatible with the category identified in the approved Closure Documents and generally described in the *Description of Allowable Uses*, attached hereto as Exhibit 3. Cleanup criteria for land use-based response activities are located in the Government Documents Section of the State of Michigan Library.
2. The Owner shall prohibit activities on the Property designated in Exhibit 2 that may result in exposures above levels established in the Closure Documents. These prohibited activities include:
 - A. Any excavation or other intrusive activity that could affect the integrity of the landfill cap (60 mil HDPE with 3 ft of clay cover, overlain with 1.5 ft of granular drainage material and 6 inches of topsoil) or RMA cap (6 inches of topsoil) within these areas shown on Figure 1 in Exhibit 2.
 - B. Any construction of wells or other devices to extract groundwater for consumption, irrigation, dewatering, or any other use, except for wells and devices that are part of an MDEQ-approved response activity.
3. The Owner shall prohibit activities on the Property that may interfere with any element of the Closure Documents, including the performance of operation and maintenance activities, monitoring, or other measures necessary to ensure the effectiveness and integrity of the landfill and RMA cap in the closure documents.
4. Permanent Markers. The Owner shall not remove, cover, obscure, or otherwise alter or interfere with the permanent markers placed at the location depicted on Figure 1 in Exhibit 2. The Owner shall keep vegetation and other materials clear of the permanent markers to assure that the markers are readily visible. REALM shall install one permanent marker at the facility entrance within sixty (60) days of REALM's receipt of the recorded Restrictive Covenant from the Genesee County Register of Deeds.

The permanent marker shall be subject to the approval of the MDEQ and shall consist of a brass plaque mounted on a permanent post. The plaque shall include a brief description of the

general location and necessity of the exposure barriers and a simple line drawing delineating the extent of the exposure barriers.

"This is a site of environmental contamination. Exposure barriers are in place in the areas illustrated below to prevent contact with contamination that is present in the soil and landfill materials. Soil and landfill materials may not be relocated without further evaluation. Details about these land and resource restrictions can be found at the Genesee County Register of deeds, Liber Page"

5. Contaminated Soil Management. The Owner shall manage all soils, media and/or debris located on the Property in accordance with the applicable requirements of Section 20120c of the NREPA; Part 111, Hazardous Waste Management, of the NREPA; Subtitle C of the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq.; the administrative rules promulgated thereunder; and all other relevant state and federal laws.

6. Access. The Owner shall grant to the MDEQ and its designated representatives the right to enter the Property at reasonable times for the purpose of determining and monitoring compliance with the Closure Documents, including the right to take samples, inspect the operation of the response activities and, inspect any records relating thereto, and to perform any actions necessary to maintain compliance with, Part 201 and the Closure Documents.

7. Notice. The Owner shall provide notice to the MDEQ of the Owner's intent to transfer any interest in the Property at least fourteen (14) business days prior to consummating the conveyance. A conveyance of title, easement, or other interest in the Property shall not be consummated by the Owner without adequate and complete provision for compliance with the terms and conditions of this Restrictive Covenant and the applicable provisions of Section 20116 of the NREPA. The notice required to be made to the MDEQ under this Paragraph shall be made to: Director, MDEQ, P.O. Box 30473, Lansing, Michigan 48909-7973; and shall include a statement that the notice is being made pursuant to the requirements of this Restrictive Covenant, MDEQ Reference Number RC-WHMD-111-05-002. A copy of this Restrictive Covenant shall be provided to all future owners, heirs, successors, lessees, easement holders, assigns, and transferees by the person transferring the interest.

8. Term and Enforcement of Restrictive Covenant. This Restrictive Covenant shall run with the Property and shall be binding on the Owner, future owners; and all current and future successors, lessees, easement holders, their assigns, and their authorized agents, employees, or persons acting under their direction and control. This Restrictive Covenant may only be modified or rescinded with the written approval of the MDEQ.

The State of Michigan, through the MDEQ, Waste and Hazardous Materials Division may enforce the restrictions set forth in this Restrictive Covenant by legal action in a court of competent jurisdiction.

9. Severability. If any provision of this Restrictive Covenant is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof, and all such other provisions shall continue unimpaired and in full force and effect.

10. Authority to Execute Restrictive Covenant. The undersigned person executing this Restrictive Covenant is the Owner, or has the express written permission of the Owner and all other holders of a legal interest whose interest is materially affected by this Restrictive Covenant as documented and attached hereto as Exhibit 4, and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Restrictive Covenant.


Instr: 200506240064432 06/24/2005
P: 5 of 18 F: \$65.00 12:25PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

AGREED AND CONSENTED TO BY OWNER:



Instr: 200506240064432 06/24/2005
P: 6 of 18 F: \$65.00 12:25PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

REALM

By: William J. McFarland
Signature

Name: William J. McFarland
Print or Type Name

Its: President
Title

STATE OF MICHIGAN
COUNTY OF Genesee

The foregoing instrument was acknowledged before me this June 17, 2005 [date] by
William J. McFarland on behalf of REALM.

Rebecca Lynn Najor
Notary Public

REBECCA LYNN NAJOR
Notary Public - Michigan
Macomb County
My Commission Expires
December 09, 2010

Prepared By:
TONY FINCH
O'BRIEN + GORE Engineers, Inc.
33469 West 14 Mile Road, Suite 150
Farmington Hills, MI 48331
68.00

IN WITNESS WHEREOF, William J. McFarland has caused this Restrictive Covenant to be
executed on this 17 day of June, 2005.



Instr: 200506240064432 06/24/2005
P: 7 of 18 F: \$65.00 12:25PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

William J. McFarland

By: William J. McFarland
Signature

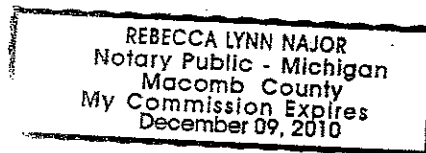
Name: William J. McFarland
Print or Type Name

Its: President
Title

STATE OF Michigan
COUNTY OF Genesee

The foregoing instrument was acknowledged before me this June 17, 2005 [date] by
William J. McFarland of REALM, Pontiac, Michigan, on behalf of the corporation.

Rebecca Lynn Najor
Notary Public





Instr: 200506240064432 06/24/2005
P: 8 of 18 F: \$65.00 12:25PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

EXHIBIT 1

**LEGAL DESCRIPTION AND SURVEY OF PROPERTY
(Attached)**

CERTIFICATE OF SURVEY

Being a part of
Section 18, T8N., R7E.
Genesee Township, Genesee County, Michigan

Certify to:
General Motors Corporation
a Delaware Corporation



Instr: 200506240064432 06/24/2005
P: 9 of 18 F: \$65.00 12:25PM
Melvin Phillip McCree
Genesee County Register MLOBRIEN &

Situated in the Township of Genesee, Genesee County, Michigan, described as:

Being all that real property situated in Section 18, Town 8 North, Range 7 East, Genesee Township, Genesee County, State of Michigan and described as follows:

Commencing at the South 1/4 corner of said Section 18 and thence running South 88°30'19" East 50.20 feet along the South line of the Southeast quarter of said Section 18; thence North 00°29'38" East 2169.31 feet to the Point of Beginning; thence North 00°29'38" East, 87.79 feet; thence North 89°36'47" West, 30.00 feet; thence North 00°29'38" East along the vacated centerline of Horton Street (formerly Alfred Street) a distance of 409.70 feet; thence South 89°24'18" West, 40.90 feet; thence North 01°20'14" West along the East line of Buick Subdivision as recorded in plat book 10, page 1 a distance of 1329.30 feet; thence North 88°49'39" West, 993.43 feet; thence North 00°30'24" East, 29.75 feet; thence North 89°09'44" West, 981.68 feet to the East right of way line of Saginaw Highway; thence North 01°33'22" East along the East right of way line of said Saginaw Highway, 376.81 feet; thence South 89°10'38" East, 280.00 feet; thence along said East right of way line of Saginaw Highway, 1808.31 feet; thence North 01°33'17" East, 438.08 feet; thence North 35°20'14" East, 210.22 feet; thence South 88°00'30" East along the South line of Stanley Road, 1808.31 feet; thence continuing along the South line of said Stanley Road South 89°48'49" East, 468.72 feet to the West right of way line of the CSX Railroad; thence South 25°29'59" East along said West right of way line, 541.14 feet; thence South 13°18'36" East, 234.78 feet; thence South 10°07'00" East, 292.15 feet; thence South 82°24'45" East, 69.33 feet; thence South 16°56'25" East, 224.26 feet; thence South 26°45'51" East, 312.89 feet; thence South 20°25'09" East, 190.42 feet; thence South 08°54'02" East, 114.92 feet; thence South 00°43'40" West, 1175.70 feet; thence North 89°34'30" West, 696.84 feet; thence South 00°27'36" West, 129.91 feet; thence North 89°32'24" West, 170.00 feet; thence North 82°29'52" West, 170.82 feet to the Point of Beginning.
Containing 118.5 acres more or less.
Subject to easements, restrictions, reservations, rights of way, leases and agreements of record if any.

I hereby certify that I have located and mapped the land hereon platted and/or described, on the date noted hereon, that I have complied with the requirements of Act 132, P.A. of 1970 and that the error of closure of the unadjusted field observation is within the limits established for the profession.
There are encroachments as shown.

Signed: Eugene L. Goss
Eugene L. Goss P.S.
Michigan No. 16040

LEGEND

Scale 1" = 503'

All dimensions are in feet and decimals thereof.

○ 1/2" x 18" steel bar set

● Indicates corner monuments found unless noted

— Indicates fence line

W.E. Indicates waters edge

OH

Indicates overhead utilities

M

Measured

R

Recorded

C

Computed

⊙

Section Corner

Project No. 971226

Field book no.

Field work by: MEG

Dated: 2-10-98

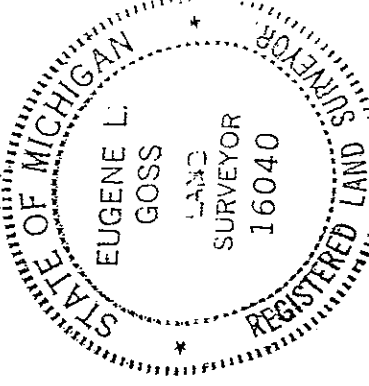
Drawn by: DJD

Calculated by: DJD

Checked by: ELG

Sheet 1 of 2

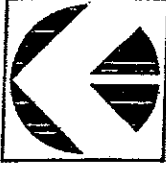
Bartow & King Engineers
2500 E. Midland Road, Bay City, Michigan 48706
Tel. (517) 684-8850
Fax. (517) 684-8404



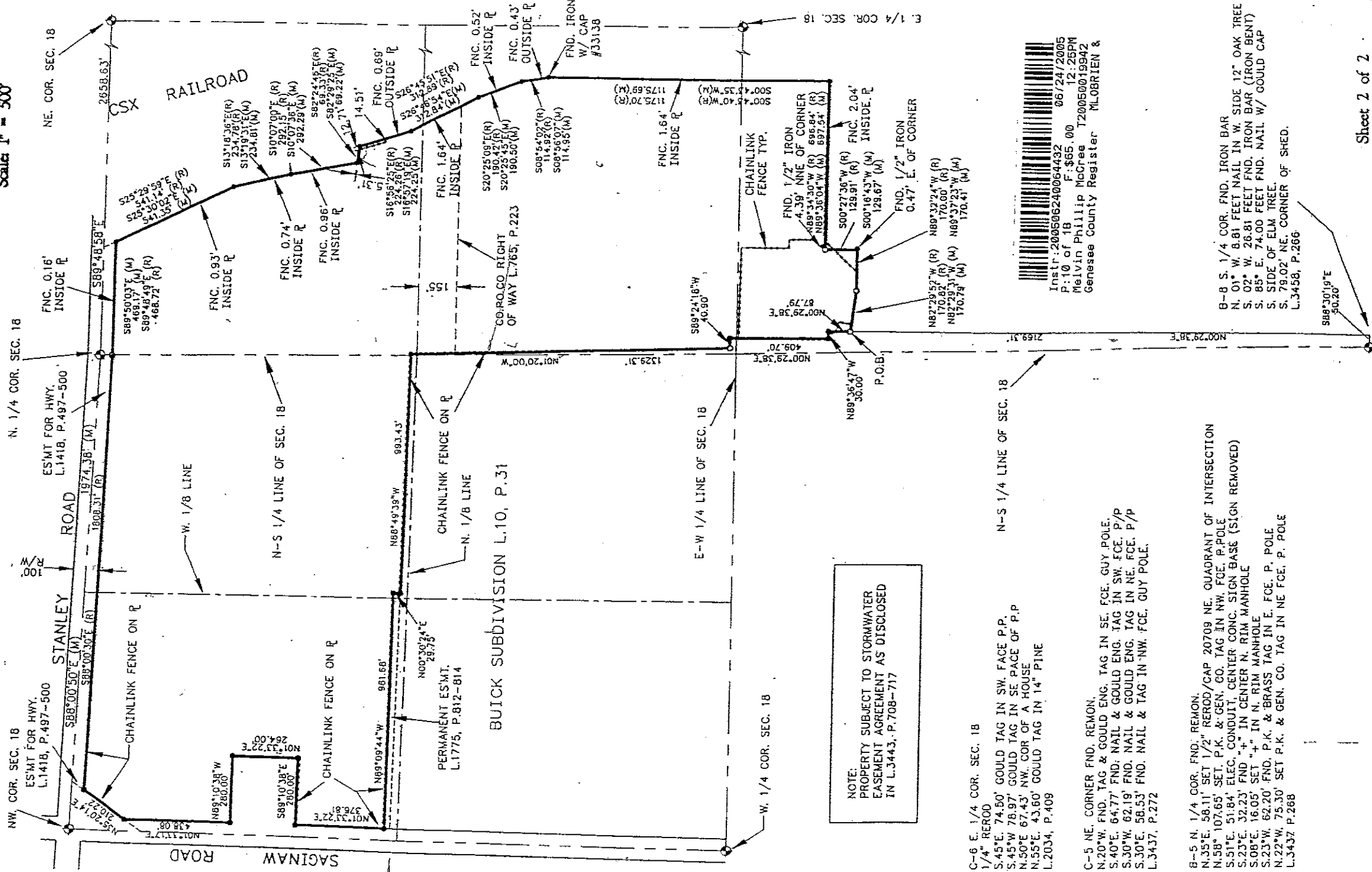
CERTIFICATE OF SURVEY

Being a part of
Section 18, T8N, R7E,
Genesee Township, Genesee County, Michigan

Certify to:
General Motors Corporation
a Delaware Corporation



Scale 1" = 500'



NOTE:
PROPERTY SUBJECT TO STORMWATER
EASEMENT AGREEMENT AS DISCLOSED
IN L.3443, P.708-717

C-6 E. 1/4 COR. SEC. 18
1/4" REROOD
S.45°E. 74.50' GOULD TAG IN SW. FACE P.P.
S.45°W 78.97' GOULD TAG IN SE. FACE OF P.P.
N.50°E 67.43' NW. COR. OF A HOUSE
N.55°E. 43.60' GOULD TAG IN 14" PINE
L.2034, P.409

C-5 NE. CORNER FND. REMON.
N.20°W. FND. TAG & GOULD ENG. TAG IN SE. FCE. GUY POLE.
S.40°E. 64.77' FND. NAIL & GOULD ENG. TAG IN SW. FCE. P/P
S.30°W. 62.19' FND. NAIL & GOULD ENG. TAG IN NE. FCE. P/P
S.30°E. 58.53' FND. NAIL & TAG IN NW. FCE. GUY POLE.
L.3437, P.272

B-5 N. 1/4 COR. FND. REMON.
N.35°E. 58.11' SET 1/2" REROOD/CAP 20709 NE. QUADRANT OF INTERSECTION
N.58° 107.65' SET. P.K. & GEN. CO. TAG IN NW. FCE. P.POLE
S.51°E. 51.84' ELEC. CONDUIT, CENTER CONC. SIGN BASE (SIGN REMOVED)
S.23°E. 32.23' FND. "+" IN CENTER N. RIM MANHOLE
S.08°E. 16.05' SET "+" IN N. RIM MANHOLE
S.23°W. 62.20' FND. P.K. & BRASS TAG IN E. FCE. P. POLE
N.22°W. 75.30' SET P.K. & GEN. CO. TAG IN NE FCE. P. POLE
L.3437, P.268

B-8 S. 1/4 COR. FND. IRON BAR
N. 01° W. 8.81 FEET NAIL IN W. SIDE 12" OAK TREE
S. 02° W. 26.81 FEET FND. IRON BAR (IRON BENT)
S. 85° E. 74.00 FEET FND. NAIL W/ GOULD CAP
S. SIDE OF ELM. TREE.
S. 78.02 NE. CORNER OF SHED.
L.3458, P.266

Inst: 200506240064432 06/24/2005
P: 10 of 18 F: \$65.00 12:25PM
Melvin Phillip McGree T20050019842
Genesee County Register MLOBRIEN &

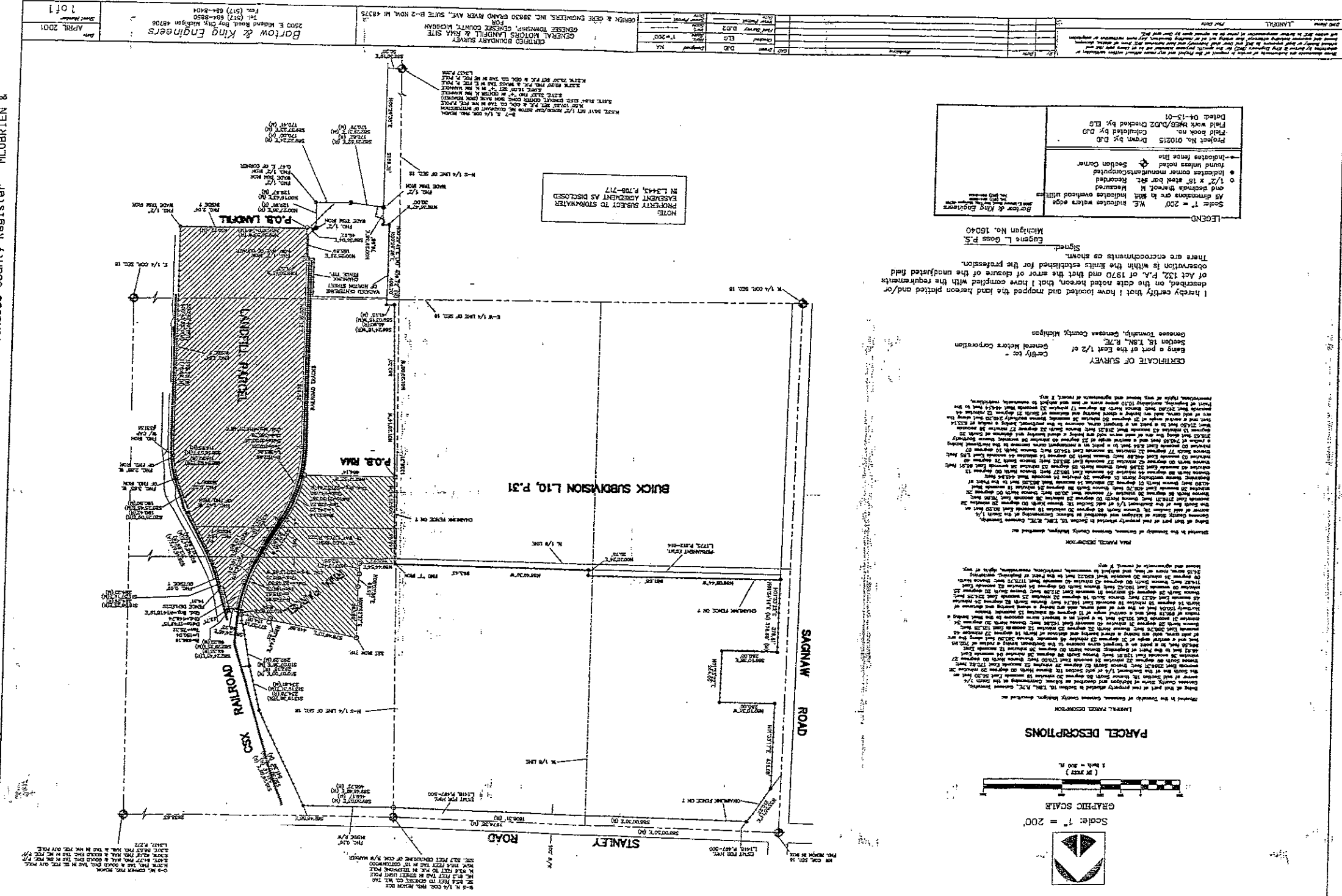

Instr: 200506240064432 06/24/2005
P: 11 of 18 F: \$65.00 12:25PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

EXHIBIT 2

**LIMITS OF LAND OR RESOURCE USE RESTRICTIONS
(Attached)**

[illegible]

Instr: 200506240064432 06/24/2005
P: 12 of 18 F: \$65.00 12:25PM
Melvin Phillip McGree T20050019942
Genesee County Register MLOARIEI &





Instr: 200506240064432 06/24/2005
P: 14 of 18 F: \$65.00 12:25PM
Melvin Phillip McGree T20050019942
Genesee County Register MLOBRIEN &

EXHIBIT 3 DESCRIPTION OF ALLOWABLE USES

The Coldwater Road Landfill site is zoned as a M-2/I-2 (general industrial) by Article XII of the Genesee Township Zoning Ordinance. This designation establishes the use of the site for manufacturing, assembling and fabrication activities including large scale or specialized industrial operations. However, no manufacturing operations are planned for the site and it will remain inactive with operation and maintenance activities performed in accordance with the Post-Closure Care Plan. The zoning will not change in the foreseeable future.

The site contains a hazardous waste landfill and an area of impact (RMA) which have been capped. These areas are defined in the Notice of Approved Remediation form (NAER) recorded with the Genesee County Register. The use of these areas is restricted as defined in the NAER.


Instr: 200506240064432 06/24/2005
P: 15 of 18 F: \$65.00 12:25PM
Melvin Phillip McCrea T20050019942
Genesee County Register MLOBRIEN &

EXHIBIT 4

**CONSENT OF EASEMENT HOLDERS
(Attached)**

Instr: 200506240064432 06/24/2005
P: 16 of 18 F: \$65.00 12:25PM
Melvin Phillip McCree T20050019942
Genesee County Register MLOBRIEN &

CONSENT OF EASEMENT HOLDER

As evidenced below by my signature, I agree and consent to the recording of the land use and resource use restrictions specified in this Restrictive Covenant.

Genesee County Road Commission

By: _____

Signature

Name: John H. Daly III
Print or Type Name

Its: Manager/Director
Title

STATE OF MICHIGAN
COUNTY OF Genesee

The foregoing instrument was acknowledged before me this 21st day of June 2005 by John H. Daly III as attorney in fact on behalf of the Genesee County Road Commission.

Carrie L. O'Dell

Notary Public

CARRIE L. O'DELL

Name (Print/Typed/Stamp): Notary Public, Genesee County, MI
My Commission Expires Jun. 6, 2008

Commissioned in Genesee County,
Michigan

My Commission Expires: 06/06/06

EXHIBIT 5

NON CONSENT OF EASEMENT HOLDER
(ATTACHED)



THIS DOCUMENT WAS HAND DELIVERED TO THE
O'BRIEN & GERE CONSUMERS ENERGY OFFICE AT
3201 COURT ST.
FLINT, MI
(ROBIN HEFLIN REID)
BY TONY FINCH ON 6/20/05.

June 16, 2005

Jill Jedele
Consumers Energy
3201 East Court Street
Flint, MI 48501

NO RETURNED SIGNED CONSENT FORM
WAS RECEIVED BY 6/24/05.

Re: Declaration of Restrictive Covenant
Signature request

File: 4966/32223#2

Dear Ms. Jedele:

On behalf of General Motors Corporation/REALM, this letter is written to request your notarized signature on the attached Restrictive Covenant Form attached. This form is required to be filed with the Genesee County Register of Deeds by the Michigan Department of Environmental Quality (MDEQ) for the purpose of protecting the public health, safety, and welfare, and the environment by prohibiting activities that could result in unacceptable exposure to environmental contamination present at the property located at 6220 Horton Street, Genesee Township, Michigan. This form has previously been reviewed by the MDEQ Waste and Hazardous Materials Division.

Consumers Energy has been identified as an easement holder for the Property, as defined in the restrictive covenant and therefore, your consent is required in acknowledging the land use and resource use restrictions specified in the attached Restrictive Covenant.

Please return the signed Consent of Easement Holder page by June 22, 2005. If you have any questions please contact me at 248-661-3745.

Very truly yours,

O'BRIEN AND GERE ENGINEERS, INC.

Anthony J. Finch, C.P.G.
Senior Project Geologist

cc: Kurt Blizzard- General Motors Corporation
Scott Cormier- O'Brien and Gere Engineers, Inc.



CUSTOMER RECEIPT - RECORDING SERVICES

Receipt Number: T20050019942
Date/Time: 06/24/2005 12:24:13
Method Received: Walk-In
Clerk: DEEDS2R

Customer Name : 2

Transaction Detail

<u>Instrument Number</u>	<u>Instrument Type</u>	<u>Remuneration Fee</u>	<u>Gen. Fee</u>	<u>Equip. Fee</u>	<u>Copy</u>	<u>Cert. Copy</u>	<u>Total Copy Fee</u>	<u># Pgs</u>	<u>Consideration</u>	<u>Subtotal</u>
200506240064431	MISC DEED	4.00	\$35.00	\$5.00	N	N	\$11.00	11		\$55.00
<u>First Party Name</u> REALM										
<u>Second Party Name</u> NOTICE TO THE PUBLIC										
MAILING LABEL OBRIEN & GERE ENGINEERS INC 33469 W 14 MILE RD STE 150 FARMINGTON HILLS MI 48331										
200506240064432	MISC DEED	4.00	\$56.00	\$5.00	N	N	\$18.00	18		\$83.00
<u>First Party Name</u> REALM										
<u>Second Party Name</u> NOTICE TO THE PUBLIC										
MAILING LABEL OBRIEN & GERE ENGINEERS INC 33469 W 14 MILE RD STE 150 FARMINGTON HILLS MI 48331										



CUSTOMER RECEIPT - RECORDING SERVICES

Receipt Number: T20050019942
Date/Time: 06/24/2005 12:24:13
Method Received: Walk-In
Clerk: DEEDS2R

Customer Name : 2

Payment Information

Method of Payment: Payment Control ID
Check: 1080

Authorized Agent: Amount
\$138.00
AMOUNT PAID: \$138.00
LESS AMOUNT DUE: \$138.00
CHANGE RECEIVED: \$0.00

File: 4966/32223 #2 CC: ASF

From: "Richard Conforti" <confortr@michigan.gov>
To: "Anthony Finch" <FinchAJ@obg.com>
Date: 8/1/2005 10:58:53 AM
Subject: Re: Coldwater Road landfill draft Permanent Marker

Tony,

The dimensions of the plaque are good. In the letter, that is making its way through the review process, I said the plaque must be mounted at 4.5 feet above grade on a steel post with a concrete foundation. I thought I should let you know how we want the plaque mounted as the letter might take some time to get to you.

Any questions give me a call.

Thanks
Rich

Richard Conforti, P.E.
Environmental Engineer
Waste and Hazardous Materials Division
Michigan Department of Environmental Quality

Phone: 517 241-2108
Fax: 517 373-4797
Email: Confortr@michigan.gov

Waste and Hazardous Materials Division
Michigan Department of Environmental Quality
P.O. Box 30241
Lansing, MI 48909-7760

For Overnight Mail:
Constitution Hall, Atrium North
525 West Allegan Street
Lansing, MI 48933

>>> "Anthony Finch" <FinchAJ@obg.com> 8/1/2005 9:49 AM >>>

Richard,

Thanks for your response.

The dimensions of the plaque will be 8.5 x 11 inches.
Please let me know if this is not acceptable as we will be ordering the plaque today. Thanks.

Tony Finch, C.P.G.
O'Brien & Gere Engineers, Inc.
33469 West Fourteen Mile Road, Suite 150
Farmington Hills, MI 48331
(248) 661-3745 ext. 14 phone
(248) 661-4057 fax

>>> "Richard Conforti" <confortr@michigan.gov> 07/27/05 4:16 PM >>>
Tony,

The draft permanent marker drawing is acceptable to the DEQ. We will send an acceptance letter by mail. This e-mail will serve as acceptance to allow you to have the plaque made and installed until the letter arrives.

What are the dimensions of the plaque?

Thanks,

Richard Conforti, P.E.
Environmental Engineer
Waste and Hazardous Materials Division
Michigan Department of Environmental Quality

Phone: 517 241-2108
Fax: 517 373-4797
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Lansing, MI 48933

>>> "Anthony Finch" <FinchAJ@obg.com> 7/22/2005 2:38:31 PM >>>

Rich,

Attached is the transmittal letter with an attached draft permanent marker drawing for the Coldwater Road landfill site in Flint, Michigan.

Please review and let me know if you approve of this. An expedited review would be appreciated so we can get the plaque made and installed by August 23.

You should receive a hard copy of the attached on Monday, 7/25.

If you have any questions please contact me.

Regards,

Tony Finch, C.P.G.
O'Brien & Gere Engineers, Inc.
33469 West Fourteen Mile Road, Suite 150
Farmington Hills, MI 48331



O'BRIEN & GERE

July 22, 2005

Mr. Richard A. Conforti, Jr., P.E.
Michigan Department of Environmental Quality
525 West Allegan Street
Atrium - North Tower
P.O. Box 30241
Lansing, MI 489097741

Re: REALM Coldwater Road Landfill
MID 005 356 860
Draft Permanent Marker Plaque

File: 4966 / 32223 #2

Dear Mr. Conforti:

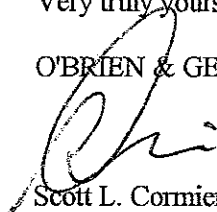
This letter is written to request review of the permanent marker as described in the Michigan Department of Environmental Quality (MDEQ) Declaration of Restrictive Covenant form (MDEQ Reference No.: RC-WHMD-111-05-002) for the Coldwater Road Landfill (MID 005 356 860) located in Flint, Michigan. The Declaration of Restrictive Covenant form was recorded with the Genesee County Register of Deeds on June 24, 2005.

Attached is a draft drawing of the brass plaque identified in the Declaration of Restrictive Covenant form for your review and approval. An expedited review of the permanent marker plaque would be appreciated so we can have the plaque made and installed by August 23, 2005.

If you have any questions or revisions regarding the attached draft permanent marker plaque, please call me at 248-661-3745.

Very truly yours,

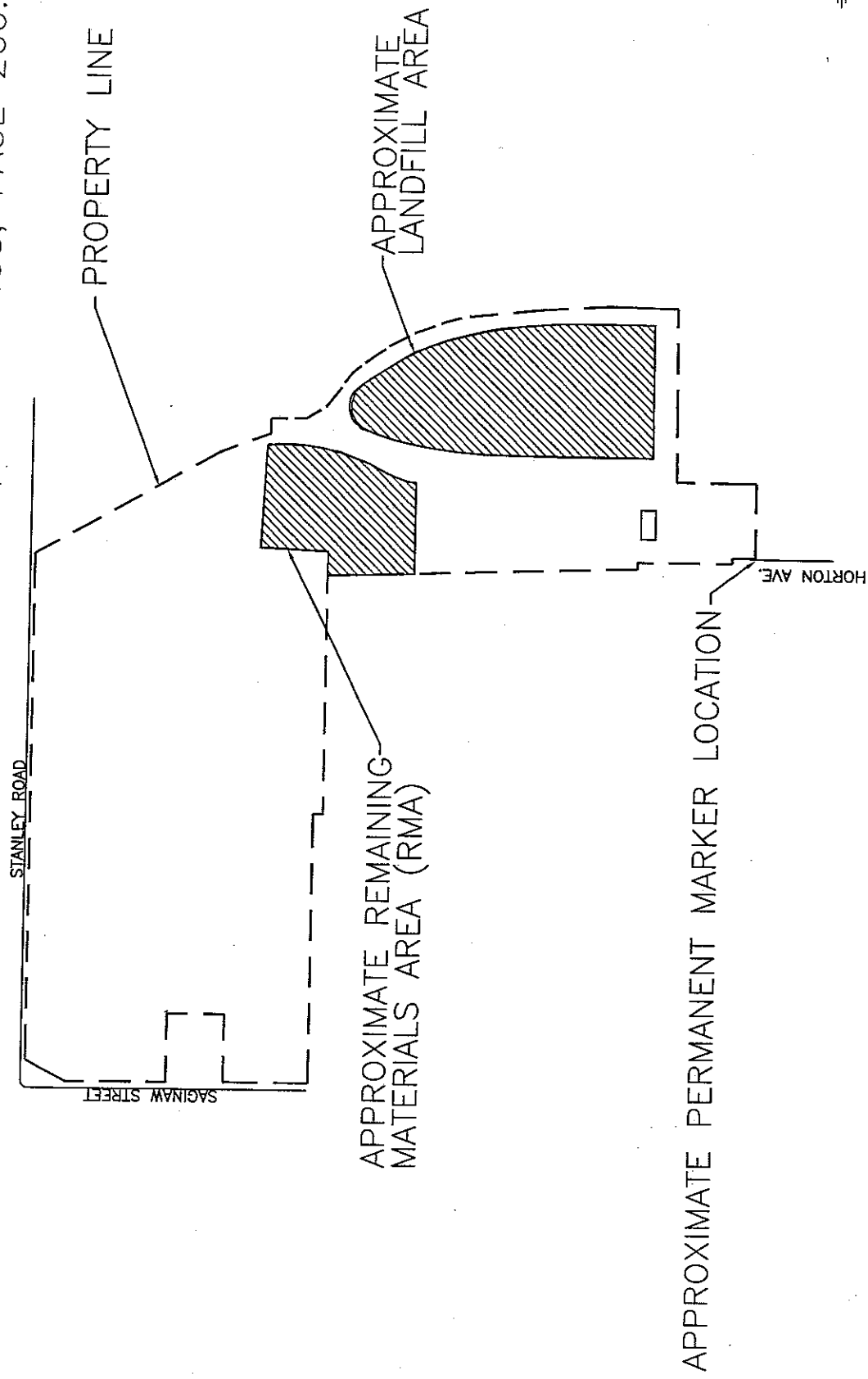
O'BRIEN & GERE ENGINEERS, INC.


Scott L. Cormier, P.E.
Senior Managing Engineer

cc: Joe Rogers -- MDEQ
John McCabe -- MDEQ
David Worrell -- GM/REALM
Kurt Blizzard- GM/REALM
Tony Finch- O'Brien & Gere

THIS IS A SITE OF ENVIRONMENTAL CONTAMINATION. EXPOSURE BARRIERS ARE IN PLACE IN THE LANDFILL AND RMA AREAS ILLUSTRATED BELOW TO PREVENT CONTACT WITH CONTAMINATION THAT IS PRESENT IN THE SOIL. SOIL FROM THESE AREAS MAY NOT BE RELOCATED WITHOUT FURTHER EVALUATION. DETAILS ABOUT THESE LAND AND RESOURCE RESTRICTIONS CAN BE FOUND AT THE

GENESEE COUNTY REGISTER OF DEEDS, LIBER 2034, PAGE 409, LIBER 3437, PAGE 272, LIBER 3437, PAGE 268, LIBER 3458, PAGE 266.



EXPOSURE BARRIERS ARE IN PLACE AT THE RMA AND LANDFILL.



**Worldwide Facilities Group
Remediation Team**

MC 483-520-190
2000 Centerpoint Parkway
Pontiac, Michigan

Telephone: (248) 753-5776 Fax (248) 753-5829

August 23, 2005

Mr. Richard A. Conforti, Jr., P.E.
Michigan Department Environmental Quality
Waste and Hazardous Materials Division
525 West Allegan Street
Atrium – North Tower
Lansing, MI 48909-7741

Re: REALM Coldwater Road Landfill
MID 005 356 860
Permanent Marker Installation
File: 4966/32223 #2

Dear Mr. Conforti:

This letter serves as documentation of the installation of the permanent marker at the Coldwater Road Landfill (MID 005 356 860) located in Flint, Michigan. The permanent marker was installed on August 23, 2005 in accordance with the Michigan Department of Environmental Quality (MDEQ)-approved Declaration of Restrictive Covenant form filed with the Genesee County Register of Deeds on June 24, 2005 and the MDEQ Waste and Hazardous Materials Division (WHMD) approval letter dated August 8, 2005. Attached are photographs of the installed permanent marker.

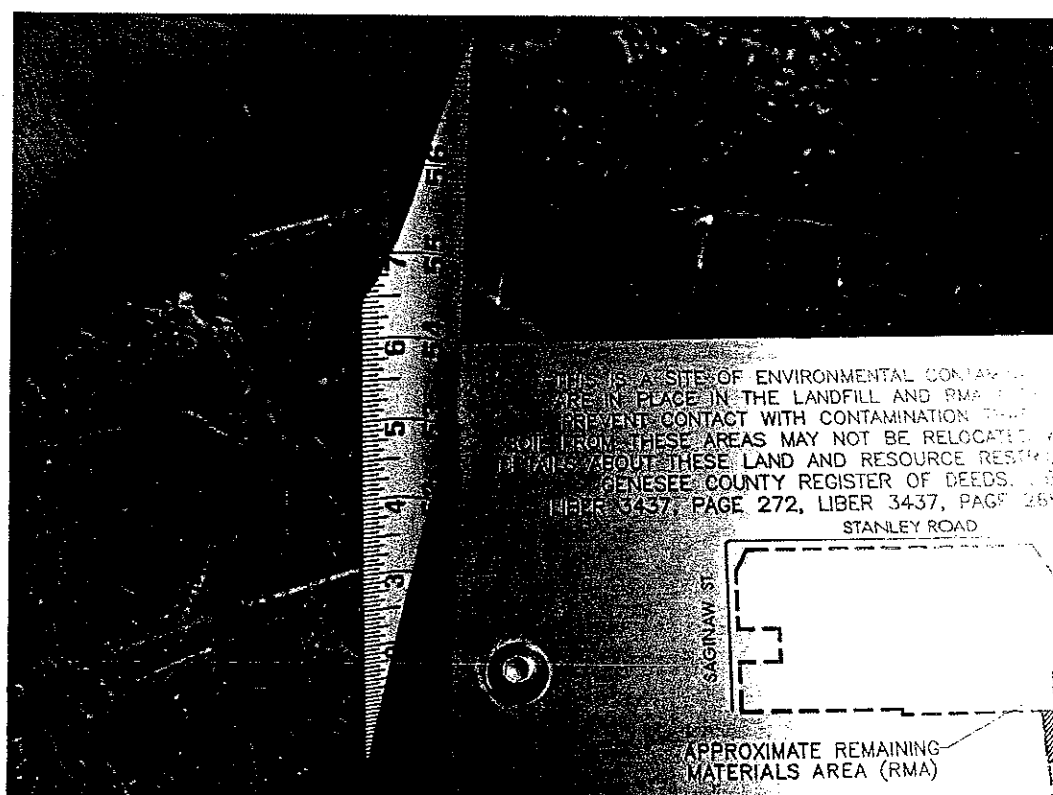
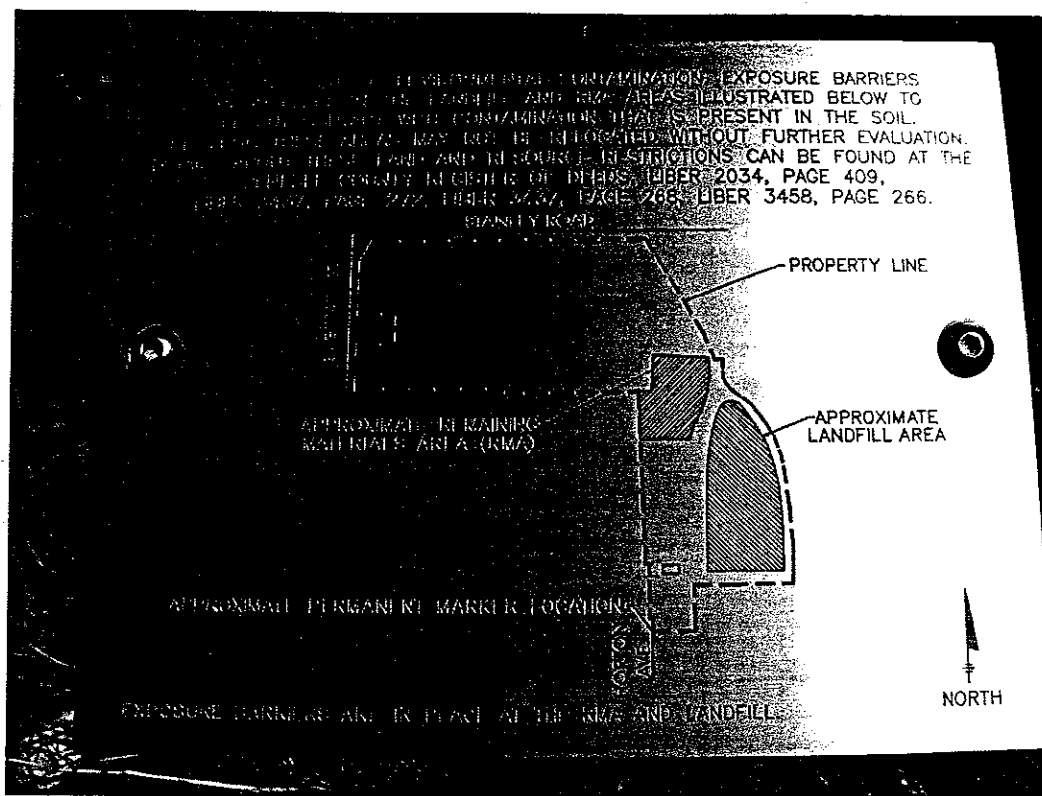
REALM will maintain the area around the permanent marker to prevent vegetative growth from obscuring the brass plaque.

If you have any questions regarding the permanent marker please call either Scott Cormier, O'Brien & Gere at 248-661-3745 or me at 248-753-5702.

Sincerely,

David Worrell, P.E.
Project Manager
General Motors Corporation

cc: Joe Rogers – MDEQ
John McCabe – MDEQ
Jean Caufield – GM/REALM
✓ Tony Finch- O'Brien & Gere
Scott Cormier- O'Brien & Gere





Appendix B
NRCS Genesee County
Hydric Soils List

State_Sym	Area_Symbol	Area_Name	mukey	Mapunit_SYM	Mapunit_Name	Comp_Name_phase	muacres	Comp_RV_Pct	majcompflag	Comp_Acres	Comp_Landform	microfeature	Hydric_Rating	hydric_criteria
MI	MI049	Genesee County, Michigan	2410028	Ad	Adrian muck	Adrian	29	100	Yes	29	lake plains	null	Yes	1
MI	MI049	Genesee County, Michigan	2399401	AkB	Arkona sand, 0 to 4 percent slopes	Belleville	125	4	No	5	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399401	AkB	Arkona sand, 0 to 4 percent slopes	Tappan	125	3	No	3	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423762	AqB	Aquents, sandy, loamy, undulating	Aquents	3	100	Yes	3	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186819	ArA	Arkport loamy fine sand, 0 to 2 percent slopes	Lamson	1241	5	No	62	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2673662	AuB	Pipestone loamy sand, loamy substratum, 0 to 6 percent slopes	Brevort	2205	10	No	220	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2409818	BeA	Belding sandy loam, 0 to 2 percent slopes	Breckenridge	8	5	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2394311	Bh	Berville loam	Berville	50	85	Yes	42	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2394311	Bh	Berville loam	Sebewa	50	5	No	2	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399551	Bl	Belleville fine sand	Belleville	50	90	Yes	45	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2439301	BoA	Boyer-Oshtemo loamy sands, 0 to 2 percent slopes	Gilford	1	2	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423835	BoB	Boyer-Oshtemo loamy sands, 2 to 6 percent slopes	Gilford	22	2	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423835	BoB	Boyer-Oshtemo loamy sands, 2 to 6 percent slopes	Tawas	22	2	No	0	depressions	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2423840	BoC	Boyer-Oshtemo loamy sands, 6 to 12 percent slopes	Gilford	3	3	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423840	BoC	Boyer-Oshtemo loamy sands, 6 to 12 percent slopes	Tawas	3	2	No	0	depressions	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2386582	BroaaA	Brookston loam, dense substratum, 0 to 1 percent slopes	Brookston, dense substratum	13452	81	Yes	10896	depressions, moraines	null	Yes	2, 3

MI	MI049	Genesee County, Michigan	2386582	BroaaA	Brookston loam, dense substratum, 0 to 1 percent slopes	Sebewa	13452		4	No		538	drainageways, moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2386582	BroaaA	Brookston loam, dense substratum, 0 to 1 percent slopes	Linwood	13452		2	No		269	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186829	Bt	Breckenridge-Brevort complex	Breckenridge	2253		55	Yes		1239	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186829	Bt	Breckenridge-Brevort complex	Brevort	2253		35	Yes		788	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186829	Bt	Breckenridge-Brevort complex	Gilford	2253		5	No		112	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186829	Bt	Breckenridge-Brevort complex	Brookston	2253		5	No		112	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2394324	Bu	Breckenridge sandy loam	Breckenridge	1		95	Yes		0	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186830	Bv	Brevort loamy sand	Brevort	1520		85	Yes		1292	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186830	Bv	Brevort loamy sand	Granby	1520		5	No		76	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186830	Bv	Brevort loamy sand	Breckenridge	1520		5	No		76	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186830	Bv	Brevort loamy sand	Brookston	1520		5	No		76	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186831	Bw	Brookston loam, 0 to 2 percent slopes	Brookston	13895		90	Yes		12505	depressions, moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186831	Bw	Brookston loam, 0 to 2 percent slopes	Belleville	13895		3	No		416	depressions, moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186831	Bw	Brookston loam, 0 to 2 percent slopes	Corunna	13895		1	No		138	depressions, moraines	null	Yes	2
MI	MI049	Genesee County, Michigan	186831	Bw	Brookston loam, 0 to 2 percent slopes	Linwood	13895		1	No		138	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2409809	CaB	Capac fine sandy loam, 2 to 6 percent slopes	Brookston	3		3	No		0	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2420084	CbB	Capac sandy loam, 0 to 4 percent slopes	Brookston	46		2	No		0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2420084	CbB	Capac sandy loam, 0 to 4 percent slopes	Colwood	46		2	No		0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186832	Cc	Carlisle muck, 0 to 2 percent slopes	Carlisle	5010		90	Yes		4509	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186832	Cc	Carlisle muck, 0 to 2 percent slopes	Linwood	5010		4	No		200	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186832	Cc	Carlisle muck, 0 to 2 percent slopes	Wallkill	5010		4	No		200	depressions, glacial drainage channels, moraines, till plains	null	Yes	2, 3

MI	MI049	Genesee County, Michigan	186832	Cc	Carlisle muck, 0 to 2 percent slopes	Adrian	5010	2	No	100	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186833	Cd	Carlisle and Linwood mucks	Carlisle	4710	60	Yes	2826	glacial drainage channels	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186833	Cd	Carlisle and Linwood mucks	Linwood	4710	40	Yes	1884	glacial drainage channels	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2409461	CeB	Celina loam, 2 to 6 percent slopes	Brookston	59	3	No	1	moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186834	CeC	Celina loam, 6 to 9 percent slopes	Brookston	2734	5	No	136	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2396656	CgB	Capac loam, 1 to 5 percent slopes	Wolcott	7	3	No	0	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2394231	Cj	Cohoctah loam	Cohoctah, frequently flooded	38	95	Yes	36	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	186835	ClA	Celina-Conover loams, 0 to 2 percent slopes	Brookston	1388	5	No	69	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186836	ClB	Celina-Conover loams, 2 to 6 percent slopes	Brookston	14703	10	No	1470	ground moraines	null	Yes	2
MI	MI049	Genesee County, Michigan	186837	CmB	Celina-Owosso sandy loams, 2 to 6 percent slopes	Brookston	10168	10	No	1016	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186838	Cn	Ceresco fine sandy loam	Cohoctah	3776	5	No	188	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	186839	Co	Cohoctah silt loam	Cohoctah	2234	90	Yes	2010	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	186839	Co	Cohoctah silt loam	Brookston	2234	5	No	111	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186839	Co	Cohoctah silt loam	Sloan	2234	5	No	111	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	186840	Cp	Colwood silt loam	Colwood	2488	85	Yes	2114	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186840	Cp	Colwood silt loam	Lenawee	2488	5	No	124	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186840	Cp	Colwood silt loam	Brookston	2488	5	No	124	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186840	Cp	Colwood silt loam	Lamson	2488	5	No	124	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186841	CvA	Conover loam, 0 to 2 percent slopes	Brookston, drained	1050	5	No	52	moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186842	CvB	Conover loam, 2 to 6 percent slopes	Brookston, drained	2870	5	No	143	moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	3117290	CvraaB	Conover loam, 0 to 4 percent slopes	Parkhill	80099	5	No	4004	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	3117291	CvrabA	Conover loam, 0 to 3 percent slopes	Parkhill	18960	9	No	1706	wave-worked till plains	open depressions	Yes	2, 3
MI	MI049	Genesee County, Michigan	3117292	CvracB	Conover-Williamstown loams, 0 to 6 percent slopes	Parkhill	2897	13	No	376	wave-worked till plains	open depressions	Yes	2, 3

MI	MI049	Genesee County, Michigan	186843	CwA	Conover-Metamora sandy loams, 0 to 2 percent slopes	Brookston	4780	5	No	239	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2673663	CxB	Covert sand, 0 to 6 percent slopes	Granby	2120	3	No	63	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2397031	Cy	Corunna sandy loam	Corunna	61	92	Yes	56	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2397031	Cy	Corunna sandy loam	Belleville	61	4	No	2	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186846	DIA	Del Rey sandy loam, 0 to 2 percent slopes	Lenawee	489	5	No	24	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186847	DrA	Del Rey silt loam, 0 to 2 percent slopes	Lenawee	12647	5	No	632	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186848	DrB	Del Rey silt loam, 2 to 6 percent slopes	Lenawee	11235	5	No	561	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2420048	DxA	Dixboro loamy fine sand, 0 to 3 percent slopes	Colwood	9	3	No	0	outwash deltas	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2420048	DxA	Dixboro loamy fine sand, 0 to 3 percent slopes	Gilford	9	2	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2420048	DxA	Dixboro loamy fine sand, 0 to 3 percent slopes	Thomas	9	2	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186849	Ed	Edwards muck, 0 to 1 percent slopes	Edwards	744	90	Yes	669	lakebeds (relict), moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186849	Ed	Edwards muck, 0 to 1 percent slopes	Adrian	744	3	No	22	lakebeds (relict), moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186849	Ed	Edwards muck, 0 to 1 percent slopes	Houghton	744	3	No	22	lakebeds (relict), moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186849	Ed	Edwards muck, 0 to 1 percent slopes	Palms	744	2	No	14	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186849	Ed	Edwards muck, 0 to 1 percent slopes	Gilford	744	2	No	14	lakebeds (relict), moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2410027	FaA	Fabius-Wasepi sandy loams, 0 to 2 percent slopes	Gilford	2	5	No	0	drainageways	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2422406	FmB	Frankenmuth very fine sandy loam, 0 to 4 percent slopes	Pella	32	5	No	1	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2422406	FmB	Frankenmuth very fine sandy loam, 0 to 4 percent slopes	Corunna	32	4	No	1	till-floored lake plains	null	Yes	2, 3

MI	MI049	Genesee County, Michigan	2422406	FmB	Frankenmuth very fine sandy loam, 0 to 4 percent slopes	Parkhill	32	4	No		1	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423826	FrC	Fox-Boyer complex, 6 to 12 percent slopes	Gilford	4	3	No		0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423824	FrE	Fox-Boyer complex, 18 to 25 percent slopes	Tawas	14	3	No		0	depressions	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2423824	FrE	Fox-Boyer complex, 18 to 25 percent slopes	Gilford	14	3	No		0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186852	Gd	Gilford sandy loam	Gilford	4468	90	Yes		4021	drainageways	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186852	Gd	Gilford sandy loam	Breckenridge	4468	5	No		223	drainageways	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186852	Gd	Gilford sandy loam	Granby	4468	5	No		223	drainageways	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399549	Gl	Granby sand, loamy substratum	Granby, loamy substratum	168	93	Yes		156	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399549	Gl	Granby sand, loamy substratum	Parkhill	168	2	No		3	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186853	Gm	Granby loamy sand	Granby	2957	95	Yes		2809	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186853	Gm	Granby loamy sand	Brevort	2957	5	No		147	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423844	Gn	Granby loamy fine sand	Granby	33	86	Yes		28	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399524	Go	Granby fine sand	Granby	964	93	Yes		896	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399524	Go	Granby fine sand	Parkhill	964	2	No		19	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2420045	Ha	Houghton and Adrian mucks	Houghton	613	55	Yes		337	depressions	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2420045	Ha	Houghton and Adrian mucks	Adrian	613	35	Yes		214	depressions	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2420045	Ha	Houghton and Adrian mucks	Brookston	613	5	No		30	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2420045	Ha	Houghton and Adrian mucks	Granby	613	5	No		30	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2396650	Ho	Houghton muck	Houghton	386	100	Yes		386	glacial drainage channels	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186855	KfA	Kibbie fine sandy loam, 0 to 2 percent slopes	Colwood	2529	5	No		126	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186856	KfB	Kibbie fine sandy loam, 2 to 6 percent slopes	Colwood	664	5	No		33	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	1905426	KibaaB	Kibbie-Urban land complex, 0 to 6 percent slopes	Lamson	37	11	No		4	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2394797	KnA	Kibbie loam, 0 to 2 percent slopes	Colwood	44	5	No		2	till-floored lake plains	null	Yes	2, 3

MI	MI049	Genesee County, Michigan	186858	Lb	Lamson loamy fine sand	Lamson	1112	90	Yes	1000	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186858	Lb	Lamson loamy fine sand	Gilford	1112	5	No	55	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186858	Lb	Lamson loamy fine sand	Granby	1112	5	No	55	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186859	Ld	Landes fine sandy loam	Cohoctah	641	5	No	32	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	186860	Le	Lenawee silty clay loam, 0 to 1 percent slopes	Lenawee	10281	93	Yes	9561	lakebeds (relict)	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186861	Lm	Linwood muck	Linwood	888	95	Yes	843	till plains	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186861	Lm	Linwood muck	Brookston	888	5	No	44	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186862	Lu	Houghton muck, 0 to 1 percent slopes	Houghton	3919	90	Yes	3527	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186862	Lu	Houghton muck, 0 to 1 percent slopes	Adrian	3919	4	No	156	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186862	Lu	Houghton muck, 0 to 1 percent slopes	Edwards	3919	3	No	117	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186862	Lu	Houghton muck, 0 to 1 percent slopes	Palms	3919	2	No	78	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186862	Lu	Houghton muck, 0 to 1 percent slopes	Gilford, gravelly subsoil	3919	1	No	39	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2395913	MaA	Matherton sandy loam, loamy substratum, 0 to 2 percent slopes	Sebewa	10	5	No	0	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399245	MbB	Macomb sandy loam, 2 to 6 percent slopes	Berville	2	5	No	0	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2420050	MeB	Marlette sandy loam, 1 to 6 percent slopes	Brookston	110	2	No	2	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	3117293	MetaaA	Metamora-Conover complex, 0 to 3 percent slopes	Parkhill	1786	7	No	125	wave-worked till plains	open depressions	Yes	2, 3
MI	MI049	Genesee County, Michigan	2396654	MgB	Marlette-Capac complex, 0 to 6 percent slopes	Wolcott	130	1	No	1	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423849	MiB	Metamora sandy loam, 0 to 4 percent slopes	Corunna	34	3	No	1	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423849	MiB	Metamora sandy loam, 0 to 4 percent slopes	Belleville	34	3	No	1	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186865	Mk	Adrian muck, 0 to 1 percent slopes	Adrian	878	92	Yes	807	depressions, moraines	null	Yes	1, 3

MI	MI049	Genesee County, Michigan	186865	Mk	Adrian muck, 0 to 1 percent slopes	Kingsville	878	3	No	26	nearshore zones (relict)	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186865	Mk	Adrian muck, 0 to 1 percent slopes	Houghton	878	2	No	17	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186865	Mk	Adrian muck, 0 to 1 percent slopes	Edwards	878	2	No	17	depressions, moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186865	Mk	Adrian muck, 0 to 1 percent slopes	Gilford, gravelly subsoil	878	1	No	8	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186866	MIA	Metamora sandy loam, 0 to 2 percent slopes	Breckenridge	5909	4	No	236	till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186867	MIB	Metamora sandy loam, 2 to 6 percent slopes	Breckenridge	1462	5	No	73	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2424414	MmA	Matherton sandy loam, 0 to 2 percent slopes	Sebewa	4	5	No	0	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2439246	MoA	Wawasee loam, 0 to 2 percent slopes	Brookston	2	3	No	0	depressions, ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2439246	MoA	Wawasee loam, 0 to 2 percent slopes	Linwood	2	2	No	0	depressions, ground moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186871	MoB	Wawasee loam, 2 to 6 percent slopes	Brookston	10101	4	No	404	depressions, ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186871	MoB	Wawasee loam, 2 to 6 percent slopes	Linwood	10101	1	No	101	depressions, ground moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186872	MoC	Wawasee loam, 6 to 12 percent slopes	Brookston	12964	3	No	388	depressions, ground moraines	null	Yes	2
MI	MI049	Genesee County, Michigan	186872	MoC	Wawasee loam, 6 to 12 percent slopes	Carlisle	12964	1	No	129	depressions, ground moraines	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2424285	MrA	Metamora loamy sand, 0 to 2 percent slopes	Breckenridge	1	5	No	0	till plains	null	Yes	2
MI	MI049	Genesee County, Michigan	2423769	ObB	Oshtemo-Boyer loamy sands, 0 to 6 percent slopes	Gilford	1	5	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423720	ObC	Oshtemo-Boyer loamy sands, 6 to 12 percent slopes	Gilford	6	4	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399250	OmB	Owosso-Miami sandy loams, 2 to 6 percent slopes	Brookston	36	5	No	1	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399250	OmB	Owosso-Miami sandy loams, 2 to 6 percent slopes	Breckenridge	36	5	No	1	ground moraines	null	Yes	2, 3

MI	MI049	Genesee County, Michigan	2424282	OtA	Ottokee loamy sand, 0 to 2 percent slopes	Granby	1	5	No	0	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399410	Pa	Parkhill loam, 0 to 1 percent slopes	Parkhill	2	87	Yes	1	wave-worked till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399410	Pa	Parkhill loam, 0 to 1 percent slopes	Corunna	2	5	No	0	wave-worked till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399410	Pa	Parkhill loam, 0 to 1 percent slopes	Ziegenfuss	2	1	No	0	wave-worked till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399407	PbA	Parkhill-Poseyville complex, 0 to 3 percent slopes	Parkhill	1	60	Yes	0	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399407	PbA	Parkhill-Poseyville complex, 0 to 3 percent slopes	Pella	1	2	No	0	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399407	PbA	Parkhill-Poseyville complex, 0 to 3 percent slopes	Corunna	1	2	No	0	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399409	PcB	Parkhill-Selfridge complex, 0 to 2 percent slopes	Parkhill	6	50	Yes	3	wave-worked till plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186888	PeA	Perrin loamy sand, 0 to 2 percent slopes	Gilford	1547	4	No	61	stream terraces	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186889	PeB	Perrin loamy sand, 2 to 6 percent slopes	Gilford	214	5	No	10	stream terraces	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2394802	PfB	Plainfield loamy sand, slightly acid variant, 2 to 6 percent slopes	Granby	2	5	No	0	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399525	PhA	Pipestone sand, loamy substratum, 0 to 3 percent slopes	Parkhill	164	3	No	4	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2399552	PiA	Pipestone sand, Erie-Huron Lake Plain, 0 to 3 percent slopes	Kingsville	2451	7	No	171	till-floored lake plains	open depressions	Yes	2, 3
MI	MI049	Genesee County, Michigan	186890	PnA	Pinconning-Allendale loamy fine sands, 0 to 2 percent slopes	Pinconning	4279	60	Yes	2567	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186890	PnA	Pinconning-Allendale loamy fine sands, 0 to 2 percent slopes	Lenawee	4279	5	No	213	lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186891	Rf	Rifle muck	Rifle	306	100	Yes	306	till plains	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	186892	SdA	Selfridge loamy sand, 0 to 3 percent slopes	Belleville	6684	5	No	334	wave-worked till plains	open depressions	Yes	2, 3

MI	MI049	Genesee County, Michigan	186892	SdA	Selfridge loamy sand, 0 to 3 percent slopes	Parkhill	6684	3	No	200	wave-worked till plains	open depressions	Yes	2, 3
MI	MI049	Genesee County, Michigan	186894	Se	Sebewa loam, 0 to 2 percent slopes	Sebewa	1645	93	Yes	1529	drainageways, moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186894	Se	Sebewa loam, 0 to 2 percent slopes	Gilford	1645	2	No	32	drainageways, moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423764	SgB	Sisson fine sandy loam, 1 to 6 percent slopes	Brookston	15	1	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423764	SgB	Sisson fine sandy loam, 1 to 6 percent slopes	Houghton	15	1	No	0	depressions	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2399537	Sl	Sloan-Ceresco complex, frequently flooded	Sloan, frequently flooded	190	47	Yes	89	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	2399537	Sl	Sloan-Ceresco complex, frequently flooded	Ceresco, frequently flooded	190	40	Yes	76	flood plains	null	Yes	4
MI	MI049	Genesee County, Michigan	1905439	SloaaA	Sloan, frequently flooded-Ceresco, occasionally flooded, complex, 0 to 3 percent slopes	Sloan	297	69	Yes	204	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	186897	Sm	Sloan silt loam	Sloan	2795	95	Yes	2655	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	186898	Sn	Sloan silt loam, occasionally flooded	Sloan, occasionally flooded	884	95	Yes	839	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	2399548	So	Sloan silt loam, frequently flooded	Sloan, frequently flooded	42	93	Yes	39	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	2399548	So	Sloan silt loam, frequently flooded	Cohoctah, frequently flooded	42	4	No	1	flood plains	null	Yes	2, 4
MI	MI049	Genesee County, Michigan	2399548	So	Sloan silt loam, frequently flooded	Ceresco, frequently flooded	42	3	No	1	flood plains	null	Yes	4
MI	MI049	Genesee County, Michigan	186899	SpA	Spinks loamy sand, wet subsoil variant, 0 to 2 percent slopes	Gilford	763	5	No	38	drainageways	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186899	SpA	Spinks loamy sand, wet subsoil variant, 0 to 2 percent slopes	Granby	763	5	No	38	drainageways	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423373	SqB	Spinks loamy sand, 0 to 6 percent slopes	Granby	12	3	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423373	SqB	Spinks loamy sand, 0 to 6 percent slopes	Gilford	12	3	No	0	depressions	null	Yes	2, 3

MI	MI049	Genesee County, Michigan	2423373	SqB	Spinks loamy sand, 0 to 6 percent slopes	Houghton	12	3	No	0	depressions	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2438243	SrE	Spinks loamy sand, 12 to 35 percent slopes	Granby	1	2	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2438243	SrE	Spinks loamy sand, 12 to 35 percent slopes	Gilford	1	2	No	0	depressions	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2438243	SrE	Spinks loamy sand, 12 to 35 percent slopes	Houghton	1	2	No	0	depressions	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2424248	ThB	Thetford loamy fine sand, 0 to 4 percent slopes	Granby	2	7	No	0	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	1905432	UrbacA	Urban land-Crosier complex, 0 to 2 percent slopes	Brookston, dense substratum	11366	2	No	227	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	1905432	UrbacA	Urban land-Crosier complex, 0 to 2 percent slopes	Lamson	11366	1	No	113	ground moraines	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186907	Wa	Wallkill silt loam	Wallkill	302	95	Yes	286	glacial drainage channels	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186907	Wa	Wallkill silt loam	Carlisle	302	5	No	15	glacial drainage channels	null	Yes	1, 3
MI	MI049	Genesee County, Michigan	2409873	WawacC	Wawasee loam, 6 to 12 percent slopes, eroded	Brookston	11	6	No	0	drainageways	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423853	WbA	Wixom-Belleville loamy fine sands, 0 to 3 percent slopes	Belleville	17	35	Yes	5	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	2423853	WbA	Wixom-Belleville loamy fine sands, 0 to 3 percent slopes	Corunna	17	5	No	0	till-floored lake plains	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186908	WeA	Wasepi sandy loam, 0 to 2 percent slopes	Gilford	2253	5	No	112	stream terraces	null	Yes	2, 3
MI	MI049	Genesee County, Michigan	186909	WpA	Wasepi sandy loam, loamy substratum, 0 to 2 percent slopes	Breckenridge	1175	5	No	58	till plains	null	Yes	2, 3
MI	MI051	Gladwin County, Michigan	189742	AP	Allendale-Pinconning-Pickford association	Pinconning	346	25	Yes	86	depressions	null	Yes	2, 3

Source:
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316619.html



Appendix C

Wetland Data Forms

DNRE
MiRAM
Version 2.1

Rating Form

July 23, 2010

MICHIGAN RAPID ASSESSMENT METHOD FOR WETLANDS (MiRAM)

Department of Natural Resources and Environment
Land and Water Management Division

Background Information	page 2
Field Datasheet	page 3
Narrative Rating	page 4
Quantitative Rating	page 5
Rating Summary	page 13

The Michigan Rapid Assessment Method for Wetlands (MiRAM) is a tool to determine the “functional value” of a particular wetland and to assign a rating level to that wetland as compared to other wetlands. The goal of this rating system is to assess individual wetlands on an equal scale regardless of ecological type. MiRAM offers a relatively rapid assessment of wetland functions and values, but it is not intended to replace more detailed quantitative measures of ecosystem function, such as Indices of Biological Integrity (IBI), Floristic Quality Assessment (FQA), or other detailed ecological studies.

The initial step of MiRAM is the proper identification of the Wetland Evaluation Area (Wetland) using the MiRAM Boundary Guidelines in the *MiRAM User's Manual*. The MiRAM evaluation contains two rating systems: the **Narrative Rating**, and the **Quantitative Rating**. First, the Evaluator is required to complete the Narrative Rating, which relies on accurate identification of several types of wetlands with significant ecological values, which automatically rates the Wetland as having high functional value. If the Wetland is not identified as having high functional value by the Narrative Rating, the Evaluator must complete the Quantitative Rating. The Quantitative Rating is a series of metrics regarding the Wetland. The Quantitative Rating is designed to provide a numeric score that reflects the functional value of a Wetland, which includes a Wetland's ecological condition (integrity) and its potential to provide ecological and societal services (functions and values).

The MiRAM requires a knowledge and understanding of wetlands and is designed to be used by Michigan Department of Natural Resources and Environment (DNRE) staff and other wetland professionals. Although the MiRAM rating form has been designed to provide sufficient information for a trained Evaluator to properly complete, it is highly recommended that the Evaluator read and understand the *MiRAM User's Manual*, as it provides additional explanations and examples.

The MiRAM was designed to be used during times when adequate plant growth allows for proper identification of most plant species within the Wetland. Typically, this follows the growing season for a particular region. MiRAM evaluations conducted outside the growing season will receive an additional 10 points due to the inability to properly identify all wetland features during this time of year. MiRAM is not designed to be used in times of snow cover.

If the Wetland and/or buffer areas have been impacted (cutting, mowing, development, etc.) during the past five years, the DNRE may rate the Wetland as if those impacts have not occurred and will presume that the impacted areas were of the best/highest quality possible for that type of wetland.

It is not the intent of MiRAM to modify the existing regulatory process in Michigan. Instead, it is intended that the MiRAM will supplement the existing process by providing additional information. The numeric score obtained from the MiRAM is not, and should not be considered, an absolute number with intrinsic meaning, but should be considered in light of other available information. It should be noted that the MiRAM is an assessment of “functional value” and is different from the determination of whether a particular location is a wetland (i.e., jurisdictional wetland).

The most recent version of this document and the *MiRAM User's Manual* are posted at:

www.michigan.gov/wetlands

Background Information

Wetland

Proposed Project Site Name or DNRE File #: Coldwater Road Landfill
Date of Evaluation: 11/28/2018-11/29/2018
County: Genesee
Township: Mt. Morris
Town: 08N
Range: 07E
Section: 18
Decimal Lat/Long: 43.102132, -83.692755

Evaluator

Name: Alicia Rodrian
Address: 8805 Governor's Hill Dr. Suite 164
City: Cincinnati State: OH Zip: 45249
Phone: 513-472-0141
Email: alicia.rodrian@obg.com
Is a Wetland Delineation Report available? ☒ YES ☐ NO Date Completed: 12/6/2018 If "YES", completed by (name of person/firm/agency): same as evaluator

Check (✓) each box below when item is complete.

- ☒ **MiRAM Boundary.** See *MiRAM User's Manual* for more information
Size of the Wetland Evaluation Area: 6.7 acres
- ☒ **Location Map.** A county road map showing the location of the Wetland Evaluation Area, north arrow, map scale information, roads, landmarks, etc. *Attach* a map to the end of this document.
- ☒ **Color Photographs.** Photos should show the wetland vegetation components, habitat/community types, hydrologic features, and any other pertinent site features. *Attach* to the end of this document.
- ☒ **Landscape Sketch or Aerial Photograph.**
1. Clearly label the Proposed Project Site and Wetland Evaluation Area. Indicate the location of the MiRAM Boundary.
 2. Label and indicate the extent of all general wetland community types identified within the Wetland Evaluation Area. Examples include: marsh, wet meadow, hardwood swamp, conifer swamp, shrub swamp, etc. Some wetland communities may be further classified as natural communities. Natural communities are predominantly structured by natural processes rather than modern anthropogenic disturbances. Examples include: bog, prairie fen, muskeg, wet prairie, southern wet meadow, etc.
 3. Identify and label all hydrologic features, such as: streams, 100-year floodplains, ponds, vernal pools, and small patches of open water within a marsh or swamp.
 4. Identify and label surrounding upland features.
 5. Include north arrow and map scale information.
 6. *Attach* the landscape sketch or aerial photo to the end of this document.

Comments: List any important site features or apparent disturbance events that have occurred within or near the Wetland Evaluation Area.

The entire area is an approved environmental remediation area. The wetlands and open water were constructed as part of the remediation plan for the site. The wetland has a constructed embankment on the western edge that is designed to retain the water to the east. A native grasses planting plan was also implemented within the area as part of the remediation plan.

Field Datasheet

List plant species observed within the Wetland. *Attach* additional sheets as necessary.
Nomenclature will follow Voss (1972,1985,1996) or Gleason and Cronquist (1991).

Forest Overstory Stratum (woody plants 3 inches or more DBH, regardless of height)

none	

Shrub/Sapling Stratum (woody plants less than 3 inches DBH and greater than 3.28 feet tall)

Salix interior	
Populus deltoides	
Salix nigra	

Herbaceous Stratum (non-woody plants, regardless of size, and woody plants less than 3.28 feet tall)

Typha latifolia	
Juncus effusus	
Juncus tenuis	
Carex lurida	
Carex vulpinoidea	
Symphytotrichum lateriflorum	
Panicum virgatum	

Checklist of features and conditions to observe during the field inspection:

- | | |
|---|--|
| ☒ Hydrologic Condition and Interactions | ☒ Vegetation Diversity |
| ☒ Hydrologic Alterations | ☒ Vegetation Condition |
| ☒ Substrate/Soil Disturbances | ☐ Amount of Open Water |
| ☒ Habitat Structure Development | ☒ Percent of Invasive/Non-native Species |
| ☐ Habitat Alterations | ☒ Community Interspersion |
| ☐ Habitat/Wetland Condition | ☐ Vertical/Horizontal Structure |
| ☐ Amphibian Breeding Pools | ☐ S1, S2, or S3 Natural Community |

Approximately how much of the Wetland Evaluation Area was reviewed during the field inspection? 100 %

Has vegetation within the Wetland Evaluation Area been altered and/or buffer areas impacted within the past 5 years? ☐ YES ☒ NO

Please Note: The Wetland Evaluation Area (encompassed by the MiRAM Boundary) is simply referred to as the "Wetland" throughout the remainder of this document.

Narrative Rating

Completion of the Narrative Rating allows the Evaluator to quickly identify whether the Wetland is one of several wetland types that typically have exceptional ecological value. If any of the metrics are answered affirmatively, the Wetland has *exceptional ecological value* and is *automatically rated as having high functional value* and completion of the Quantitative Rating is not necessary. If none of the metrics are answered affirmatively, proceed to the Quantitative Rating.

Answer all of the following metrics.

1. U.S. Fish and Wildlife Service (USFWS) Critical Habitat.

Is any part of the Wetland located within an area designated as Critical Habitat and does the Wetland *actually* contain habitat suitable for either species listed below?

Piping Plover (*Charadrius melodus*) Critical Habitat Units are designated only within the following counties: Alger, Benzie, Charlevoix, Cheboygan, Chippewa, Emmet, Iosco, Leelanau, Luce, Mackinac, Mason, Muskegon, Presque Isle, and Schoolcraft. See URL below for Unit locations.

<http://www.fws.gov/midwest/endangered/pipingplover/chabitat.html>

Hines's Emerald Dragonfly (*Somatochlora Hineana*) Critical Habitat Units are designated only within the following counties: Alpena, Mackinac, and Presque Isle. See URL below for Unit locations.

www.fws.gov/midwest/endangered/insects/hed/pdf/hinesfCH_FR.pdf

☐ YES ☒ NO

If "yes", the Wetland has *high functional value*.

2. Threatened or Endangered (T/E) Species.

Do federal/state-listed T/E plant or animal species occur within the Wetland? Complete the following questions to answer this metric.

- a. ☐ YES ☒ NO Has an approved T/E survey been completed? If "Yes," go to question b. If "No," go to question c.
- b. ☐ YES ☐ NO Does the T/E survey indicate T/E species present within the Wetland? If "Yes," answer "Yes" to this metric. If "No," answer "No" to this metric.
- c. ☐ YES ☒ NO Has the Evaluator (or others known to the Evaluator) observed any T/E species within the Wetland? If "Yes," answer "Yes" to this metric. If "No," go to question d.
- d. ☐ YES ☒ NO Does the DNRE Endangered Species Assessment (ESA) web site interactive map, mcgi.state.mi.us/esa, indicate that there is a potential for unique natural features at or near your site of interest? If "No," answer "No" to this metric. If "Yes," request a DNRE formal review by submitting the online form. Type "MiRAM" within the "Project Information" field on the form. Go to question e.
- e. ☐ YES ☐ NO Did the DNRE review confirm potential T/E occurrence in the Wetland? If "Yes," answer "Yes" to this metric. If "No," answer "No" to this metric.
- The Evaluator may proceed with the Narrative Rating and Quantitative Rating while waiting for a formal response from DNRE.**

☐ YES ☒ NO

If "yes", the Wetland has *high functional value*.

3. Rare Wetland Natural Community Type.

Are more than 5 acres or more than 25% of the Wetland comprised of a Rare Wetland Natural Community Type*? Check (✓) all Rare Wetland Natural Community Types

☐

S1 or S2 Natural Community Type.

Has the Wetland been identified by the Evaluator — or other persons — as being an S1 or S2 natural community type as defined by the Michigan Natural Features Inventory (MNFI)? See the *MiRAM User's Manual* for more information.

☐

Southern Bog, defined as any bog occurring below the northern limit of Michigan's Floristic Tension Zone (see figure for approximate location).

☐

Old-Growth/Mature Forested Wetland. Lacks evidence of any significant harvesting. Dominated by large, overstory trees (mean overstory DBH ≥20 inches, including at least two trees/acre having DBH ≥28 inches) and the canopy is multi-aged and multi-layered. Aggregations of canopy trees are interspersed with canopy gaps and large snags. Large nursery logs and tip-up mounds litter the forest floor. Does the forested Wetland have all/most of these characteristics?

*If the Rare Wetland Community Type is less than 5 acres and less than 25% of the Wetland, the rare community should be split off and evaluated separately.

☐ YES ☒ NO

If "yes", the Wetland has *high functional value*.



4. Great Lakes Coastal Wetland.

Is any part of the Wetland within 1,000 feet of the ordinary high water mark of any of the Great Lakes, including Lake St. Clair?

☐ YES ☒ NO

If "yes", the Wetland has *high functional value*.

Quantitative Rating

Completion of the Quantitative Rating assists the Evaluator in recognizing the functional value of the Wetland. Complete all metrics by completing all sections, circling the correct point value(s), and assigning a score.

Metric 1. Wetland Size and Distribution

Maximum 9 points.

1a. Wetland Size Estimate the size of the Wetland (i.e., Wetland Evaluation Area). Select a size class. Maximum 6 points.			Score 3
50 acres	Select this option if the wetland's actual size ≥ 50 acres.	6 pts	
25 acres to <50 acres		5 pts	
10 acres to <25 acres		4 pts	
3 acres to <10 acres		3 pts	
¼ acre to <3 acres		2 pts	
less than ¼ acre		0 pt	
1b. Wetland Scarcity Utilize the USFWS National Wetlands Inventory (NWI) maps to estimate percentage of wetland area remaining within a 2-mile radius from the Wetland's center. For the purpose of this submetric, areas of open water within the Great Lakes, inland lakes, streams, etc., should be excluded from the wetland percentage. Select the most appropriate percentage category. Maximum 3 points.			Score 3
0 to 20% of surrounding 2-mile radius is wetland		3 pts	
>20 to 80% of surrounding 2-mile radius is wetland		2 pts	
>80% of surrounding 2-mile radius is wetland		1 pt	

6

Metric 1 Total
 add 1a & 1b
(9 points max.)

Metric 2. Upland Buffers and Intensity of Surrounding Land Use

Maximum 12 points.

2a. Average Buffer Width around the Wetland's Perimeter Step 1: Using the most recent aerial photograph available, sketch a 150-foot wide "buffer zone" around the Wetland. Step 2: Estimate the buffer widths from the Wetland's edge to any non-buffer areas (up to 150 feet). Step 3: Average the buffer widths along the Wetland's perimeter. Step 4: Select the buffer width that is most appropriate. Maximum 6 points.			Score 4
Buffers Include: • shrubland, young forest, natural grassland, prairie • abandoned row crop field (vegetated & naturalizing) • hay field (non-row crop), lightly grazed pasture • lightly managed forest (selectively logged) • designated wildlife area, lightly managed parkland • other wetland, lake, river Non-Buffers Include: • lawns, golf courses, manicured parkland • residential, commercial, industrial • roadways (including shoulders), parking lots • row crop field • conservation tillage, heavily grazed pasture • clear-cutting, mining, construction activity			
Wide Buffer Width:	≥150 feet around the perimeter	6 pts	4
Medium Buffer Width:	75 to <150 feet around the perimeter	4 pts	
Narrow Buffer Width:	25 to <75 feet around the perimeter	2 pt	
Very Narrow Buffer Width:	0 (no buffer) to <25 feet around the perimeter	0 pt	

2b. Intensity of Surrounding Land Use within 1,000 feet of the Wetland

Step 1: Using the most recent aerial photograph available, sketch a 1,000-foot wide "land use zone" around the Wetland.

Step 2: Estimate percent coverages comprised by each of the four types of land use listed below.

Step 3: If any land use type comprises more than 25% of the total land use, it is considered to be a "dominant" land use type for the purposes of MiRAM and will receive points. Sum the available points from all dominant land use types and then average the score. Round to the nearest 0.5 increment. **Maximum 6 points.**

Type of Land Use	Examples within each Type of Land Use		Score
Very Low Intensity:	- maturing forest - natural grassland, prairie	- designated wildlife area - other wetland, lake, river	6 pts
Low Intensity:	- shrubland/young forest - recent selective logging - hay field (non-row crop)	- lightly managed parkland - old field, lightly grazed pasture - one-lane road/two track	4 pts
Moderately High Intensity:	- residential & lawns - manicured parkland - golf course	- conservation tillage - recent clear-cut (<10 years) - two-lane road	2 pts
High Intensity:	- commercial, industrial - high-density residential - heavily grazed pasture - row crop field	- multi-lane paved roadway - construction activity - parking lot - mining	1 pt
			2

6

Metric 2 Total
add 2a & 2b
(12 points max.)

Metric 3. Hydrology

Limited to 26 points.

3a. Sources of Water: Select <u>all that apply</u> . Maximum 8 points.		Score
Precipitation: Directly and/or as runoff from upland areas.	1 pt	1
Groundwater: Seeps or evidence, such as significant amounts of skunk cabbage (<i>Symplocarpus foetidus</i>) or other fen-adapted species.	2 pts	
Seasonal/Intermittent Surface Water: Seasonal inundation from a lake, pond, or stream. (A Wetland can only receive points for this source of water or the next, not both.)	2 pts	
Perennial Surface Water: Perennial inundation from a lake, stream or pond.	5 pts	5

3b. Connectivity: Select <u>all that apply</u> . Maximum 8 points.		Score
100-Year Floodplain. As defined in the Floodplain Authority under Part 31 of the NREPA.	2 pts	
Between a Stream/Lake/Pond and Human Land Use. The Wetland is located between a surface waterbody and any human land use, such that run-off from the adjacent land use could flow through the Wetland before it discharges into the surface waterbody.	2 pts	2
Wetland/Upland Complex. The Wetland is part of a large scale (10+ acres) non-linear complex of wetlands with small areas of unmanicured/undeveloped vegetated uplands that do not restrict movement of organisms between the wetland areas.	2 pts	
Riparian Corridor. The Wetland is part of a linear <i>riparian</i> corridor that provides organism movement along a stream/river. Typically, these corridors should exceed 100 feet in width and extend at least one half mile.	2 pts	

3c. Duration of Inundation/Saturation Select the option(s) from below that best describe(s) the dominant hydrologic characteristic of the Wetland. For the purposes of this submetric, "dominant" is defined as comprising <u>at least 25%</u> of the Wetland's area. If the Wetland contains several areas that have distinctly different hydrologic characteristics, <u>select all that apply and average the points</u> . Round to the nearest 0.5 increment. Maximum 4 points.		Score
Permanently Inundated	4 pts	
Permanently Saturated to Regularly Inundated	3 pts	3
Regularly Saturated to Seasonally Inundated	2 pts	
Seasonally Saturated in the Upper 12 Inches of Soil	1 pt	

3d. Alterations to Natural Hydrologic Regime This submetric evaluates the intactness of the natural hydrologic regime of the Wetland. Check (✓) all forms of past or ongoing hydrologic alteration(s) that are potentially influencing the Wetland. ☐ ditch(es) in or near the wetland ☐ tile(s) in or near the wetland ☐ dike(s) in or near the wetland ☐ weir(s) in or near the wetland ☐ stormwater inputs (addition of water) ☐ stream channelization ☐ point source discharge(s) (non-stormwater) ☐ filling/grading activities in or near the wetland ☐ road bed(s)/RR grades(s) in or near the wetland ☐ dredging activities in or near the wetland ☒ other (specify) Wetland and ponds were constructed in upland for remediation of soils ☐ other (specify) Evaluate whether an alteration is significant or minor in relation to the Wetland's overall area and hydrologic regime. For this submetric, "significant" is defined as affecting approximately 10% or greater of the Wetland. "Minor" is defined as affecting less than approximately 10% of the Wetland. A hydrologic alteration may also impact the Substrate/Soil (submetric 4a) and/or Habitat (submetric 4b). Select an option below that best describes the extent of (or lack of) alteration(s) to the Wetland's natural hydrologic regime. If uncertain, select adjoining options and average the available points. Round to the nearest 0.5 increment. If the Wetland's natural hydrologic regime has been significantly altered, it shall receive no more than 6 points for this submetric. Maximum 8 points.			Score
No Hydrologic Alterations Apparent: There has been no significant alteration(s) to the Wetland's natural hydrologic regime, and/or ongoing minor alteration(s) is/are rare.	8 pts		
Recovered: Significant hydrologic alteration(s) occurred more than 20 years prior to the assessment, and/or ongoing minor hydrologic alteration(s) is/are only occasional.	6 pts	6	
Recovering: A single significant hydrologic alteration occurred within 20 years prior to the assessment, and/or ongoing minor hydrologic alteration(s) is/are frequent.	4 pts		
Recent or No Recovery: Multiple significant hydrologic alterations have occurred in the 20 years prior to the assessment, and/or significant alteration(s) is/are ongoing.	1 pt		

17

Metric 3 Total
 add 3a – 3d
 (26 points max.)

Metric 4. Habitat Alteration and Habitat Structure Development

Maximum 20 Points.

4a. Substrate/Soil Disturbance

This submetric evaluates the intactness or lack of disturbance to the Wetland's substrate and soil. Check (✓) all possible forms of past or ongoing substrate/soil disturbance that are observed within the Wetland.

- | | | |
|--|---|---------------------------|
| ☐ human-induced erosion or exposure | ☐ plowing, disking | |
| ☐ human-induced sedimentation or burial | ☐ intensive grazing (hooves) | |
| ☐ filling | ☐ off-road vehicle use | Wetland and pond areas |
| ☐ grading | ☐ construction vehicle use | were constructed |
| ☐ dredging | ☒ other (specify) | in uplands as part of the |
| | | soils remediation area. |

Evaluate whether a disturbance is significant or minor in relation to the Wetland's overall area.

For this submetric, "significant" is defined as affecting approximately 10% or greater of the Wetland. "Minor" is defined as affecting less than approximately 10% of the Wetland. A substrate disturbance may also be an alteration of the natural hydrologic regime (Submetric 3d) and/or an alteration of habitat (Submetric 4b).

Select an option below that best describes the extent of (or lack of) disturbances to the Wetland's substrate. If uncertain, select adjoining options and average the points. Round to the nearest 0.5 increment. If the Wetland's substrate has been significantly altered, it should receive no more than 3 points. **Maximum 4 points.**

			Score
No Substrate Disturbance Apparent:	There has been no significant disturbance to the Wetland's substrate and/or ongoing minor disturbance events are rare.	4 pts	3
Recovered:	Significant substrate disturbance occurred more than 20 years prior to the assessment, and/or ongoing minor substrate disturbance events are only occasional (e.g., light sedimentation from a nearby dirt road).	3 pts	
Recovering:	A single significant substrate disturbance event occurred within 20 years prior to the assessment, and/or ongoing minor substrate disturbance events are frequent.	2 pts	
Recent or No Recovery:	Multiple significant substrate disturbance events have occurred in the 20 years prior to the assessment, and/or significant disturbance is ongoing.	1 pt	

4b. Habitat Alteration

This submetric evaluates the intactness of the natural habitat within the Wetland. A "significant" alteration is defined as affecting 10% or greater of the Wetland. "Minor" alteration affects less than 10% of the Wetland. Check (✓) all possible forms of past or ongoing habitat alteration(s) that are observed within the Wetland.

- | | |
|--|---|
| ☐ barriers such as road bed(s)/RR grades(s) | ☐ herbicide/chemical treatment |
| ☐ selective cutting | ☐ sedimentation |
| ☐ clearcutting | ☐ dredging |
| ☒ mowing or shrub removal | ☐ filling/grading |
| ☐ coarse woody debris (CWD) removal | ☐ plowing/disking/farming |
| ☐ intensive grazing | ☒ other (specify) A native species plant plan was conducted |
| ☐ nutrient enrichment, e.g., nuisance algae | as part of the remediation area. |

Utilize aerial photography and field evidence to determine if any habitat alterations occurred prior to approximately 20 years ago. Determine the approximate pre-disturbance extent of vertical and horizontal habitat attributes, such as large, woody debris, plant species diversity, hummocks, patchiness, niche diversity, etc. Disregard changes that can be attributed to wetland community succession or other natural processes. A habitat alteration may also be an alteration of the natural hydrologic regime (Submetric 3d) and/or a substrate disturbance (Submetric 4a).

Select an option below that best describes the extent of (or lack of) alteration(s) to the Wetland's habitat. If unclear, select adjoining options and average the available points. Round to the nearest 0.5 increment. **Maximum 9 points.**

			Score
No Habitat Alterations Apparent:	There has been no significant alteration to the Wetland's natural habitat, and/or ongoing minor alteration(s) is/are rare.	9 pts	6
Recovered:	Significant habitat alteration(s) occurred more than 20 years prior to the assessment, and/or ongoing minor habitat alteration(s) is/are only occasional.	6 pts	
Recovering:	A single, significant habitat alteration occurred within 20 years prior to the assessment, and/or ongoing minor habitat alteration(s) is/are frequent.	3 pts	
Recent or No Recovery:	Multiple significant habitat alterations have occurred in the 20 years prior to the assessment, and/or significant alteration(s) is/are ongoing.	1 pt	

4c. Habitat Structure Development

Determine an overall qualitative rating of how well developed the Wetland is in comparison to the best of its type. For this submetric, a wetland's type is defined as any ecologically and/or hydrogeomorphically similar wetland habitat typical of the region. Well-developed communities, regardless of successional state, often exhibit many of the following habitat characteristics:

- Quality vertical habitat, such as hummocks, organic debris, and diverse plant height ranges.
- Quality horizontal habitat, such as varying vegetation density and patchiness, moderate ratios of open space to cover, plant species diversity, and a wide range of plant ages.
- Other ecological attributes, such as a diverse assortment of the following: breeding areas, rearing areas, feeding areas, niche space, etc.

Select an option below that best describes the Wetland's habitat structure development. If unclear, select adjoining options and average the points. Round to the nearest 0.5 increment.

Maximum 7 points.

		Score
Excellent:	Wetland appears to represent the best of its type.	7 pts
Good:	Wetland appears to be a good example of its type but because of past or present disturbance, or other reasons, is not excellent.	5 pts
Fair:	Wetland appears to be a moderately good example of its type but because of past or present disturbance, or other reasons, is not good.	3 pts
Poor:	Wetland is a poor example of its type because of past or present disturbance, or other reasons.	1 pt
		3

12

Metric 4 Total
add 4a – 4c
(20 points max.)

Metric 5. Special Situations

Refer to the Narrative Rating for definitions and the *User's Manual* for guidance, **Limited to 10 points**

5a. High Ecological Value. See Narrative Rating for definitions of each.
10 points for each that apply.

- ☐ 1. Contains USFWS-designated Critical Habitat
- ☐ 2. Federal or State-listed T/E Plant or Animal Species
- ☐ 3. S1, S2, or S3 Natural Community Type (at least 5 acres or 25% of the Wetland)
- ☐ 4. Southern Bog (at least 5 acres or 25% of the Wetland)
- ☐ 5. Old-Growth/Mature Forested Wetland (at least 5 acres or 25% of the Wetland)
- ☐ 6. Great Lakes Coastal Wetland

Score

0

5b. Forested Wetland. 5 points.

Exhibits combined canopy cover from any group(s) of trees. Stem DBH must be at least 3 inches to qualify as a tree. Total area must comprise at least 5 acres or 25% of the Wetland. Does not qualify if most of the trees are ungrouped and widely scattered (e.g., a savanna), or located only thinly along the Wetland's margin.

Score

0

5c. Urban/Suburban Wetland. 5 points.

Greater than 50% of the surrounding landscape (1,000 foot radius) is comprised of low-permeability surfaces, such as roads, lawns, parking lots, buildings, sidewalks, etc.

Score

5

5d. Low-Quality Wetland. Negative 10 points.

The Wetland is less than 1 acre and non-contiguous as defined in Part 303 and either:
1) a stormwater pond that was excavated from upland and constructed for stormwater treatment in conjunction with a development project or 2) more than 75% covered by highly-invasive vegetation. See Submetric 6c for a list of highly-invasive species.

Score

0

5

Metric 5 Total
(10 points max.)
Can be negative

Metric 6. Vegetation, Interspersion, and Habitat Features

Maximum 20 points.

6a. Wetland Vegetation Components

Determine the Qualitative Cover Score of each Vegetation Component (Herbaceous, Shrub/Sapling, Forest Overstory). Using the Qualitative Cover Scoring Table, start on the left and proceed to the right, until a point value is obtained for each Vegetation Component. Vegetation Components may exist in overlapping layers, e.g., significant areas of shrub/sapling and/or herbaceous may exist under a forest canopy. Only groups of trees, clusters of shrubs, or dense patches of herbaceous stems may count toward area coverage. Do not include widely-scattered trees, lone shrub/saplings, or sparse patches of herbaceous stems. See Submetric 6c to aid in the proper identification of broad-leaved cattail (*Typha latifolia*), a non-invasive, native species.

Qualitative Cover Scoring Table

Vegetation Component is >¼ acre ▶	>25% of Wetland area ▶	Native species dominate the coverage ▶	High native diversity ▶	3 pts
			Moderate to low native diversity ▶	2 pts
		Invasive or non-native species dominate the coverage ▶	Moderate to high native diversity ▶	2 pts
			Low native diversity ▶	1 pt
	<25% of Wetland area ▶	Native species dominate the coverage ▶	Moderate to high native diversity ▶	2 pts
			Low native diversity ▶	1 pt
		Invasive or non-native species dominate the coverage ▶	Moderate native diversity ▶	1 pt
			Low native diversity ▶	0 pt
Vegetation Component is <¼ acre ▶	>25% of Wetland area ▶	Native species dominate the coverage ▶	Moderate to high native diversity ▶	2 pts
			Low native diversity ▶	1 pt
		Invasive or non-native species dominate the coverage ▶		0 pt
	<25% of Wetland area ▶			0 pt

Forest Overstory Component, qualitative cover score derived from table **maximum 3 points**.

Forested wetland areas are characterized by a group of trees at least 3 inches in DBH, regardless of height. The Wetland does not have a forested component if the trees are widely scattered (e.g., a savanna), located only thinly along the Wetland's margin, or if it is clear that most of the trees are actually located on upland around the perimeter of the Wetland.

Score

0

Shrub/Sapling Component, qualitative cover score derived from table **maximum 3 points**.

Shrub/Sapling wetland areas are dominated by clusters of woody plants less than 3 inches in DBH and greater than 3.28 feet in height. Species include true shrubs, young trees, and stunted trees. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.

Score

3

Herbaceous Component, qualitative cover score derived from table **maximum 3 points**.

Herbaceous wetlands are areas dominated by dense patches of erect, non-woody plants, regardless of size, and woody plants less than 3.28 feet in height. The MiRAM includes the robust-stemmed yellow pond lily (*Nuphar advena*) and American lotus (*Nelumbo lutea*) within the herbaceous component because of their tendency to hold their stems and leaves well above the water. All floating-leaf species (including *Nymphaea* spp.) are excluded from the herbaceous component, and are instead included within the open water component (see Submetric 6b).

Score

0

6b. Open Water Component

Open water is an unobstructed, inundated area of water containing few or no rooted emergent or woody plant species. It can occur as a distinct zone along a river or lake or as a combination of small ponds, streams, or pools (e.g., within a marsh or swamp) and as an “understory” below a forest canopy (e.g., a forested vernal pool).

This Habitat Component includes combined acreage from any of the following areas:

- **Small ponds, streams, and pools.**
- **Seasonal standing water areas** (e.g., mudflats and dried-down vernal pools) that were inundated long enough during the growing season to support aquatic life.
- **Aquatic bed areas**, also known as submergent marsh or submerged aquatic vegetation (SAV). Aquatic bed is dominated by plants that grow at or below the surface of the water for most of the growing season in most years. The MiRAM includes aquatic bed within the definition of open water, due to the potential difficulty in differentiating the two entities. For the purposes of the MiRAM, all floating-leaf aquatic taxa, such as water lilies (*Nymphaea* spp.), are included in the definition of aquatic bed and, therefore, are also included in the definition of open water.
- **100-foot wide strip of open water along a lake or river** (see Boundary Guidelines in the *User's Manual*). When the Wetland is adjacent to a lake or large river, calculate the acreage of the 100-foot wide open water strip that is included within the Wetland (see MiRAM Boundary Determination Guidelines). Simply divide the linear feet of shoreline length by 400. For example, if the vegetated portion of the wetland interfaces with 200 linear feet of a lake, then the extent of the lake's open water included within the Wetland would be calculated as: $200/400 = 0.5$ acre.
- **Shallow pools free of dense shrub canopy** (e.g., open area within an inundated shrub swamp).
- **Shallow pools free of densely-packed herbaceous vegetation** (e.g., open area within a marsh or bog).

Estimate the total open water coverage. **Maximum 3 points.**

			Score
High:	2.5 acres or more	3 pts	2
Moderate:	1.0 acre to <2.5 acres	2 pts	
Low:	0.25 acre to <1.0 acre	1 pt	
Virtually Absent:	<0.25 acre	0 pt	

6c. Coverage of Highly-Invasive Plant Species

Estimate the combined total coverage of any of the species listed below. Assign points based on a range from virtually absent (1 point) to extensive (negative 5 points).

- common reed (*Phragmites australis*)
- purple loosestrife (*Lythrum salicaria*)
- reed canary grass (*Phalaris arundinacea*)
- common buckthorn (*Rhamnus cathartica*)
- glossy buckthorn (*Rhamnus frangula*)
- narrow-leaved cattail (*Typha angustifolia*)
- hybrid cattail (*Typha x glauca*)
- marsh thistle (*Cirsium palustre*)
- multiflora rose (*Rosa multiflora*)
- non-native honeysuckle (*Lonicera* spp.)

Key to Aid in Identification of Invasive and Non-Invasive Cattail (Typha) Species

Native, non-invasive: Male and female portions of the flower spike are not separated (or only slightly separated) on most of the stems within the same local stand. Female flower spikes are light brown and are 0.8-1.2 inches thick at maturity (before expanding when dried). Most leaf blades are approximately 0.5 to 1 inch wide at widest part. Typically, not tightly packed into an area (non-invasive).**broad-leaved cattail (*T. latifolia*)**

Non-native, Invasive: Male and female portions of the flower spike are separated on most of the stems within the same local stand. Female flower spikes are dark brown and less than 0.8 inch thick at maturity (before expanding when dried). Most leaf blades are less than 0.5 inch wide at widest part. Typically, tightly packed within an area, crowding out other plant species (invasive).**narrow-leaved cattail (*T. angustifolia*)**

Non-native, Invasive: Hybridization may have occurred if most plants within the same local stand do not cleanly fit the characteristics of either pure species described above. The gap between the male and female portions of the flower spikes is highly variable, with many plants within the same local stand having no gap, and many having relatively wide gaps. Typically, extremely vigorous and often tightly packed within an area, crowding out other plant species (invasive).**hybrid cattail (*T. x glauca*)**

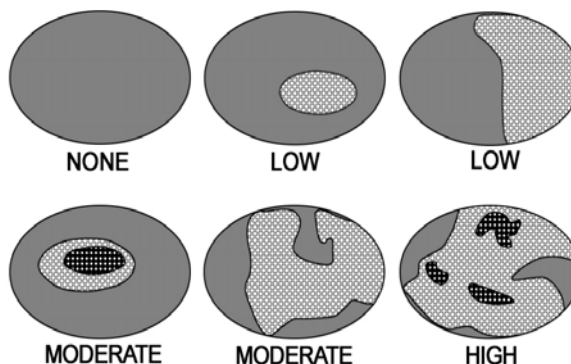
Estimate the total coverage. **Maximum 1 point.**

			Score
Virtually Absent:	<1% aerial coverage of highly-invasive species	1 pt	-5
Nearly Absent:	1% to <5% aerial coverage of highly-invasive species	0 pt	
Low:	5% to <25% aerial coverage of highly-invasive species	-1 pt	
Moderate:	25% to <75% aerial coverage of highly-invasive species	-3 pts	
Extensive:	≥75% aerial coverage of highly-invasive species	-5 pts	

6d. Horizontal (Plan View) Interspersion

Evaluate the Wetland from a "plan view," i.e., as if you are looking down upon it. The graphic shows hypothetical wetlands for estimating degree of interspersion.

Select only one option.
Maximum 5 points.



		Score
Wetland has a <u>high</u> degree of interspersion	5 pts	1
Wetland has a <u>moderate</u> degree of interspersion	3 pts	
Wetland has a <u>low</u> degree of interspersion	1 pt	
Wetland has <u>no</u> interspersion	0 pt	

6e. Habitat Features

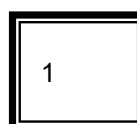
Determine the amount of each habitat feature that is present in the Wetland. **Maximum 3 points for each habitat feature.**

1. Hummocks/Tussocks/Tree Mounds , e.g., sedge/grass tussocks, decaying nursery logs (remnants of large logs), root tip-up mounds (uprooted trees), etc. Percent coverage is based on total area of all raised features (hummocks/tussocks/tree mounds) and includes the depressional matrix within any group of raised features.				Score
Virtually Absent: 0 pt <5% of the area	Sparse: 1 pt 5% to 10% of the area	Moderate: 2 pts 11% to 50% of the area	Dense: 3 pts >50% of the area	0

2. Coarse Woody Debris (CWD) . Per log, average width ≥6 inches; each at least 10 feet long. e.g., fallen trees and/or large branches, etc.				Score
Virtually Absent: 0 pt < 1 per acre	Sparse: 1 pt 1 to 5 per acre	Moderate: 2 pts 6 to 10 per acre	Dense: 3 pts >10 per acre	0

3. Large Standing Trees, Living or Dead (≥12 inches DBH).				Score
Virtually Absent: 0 pt < 1 per acre	Sparse: 1 pt 1 to 5 per acre	Moderate: 2 pts 6 to 10 per acre	Dense: 3 pts >10 per acre	1

4. Amphibian Breeding/Nursery Habitat , e.g., temporary pools with standing water of sufficient duration and depth to support frog and/or salamander reproduction. Permanent areas of vegetated standing water along the edges of ponds, lakes, and some streams also serve as amphibian habitat.				Score
Virtually Absent: 0 pt < 5% of the area	Sparse: 1 pt 5% to 10% of the area	Moderate: 2 pts 11% to 50% of the area	Dense: 3 pts >50% of the area	0



Metric 6 Total
add 6a – 6f
(20 points max.)

Metric 7. Scenic, Recreational, and Cultural Value

Maximum 3 points.

Select <u>all that apply</u> . Maximum 1 point per submetric.		Score
7a. Scenic: The public can view the Wetland from a public road or public land OR the Wetland has significant scenic value (assign 1 point).	1 pt	0
7b. Recreational: The general public has access to the Wetland or the Wetland is assumed to be used for recreational activities (assign 1 point).	1 pt	0
7c. Cultural/Historical: The Wetland, or any part of the Wetland, has been recognized as having important cultural or historic value (assign 1 point).	1 pt.	0

0	Metric 7 Total (3 points max.)
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MiRAM Summary

Narrative Rating

- Question 1: U.S. Fish and Wildlife Service (USFWS) Critical Habitat
 Question 2: Threatened or Endangered (T/E) Species Habitat
 Question 3: Rare Wetland Natural Community Type
 Question 4: Great Lakes Coastal Wetland

- ☐ YES ☒ NO
☐ YES ☒ NO
☐ YES ☒ NO
☐ YES ☒ NO

Quantitative Rating

- Metric 1: Wetland Size and Distribution
 Metric 2: Upland Buffers and Intensity of Surrounding Land Use
 Metric 3: Hydrology
 Metric 4: Habitat Alteration and Habitat Structure Development
 Metric 5: Special Situations
 Metric 6: Vegetation, Interspersion, and Habitat Features
 Metric 7: Scenic, Recreational, and Cultural Value
Seasonally Adjusted Score (add 10 pts if outside the growing season)

Score	Maximum
6	9
6	12
17	26
12	20
5	10
1	20
0	3
10	10

Grand Total

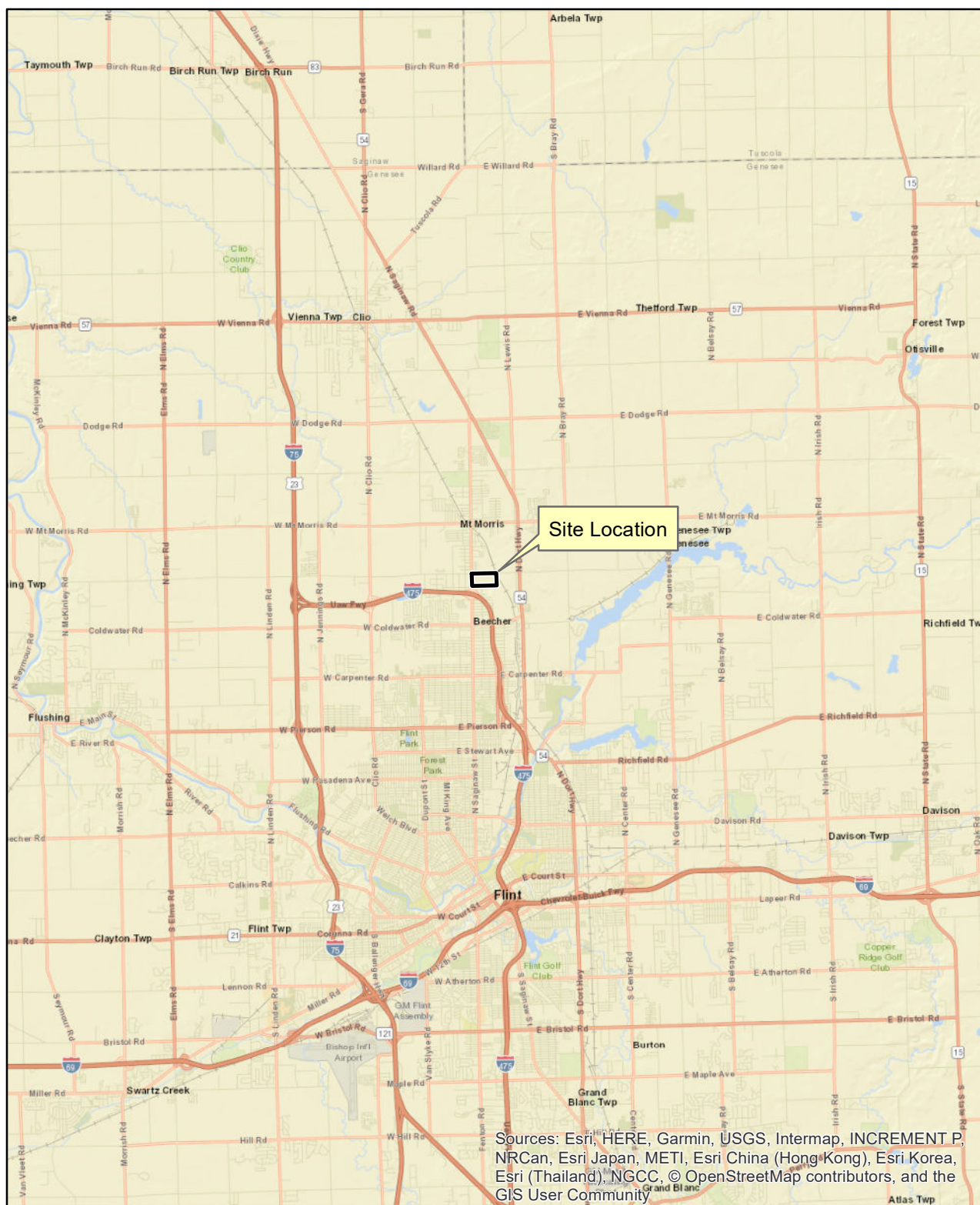
Add totals from
all seven metrics

57	100 Max.
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Scoring comments:

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LEGEND

 Site Vicinity

RACER TRUST COLDWATER ROAD LANDFILL FACILITY MT. MORRIS, MICHIGAN SITE VICINITY

15388/68545/002
DECEMBER 2018

0 5,000 10,000 20,000
Feet



O'BRIEN & GERE ENGINEERS, INC.



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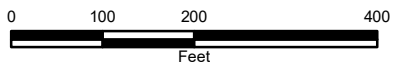


LEGEND

- MiRAM Evaluation Area (Wetland A/B/C)
- MiRAM Evaluation Area (Wetland D/E/F/G)
- Jurisdictional Waters Delineation Survey Area
- Palustrine Scrub/Shrub Wetland
- Palustrine Open Water

15388/68545/002
DECEMBER 2018

RACER TRUST
COLDWATER ROAD
LANDFILL FACILITY
MT. MORRIS, MICHIGAN
JURISDICTIONAL WATERS SURVEY



O'BRIEN & GERE ENGINEERS, INC.



DNRE
MiRAM
Version 2.1

Rating Form

July 23, 2010

MICHIGAN RAPID ASSESSMENT METHOD FOR WETLANDS (MiRAM)

Department of Natural Resources and Environment
Land and Water Management Division

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The Michigan Rapid Assessment Method for Wetlands (MiRAM) is a tool to determine the “functional value” of a particular wetland and to assign a rating level to that wetland as compared to other wetlands. The goal of this rating system is to assess individual wetlands on an equal scale regardless of ecological type. MiRAM offers a relatively rapid assessment of wetland functions and values, but it is not intended to replace more detailed quantitative measures of ecosystem function, such as Indices of Biological Integrity (IBI), Floristic Quality Assessment (FQA), or other detailed ecological studies.

The initial step of MiRAM is the proper identification of the Wetland Evaluation Area (Wetland) using the MiRAM Boundary Guidelines in the *MiRAM User's Manual*. The MiRAM evaluation contains two rating systems: the **Narrative Rating**, and the **Quantitative Rating**. First, the Evaluator is required to complete the Narrative Rating, which relies on accurate identification of several types of wetlands with significant ecological values, which automatically rates the Wetland as having high functional value. If the Wetland is not identified as having high functional value by the Narrative Rating, the Evaluator must complete the Quantitative Rating. The Quantitative Rating is a series of metrics regarding the Wetland. The Quantitative Rating is designed to provide a numeric score that reflects the functional value of a Wetland, which includes a Wetland's ecological condition (integrity) and its potential to provide ecological and societal services (functions and values).

The MiRAM requires a knowledge and understanding of wetlands and is designed to be used by Michigan Department of Natural Resources and Environment (DNRE) staff and other wetland professionals. Although the MiRAM rating form has been designed to provide sufficient information for a trained Evaluator to properly complete, it is highly recommended that the Evaluator read and understand the *MiRAM User's Manual*, as it provides additional explanations and examples.

The MiRAM was designed to be used during times when adequate plant growth allows for proper identification of most plant species within the Wetland. Typically, this follows the growing season for a particular region. MiRAM evaluations conducted outside the growing season will receive an additional 10 points due to the inability to properly identify all wetland features during this time of year. MiRAM is not designed to be used in times of snow cover.

If the Wetland and/or buffer areas have been impacted (cutting, mowing, development, etc.) during the past five years, the DNRE may rate the Wetland as if those impacts have not occurred and will presume that the impacted areas were of the best/highest quality possible for that type of wetland.

It is not the intent of MiRAM to modify the existing regulatory process in Michigan. Instead, it is intended that the MiRAM will supplement the existing process by providing additional information. The numeric score obtained from the MiRAM is not, and should not be considered, an absolute number with intrinsic meaning, but should be considered in light of other available information. It should be noted that the MiRAM is an assessment of “functional value” and is different from the determination of whether a particular location is a wetland (i.e., jurisdictional wetland).

The most recent version of this document and the *MiRAM User's Manual* are posted at:

www.michigan.gov/wetlands

Background Information

Wetland

Proposed Project Site Name or DNRE File #: Coldwater Road Landfill
Date of Evaluation: 11/28/2018-11/29/2018
County: Genesee
Township: Mt. Morris
Town: 08N
Range: 07E
Section: 18
Decimal Lat/Long: 43.102132, -83.692755

Evaluator

Name: Alicia Rodrian
Address: 8805 Governor's Hill Dr. Suite 164
City: Cincinnati State: OH Zip: 45249
Phone: 513-472-0141
Email: alicia.rodrian@obg.com
Is a Wetland Delineation Report available? ☒ YES ☐ NO Date Completed: 12/6/2018 If "YES", completed by (name of person/firm/agency): same as evaluator

Check (✓) each box below when item is complete.

- ☒ **MiRAM Boundary.** See *MiRAM User's Manual* for more information
Size of the Wetland Evaluation Area: 6.7 acres
- ☒ **Location Map.** A county road map showing the location of the Wetland Evaluation Area, north arrow, map scale information, roads, landmarks, etc. *Attach* a map to the end of this document.
- ☒ **Color Photographs.** Photos should show the wetland vegetation components, habitat/community types, hydrologic features, and any other pertinent site features. *Attach* to the end of this document.
- ☒ **Landscape Sketch or Aerial Photograph.**
- Clearly label the Proposed Project Site and Wetland Evaluation Area. Indicate the location of the MiRAM Boundary.
 - Label and indicate the extent of all general wetland community types identified within the Wetland Evaluation Area. Examples include: marsh, wet meadow, hardwood swamp, conifer swamp, shrub swamp, etc. Some wetland communities may be further classified as natural communities. Natural communities are predominantly structured by natural processes rather than modern anthropogenic disturbances. Examples include: bog, prairie fen, muskeg, wet prairie, southern wet meadow, etc.
 - Identify and label all hydrologic features, such as: streams, 100-year floodplains, ponds, vernal pools, and small patches of open water within a marsh or swamp.
 - Identify and label surrounding upland features.
 - Include north arrow and map scale information.
 - Attach* the landscape sketch or aerial photo to the end of this document.

Comments: List any important site features or apparent disturbance events that have occurred within or near the Wetland Evaluation Area.

The entire area is an approved environmental remediation area. The wetlands and open water were constructed as part of the remediation plan for the site. The wetland has a constructed embankment on the western edge that is designed to retain the water to the east. A native grasses planting plan was also implemented within the area as part of the remediation plan.

Field Datasheet

List plant species observed within the Wetland. *Attach* additional sheets as necessary.
Nomenclature will follow Voss (1972,1985,1996) or Gleason and Cronquist (1991).

Forest Overstory Stratum (woody plants 3 inches or more DBH, regardless of height)

Populus deltoides	

Shrub/Sapling Stratum (woody plants less than 3 inches DBH and greater than 3.28 feet tall)

Salix interior	
Populus deltoides	

Herbaceous Stratum (non-woody plants, regardless of size, and woody plants less than 3.28 feet tall)

Typha angustifolia	Symphytotrichum pilosum
Phragmites australis	
Juncus tenuis	
Carex lurida	
Carex vulpinoidea	
Symphytotrichum lateriflorum	
Panicum virgatum	

Checklist of features and conditions to observe during the field inspection:

- | | |
|---|--|
| ☒ Hydrologic Condition and Interactions | ☒ Vegetation Diversity |
| ☒ Hydrologic Alterations | ☒ Vegetation Condition |
| ☒ Substrate/Soil Disturbances | ☐ Amount of Open Water |
| ☒ Habitat Structure Development | ☒ Percent of Invasive/Non-native Species |
| ☐ Habitat Alterations | ☒ Community Interspersion |
| ☐ Habitat/Wetland Condition | ☐ Vertical/Horizontal Structure |
| ☐ Amphibian Breeding Pools | ☐ S1, S2, or S3 Natural Community |

Approximately how much of the Wetland Evaluation Area was reviewed during the field inspection? 100 %

Has vegetation within the Wetland Evaluation Area been altered and/or buffer areas impacted within the past 5 years? ☐ YES ☒ NO

Please Note: The Wetland Evaluation Area (encompassed by the MiRAM Boundary) is simply referred to as the "Wetland" throughout the remainder of this document.

Narrative Rating

Completion of the Narrative Rating allows the Evaluator to quickly identify whether the Wetland is one of several wetland types that typically have exceptional ecological value. If any of the metrics are answered affirmatively, the Wetland has *exceptional ecological value* and is *automatically rated as having high functional value* and completion of the Quantitative Rating is not necessary. If none of the metrics are answered affirmatively, proceed to the Quantitative Rating.

Answer all of the following metrics.

1. U.S. Fish and Wildlife Service (USFWS) Critical Habitat.

Is any part of the Wetland located within an area designated as Critical Habitat and does the Wetland *actually* contain habitat suitable for either species listed below?

Piping Plover (*Charadrius melodus*) Critical Habitat Units are designated only within the following counties: Alger, Benzie, Charlevoix, Cheboygan, Chippewa, Emmet, Iosco, Leelanau, Luce, Mackinac, Mason, Muskegon, Presque Isle, and Schoolcraft. See URL below for Unit locations.

<http://www.fws.gov/midwest/endangered/pipingplover/chabitat.html>

Hines's Emerald Dragonfly (*Somatochlora Hineana*) Critical Habitat Units are designated only within the following counties: Alpena, Mackinac, and Presque Isle. See URL below for Unit locations.

www.fws.gov/midwest/endangered/insects/hed/pdf/hinesfCH_FR.pdf

☐ YES ☒ NO

If "yes", the Wetland has *high functional value*.

2. Threatened or Endangered (T/E) Species.

Do federal/state-listed T/E plant or animal species occur within the Wetland? Complete the following questions to answer this metric.

- a. ☐ YES ☒ NO Has an approved T/E survey been completed? If "Yes," go to question b. If "No," go to question c.
- b. ☐ YES ☐ NO Does the T/E survey indicate T/E species present within the Wetland? If "Yes," answer "Yes" to this metric. If "No," answer "No" to this metric.
- c. ☐ YES ☒ NO Has the Evaluator (or others known to the Evaluator) observed any T/E species within the Wetland? If "Yes," answer "Yes" to this metric. If "No," go to question d.
- d. ☐ YES ☒ NO Does the DNRE Endangered Species Assessment (ESA) web site interactive map, mcgi.state.mi.us/esa, indicate that there is a potential for unique natural features at or near your site of interest? If "No," answer "No" to this metric. If "Yes," request a DNRE formal review by submitting the online form. Type "MiRAM" within the "Project Information" field on the form. Go to question e.
- e. ☐ YES ☐ NO Did the DNRE review confirm potential T/E occurrence in the Wetland? If "Yes," answer "Yes" to this metric. If "No," answer "No" to this metric.
- The Evaluator may proceed with the Narrative Rating and Quantitative Rating while waiting for a formal response from DNRE.**

☐ YES ☒ NO

If "yes", the Wetland has *high functional value*.

3. Rare Wetland Natural Community Type.

Are more than 5 acres or more than 25% of the Wetland comprised of a Rare Wetland Natural Community Type*? Check (✓) all Rare Wetland Natural Community Types

☐

S1 or S2 Natural Community Type.

Has the Wetland been identified by the Evaluator — or other persons — as being an S1 or S2 natural community type as defined by the Michigan Natural Features Inventory (MNFI)? See the *MiRAM User's Manual* for more information.

☐

Southern Bog, defined as any bog occurring below the northern limit of Michigan's Floristic Tension Zone (see figure for approximate location).

☐

Old-Growth/Mature Forested Wetland. Lacks evidence of any significant harvesting. Dominated by large, overstory trees (mean overstory DBH ≥20 inches, including at least two trees/acre having DBH ≥28 inches) and the canopy is multi-aged and multi-layered. Aggregations of canopy trees are interspersed with canopy gaps and large snags. Large nursery logs and tip-up mounds litter the forest floor. Does the forested Wetland have all/most of these characteristics?

*If the Rare Wetland Community Type is less than 5 acres and less than 25% of the Wetland, the rare community should be split off and evaluated separately.

☐ YES ☒ NO

If "yes", the Wetland has *high functional value*.



4. Great Lakes Coastal Wetland.

Is any part of the Wetland within 1,000 feet of the ordinary high water mark of any of the Great Lakes, including Lake St. Clair?

☐ YES ☒ NO

If "yes", the Wetland has *high functional value*.

Quantitative Rating

Completion of the Quantitative Rating assists the Evaluator in recognizing the functional value of the Wetland. Complete all metrics by completing all sections, circling the correct point value(s), and assigning a score.

Metric 1. Wetland Size and Distribution

Maximum 9 points.

1a. Wetland Size Estimate the size of the Wetland (i.e., Wetland Evaluation Area). Select a size class. Maximum 6 points.			Score 3
50 acres	Select this option if the wetland's actual size ≥ 50 acres.	6 pts	
25 acres to <50 acres		5 pts	
10 acres to <25 acres		4 pts	
3 acres to <10 acres		3 pts	
¼ acre to <3 acres		2 pts	
less than ¼ acre		0 pt	
1b. Wetland Scarcity Utilize the USFWS National Wetlands Inventory (NWI) maps to estimate percentage of wetland area remaining within a 2-mile radius from the Wetland's center. For the purpose of this submetric, areas of open water within the Great Lakes, inland lakes, streams, etc., should be excluded from the wetland percentage. Select the most appropriate percentage category. Maximum 3 points.			Score 3
0 to 20% of surrounding 2-mile radius is wetland		3 pts	
>20 to 80% of surrounding 2-mile radius is wetland		2 pts	
>80% of surrounding 2-mile radius is wetland		1 pt	

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Metric 1 Total
add 1a & 1b
(9 points max.)

Metric 2. Upland Buffers and Intensity of Surrounding Land Use

Maximum 12 points.

2a. Average Buffer Width around the Wetland's Perimeter Step 1: Using the most recent aerial photograph available, sketch a 150-foot wide "buffer zone" around the Wetland. Step 2: Estimate the buffer widths from the Wetland's edge to any non-buffer areas (up to 150 feet). Step 3: Average the buffer widths along the Wetland's perimeter. Step 4: Select the buffer width that is most appropriate. Maximum 6 points.			Score
Buffers Include: - shrubland, young forest, natural grassland, prairie - abandoned row crop field (vegetated & naturalizing) - hay field (non-row crop), lightly grazed pasture - lightly managed forest (selectively logged) - designated wildlife area, lightly managed parkland - other wetland, lake, river Non-Buffers Include: - lawns, golf courses, manicured parkland - residential, commercial, industrial - roadways (including shoulders), parking lots - row crop field - conservation tillage, heavily grazed pasture - clear-cutting, mining, construction activity			
Wide Buffer Width:	≥150 feet around the perimeter	6 pts	4
Medium Buffer Width:	75 to <150 feet around the perimeter	4 pts	
Narrow Buffer Width:	25 to <75 feet around the perimeter	2 pt	
Very Narrow Buffer Width:	0 (no buffer) to <25 feet around the perimeter	0 pt	

2b. Intensity of Surrounding Land Use within 1,000 feet of the Wetland

Step 1: Using the most recent aerial photograph available, sketch a 1,000-foot wide "land use zone" around the Wetland.

Step 2: Estimate percent coverages comprised by each of the four types of land use listed below.

Step 3: If any land use type comprises more than 25% of the total land use, it is considered to be a "dominant" land use type for the purposes of MiRAM and will receive points. Sum the available points from all dominant land use types and then average the score. Round to the nearest 0.5 increment. **Maximum 6 points.**

Type of Land Use	Examples within each Type of Land Use		Score
Very Low Intensity:	- maturing forest - natural grassland, prairie	- designated wildlife area - other wetland, lake, river	6 pts
Low Intensity:	- shrubland/young forest - recent selective logging - hay field (non-row crop)	- lightly managed parkland - old field, lightly grazed pasture - one-lane road/two track	4 pts
Moderately High Intensity:	- residential & lawns - manicured parkland - golf course	- conservation tillage - recent clear-cut (<10 years) - two-lane road	2 pts
High Intensity:	- commercial, industrial - high-density residential - heavily grazed pasture - row crop field	- multi-lane paved roadway - construction activity - parking lot - mining	1 pt
			2

6

Metric 2 Total
add 2a & 2b
(12 points max.)

Metric 3. Hydrology

Limited to 26 points.

3a. Sources of Water: Select <u>all that apply</u> . Maximum 8 points.		Score
Precipitation: Directly and/or as runoff from upland areas.	1 pt	1
Groundwater: Seeps or evidence, such as significant amounts of skunk cabbage (<i>Symplocarpus foetidus</i>) or other fen-adapted species.	2 pts	
Seasonal/Intermittent Surface Water: Seasonal inundation from a lake, pond, or stream. (A Wetland can only receive points for this source of water or the next, not both.)	2 pts	
Perennial Surface Water: Perennial inundation from a lake, stream or pond.	5 pts	5

3b. Connectivity: Select <u>all that apply</u> . Maximum 8 points.		Score
100-Year Floodplain. As defined in the Floodplain Authority under Part 31 of the NREPA.	2 pts	
Between a Stream/Lake/Pond and Human Land Use. The Wetland is located between a surface waterbody and any human land use, such that run-off from the adjacent land use could flow through the Wetland before it discharges into the surface waterbody.	2 pts	2
Wetland/Upland Complex. The Wetland is part of a large scale (10+ acres) non-linear complex of wetlands with small areas of unmanicured/undeveloped vegetated uplands that do not restrict movement of organisms between the wetland areas.	2 pts	
Riparian Corridor. The Wetland is part of a linear <i>riparian</i> corridor that provides organism movement along a stream/river. Typically, these corridors should exceed 100 feet in width and extend at least one half mile.	2 pts	

3c. Duration of Inundation/Saturation Select the option(s) from below that best describe(s) the dominant hydrologic characteristic of the Wetland. For the purposes of this submetric, "dominant" is defined as comprising <u>at least 25%</u> of the Wetland's area. If the Wetland contains several areas that have distinctly different hydrologic characteristics, <u>select all that apply and average the points</u> . Round to the nearest 0.5 increment. Maximum 4 points.		Score
Permanently Inundated	4 pts	
Permanently Saturated to Regularly Inundated	3 pts	3
Regularly Saturated to Seasonally Inundated	2 pts	
Seasonally Saturated in the Upper 12 Inches of Soil	1 pt	

3d. Alterations to Natural Hydrologic Regime This submetric evaluates the intactness of the natural hydrologic regime of the Wetland. Check (✓) all forms of past or ongoing hydrologic alteration(s) that are potentially influencing the Wetland. ☐ ditch(es) in or near the wetland ☐ tile(s) in or near the wetland ☐ dike(s) in or near the wetland ☐ weir(s) in or near the wetland ☐ stormwater inputs (addition of water) ☐ stream channelization ☐ point source discharge(s) (non-stormwater) ☐ filling/grading activities in or near the wetland ☐ road bed(s)/RR grades(s) in or near the wetland ☐ dredging activities in or near the wetland ☒ other (specify) Wetland and ponds were constructed in upland for remediation of soils ☐ other (specify) Evaluate whether an alteration is significant or minor in relation to the Wetland's overall area and hydrologic regime. For this submetric, "significant" is defined as affecting approximately 10% or greater of the Wetland. "Minor" is defined as affecting less than approximately 10% of the Wetland. A hydrologic alteration may also impact the Substrate/Soil (submetric 4a) and/or Habitat (submetric 4b). Select an option below that best describes the extent of (or lack of) alteration(s) to the Wetland's natural hydrologic regime. If uncertain, select adjoining options and average the available points. Round to the nearest 0.5 increment. If the Wetland's natural hydrologic regime has been significantly altered, it shall receive no more than 6 points for this submetric. Maximum 8 points.			Score
No Hydrologic Alterations Apparent:	There has been no significant alteration(s) to the Wetland's natural hydrologic regime, and/or ongoing minor alteration(s) is/are rare.	8 pts	6
Recovered:	Significant hydrologic alteration(s) occurred more than 20 years prior to the assessment, and/or ongoing minor hydrologic alteration(s) is/are only occasional.	6 pts	
Recovering:	A single significant hydrologic alteration occurred within 20 years prior to the assessment, and/or ongoing minor hydrologic alteration(s) is/are frequent.	4 pts	
Recent or No Recovery:	Multiple significant hydrologic alterations have occurred in the 20 years prior to the assessment, and/or significant alteration(s) is/are ongoing.	1 pt	

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Metric 3 Total
 add 3a – 3d
 (26 points max.)

Metric 4. Habitat Alteration and Habitat Structure Development

Maximum 20 Points.

4a. Substrate/Soil Disturbance

This submetric evaluates the intactness or lack of disturbance to the Wetland's substrate and soil. Check (✓) all possible forms of past or ongoing substrate/soil disturbance that are observed within the Wetland.

- | | | |
|--|---|---------------------------|
| ☐ human-induced erosion or exposure | ☐ plowing, disking | |
| ☐ human-induced sedimentation or burial | ☐ intensive grazing (hooves) | |
| ☐ filling | ☐ off-road vehicle use | Wetland and pond areas |
| ☐ grading | ☐ construction vehicle use | were constructed |
| ☐ dredging | ☒ other (specify) | in uplands as part of the |
| | | soils remediation area. |

Evaluate whether a disturbance is significant or minor in relation to the Wetland's overall area.

For this submetric, "significant" is defined as affecting approximately 10% or greater of the Wetland. "Minor" is defined as affecting less than approximately 10% of the Wetland. A substrate disturbance may also be an alteration of the natural hydrologic regime (Submetric 3d) and/or an alteration of habitat (Submetric 4b).

Select an option below that best describes the extent of (or lack of) disturbances to the Wetland's substrate. If uncertain, select adjoining options and average the points. Round to the nearest 0.5 increment. If the Wetland's substrate has been significantly altered, it should receive no more than 3 points. **Maximum 4 points.**

			Score
No Substrate Disturbance Apparent:	There has been no significant disturbance to the Wetland's substrate and/or ongoing minor disturbance events are rare.	4 pts	3
Recovered:	Significant substrate disturbance occurred more than 20 years prior to the assessment, and/or ongoing minor substrate disturbance events are only occasional (e.g., light sedimentation from a nearby dirt road).	3 pts	
Recovering:	A single significant substrate disturbance event occurred within 20 years prior to the assessment, and/or ongoing minor substrate disturbance events are frequent.	2 pts	
Recent or No Recovery:	Multiple significant substrate disturbance events have occurred in the 20 years prior to the assessment, and/or significant disturbance is ongoing.	1 pt	

4b. Habitat Alteration

This submetric evaluates the intactness of the natural habitat within the Wetland. A "significant" alteration is defined as affecting 10% or greater of the Wetland. "Minor" alteration affects less than 10% of the Wetland. Check (✓) all possible forms of past or ongoing habitat alteration(s) that are observed within the Wetland.

- | | |
|--|---|
| ☐ barriers such as road bed(s)/RR grades(s) | ☐ herbicide/chemical treatment |
| ☐ selective cutting | ☐ sedimentation |
| ☐ clearcutting | ☐ dredging |
| ☒ mowing or shrub removal | ☐ filling/grading |
| ☐ coarse woody debris (CWD) removal | ☐ plowing/disking/farming |
| ☐ intensive grazing | ☒ other (specify) A native species plant plan was conducted |
| ☐ nutrient enrichment, e.g., nuisance algae | as part of the remediation area. |

Utilize aerial photography and field evidence to determine if any habitat alterations occurred prior to approximately 20 years ago. Determine the approximate pre-disturbance extent of vertical and horizontal habitat attributes, such as large, woody debris, plant species diversity, hummocks, patchiness, niche diversity, etc. Disregard changes that can be attributed to wetland community succession or other natural processes. A habitat alteration may also be an alteration of the natural hydrologic regime (Submetric 3d) and/or a substrate disturbance (Submetric 4a).

Select an option below that best describes the extent of (or lack of) alteration(s) to the Wetland's habitat. If unclear, select adjoining options and average the available points. Round to the nearest 0.5 increment. **Maximum 9 points.**

			Score
No Habitat Alterations Apparent:	There has been no significant alteration to the Wetland's natural habitat, and/or ongoing minor alteration(s) is/are rare.	9 pts	6
Recovered:	Significant habitat alteration(s) occurred more than 20 years prior to the assessment, and/or ongoing minor habitat alteration(s) is/are only occasional.	6 pts	
Recovering:	A single, significant habitat alteration occurred within 20 years prior to the assessment, and/or ongoing minor habitat alteration(s) is/are frequent.	3 pts	
Recent or No Recovery:	Multiple significant habitat alterations have occurred in the 20 years prior to the assessment, and/or significant alteration(s) is/are ongoing.	1 pt	

4c. Habitat Structure Development

Determine an overall qualitative rating of how well developed the Wetland is in comparison to the best of its type. For this submetric, a wetland's type is defined as any ecologically and/or hydrogeomorphically similar wetland habitat typical of the region. Well-developed communities, regardless of successional state, often exhibit many of the following habitat characteristics:

- Quality vertical habitat, such as hummocks, organic debris, and diverse plant height ranges.
- Quality horizontal habitat, such as varying vegetation density and patchiness, moderate ratios of open space to cover, plant species diversity, and a wide range of plant ages.
- Other ecological attributes, such as a diverse assortment of the following: breeding areas, rearing areas, feeding areas, niche space, etc.

Select an option below that best describes the Wetland's habitat structure development. If unclear, select adjoining options and average the points. Round to the nearest 0.5 increment.

Maximum 7 points.

		Score
Excellent:	Wetland appears to represent the best of its type.	7 pts
Good:	Wetland appears to be a good example of its type but because of past or present disturbance, or other reasons, is not excellent.	5 pts
Fair:	Wetland appears to be a moderately good example of its type but because of past or present disturbance, or other reasons, is not good.	3 pts
Poor:	Wetland is a poor example of its type because of past or present disturbance, or other reasons.	1 pt
		3

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Metric 4 Total
add 4a – 4c
(20 points max.)

Metric 5. Special Situations

Refer to the Narrative Rating for definitions and the *User's Manual* for guidance, **Limited to 10 points**

5a. High Ecological Value. See Narrative Rating for definitions of each.
10 points for each that apply.

- ☐ 1. Contains USFWS-designated Critical Habitat
- ☐ 2. Federal or State-listed T/E Plant or Animal Species
- ☐ 3. S1, S2, or S3 Natural Community Type (at least 5 acres or 25% of the Wetland)
- ☐ 4. Southern Bog (at least 5 acres or 25% of the Wetland)
- ☐ 5. Old-Growth/Mature Forested Wetland (at least 5 acres or 25% of the Wetland)
- ☐ 6. Great Lakes Coastal Wetland

Score

0

5b. Forested Wetland. 5 points.

Exhibits combined canopy cover from any group(s) of trees. Stem DBH must be at least 3 inches to qualify as a tree. Total area must comprise at least 5 acres or 25% of the Wetland. Does not qualify if most of the trees are ungrouped and widely scattered (e.g., a savanna), or located only thinly along the Wetland's margin.

Score

0

5c. Urban/Suburban Wetland. 5 points.

Greater than 50% of the surrounding landscape (1,000 foot radius) is comprised of low-permeability surfaces, such as roads, lawns, parking lots, buildings, sidewalks, etc.

Score

5

5d. Low-Quality Wetland. Negative 10 points.

The Wetland is less than 1 acre and non-contiguous as defined in Part 303 and either:
1) a stormwater pond that was excavated from upland and constructed for stormwater treatment in conjunction with a development project or 2) more than 75% covered by highly-invasive vegetation. See Submetric 6c for a list of highly-invasive species.

Score

0

5

Metric 5 Total
(10 points max.)
Can be negative

Metric 6. Vegetation, Interspersion, and Habitat Features

Maximum 20 points.

6a. Wetland Vegetation Components

Determine the Qualitative Cover Score of each Vegetation Component (Herbaceous, Shrub/Sapling, Forest Overstory). Using the Qualitative Cover Scoring Table, start on the left and proceed to the right, until a point value is obtained for each Vegetation Component. Vegetation Components may exist in overlapping layers, e.g., significant areas of shrub/sapling and/or herbaceous may exist under a forest canopy. Only groups of trees, clusters of shrubs, or dense patches of herbaceous stems may count toward area coverage. Do not include widely-scattered trees, lone shrub/saplings, or sparse patches of herbaceous stems. See Submetric 6c to aid in the proper identification of broad-leaved cattail (*Typha latifolia*), a non-invasive, native species.

Qualitative Cover Scoring Table

Vegetation Component is >¼ acre ▶	>25% of Wetland area ▶	Native species dominate the coverage ▶	High native diversity ▶	3 pts
			Moderate to low native diversity ▶	2 pts
		Invasive or non-native species dominate the coverage ▶	Moderate to high native diversity ▶	2 pts
			Low native diversity ▶	1 pt
	<25% of Wetland area ▶	Native species dominate the coverage ▶	Moderate to high native diversity ▶	2 pts
			Low native diversity ▶	1 pt
		Invasive or non-native species dominate the coverage ▶	Moderate native diversity ▶	1 pt
			Low native diversity ▶	0 pt
Vegetation Component is <¼ acre ▶	>25% of Wetland area ▶	Native species dominate the coverage ▶	Moderate to high native diversity ▶	2 pts
			Low native diversity ▶	1 pt
		Invasive or non-native species dominate the coverage ▶		0 pt
	<25% of Wetland area ▶			0 pt

Forest Overstory Component, qualitative cover score derived from table **maximum 3 points**.

Forested wetland areas are characterized by a group of trees at least 3 inches in DBH, regardless of height. The Wetland does not have a forested component if the trees are widely scattered (e.g., a savanna), located only thinly along the Wetland's margin, or if it is clear that most of the trees are actually located on upland around the perimeter of the Wetland.

Score

0

Shrub/Sapling Component, qualitative cover score derived from table **maximum 3 points**.

Shrub/Sapling wetland areas are dominated by clusters of woody plants less than 3 inches in DBH and greater than 3.28 feet in height. Species include true shrubs, young trees, and stunted trees. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.

Score

3

Herbaceous Component, qualitative cover score derived from table **maximum 3 points**.

Herbaceous wetlands are areas dominated by dense patches of erect, non-woody plants, regardless of size, and woody plants less than 3.28 feet in height. The MiRAM includes the robust-stemmed yellow pond lily (*Nuphar advena*) and American lotus (*Nelumbo lutea*) within the herbaceous component because of their tendency to hold their stems and leaves well above the water. All floating-leaf species (including *Nymphaea* spp.) are excluded from the herbaceous component, and are instead included within the open water component (see Submetric 6b).

Score

0

6b. Open Water Component

Open water is an unobstructed, inundated area of water containing few or no rooted emergent or woody plant species. It can occur as a distinct zone along a river or lake or as a combination of small ponds, streams, or pools (e.g., within a marsh or swamp) and as an “understory” below a forest canopy (e.g., a forested vernal pool).

This Habitat Component includes combined acreage from any of the following areas:

- **Small ponds, streams, and pools.**
- **Seasonal standing water areas** (e.g., mudflats and dried-down vernal pools) that were inundated long enough during the growing season to support aquatic life.
- **Aquatic bed areas**, also known as submergent marsh or submerged aquatic vegetation (SAV). Aquatic bed is dominated by plants that grow at or below the surface of the water for most of the growing season in most years. The MiRAM includes aquatic bed within the definition of open water, due to the potential difficulty in differentiating the two entities. For the purposes of the MiRAM, all floating-leaf aquatic taxa, such as water lilies (*Nymphaea* spp.), are included in the definition of aquatic bed and, therefore, are also included in the definition of open water.
- **100-foot wide strip of open water along a lake or river** (see Boundary Guidelines in the *User's Manual*). When the Wetland is adjacent to a lake or large river, calculate the acreage of the 100-foot wide open water strip that is included within the Wetland (see MiRAM Boundary Determination Guidelines). Simply divide the linear feet of shoreline length by 400. For example, if the vegetated portion of the wetland interfaces with 200 linear feet of a lake, then the extent of the lake's open water included within the Wetland would be calculated as: $200/400 = 0.5$ acre.
- **Shallow pools free of dense shrub canopy** (e.g., open area within an inundated shrub swamp).
- **Shallow pools free of densely-packed herbaceous vegetation** (e.g., open area within a marsh or bog).

Estimate the total open water coverage. **Maximum 3 points.**

			Score
High:	2.5 acres or more	3 pts	3
Moderate:	1.0 acre to <2.5 acres	2 pts	
Low:	0.25 acre to <1.0 acre	1 pt	
Virtually Absent:	<0.25 acre	0 pt	

6c. Coverage of Highly-Invasive Plant Species

Estimate the combined total coverage of any of the species listed below. Assign points based on a range from virtually absent (1 point) to extensive (negative 5 points).

- common reed (*Phragmites australis*)
- purple loosestrife (*Lythrum salicaria*)
- reed canary grass (*Phalaris arundinacea*)
- common buckthorn (*Rhamnus cathartica*)
- glossy buckthorn (*Rhamnus frangula*)
- narrow-leaved cattail (*Typha angustifolia*)
- hybrid cattail (*Typha x glauca*)
- marsh thistle (*Cirsium palustre*)
- multiflora rose (*Rosa multiflora*)
- non-native honeysuckle (*Lonicera* spp.)

Key to Aid in Identification of Invasive and Non-Invasive Cattail (Typha) Species

Native, non-invasive: Male and female portions of the flower spike are not separated (or only slightly separated) on most of the stems within the same local stand. Female flower spikes are light brown and are 0.8-1.2 inches thick at maturity (before expanding when dried). Most leaf blades are approximately 0.5 to 1 inch wide at widest part. Typically, not tightly packed into an area (non-invasive).**broad-leaved cattail (*T. latifolia*)**

Non-native, Invasive: Male and female portions of the flower spike are separated on most of the stems within the same local stand. Female flower spikes are dark brown and less than 0.8 inch thick at maturity (before expanding when dried). Most leaf blades are less than 0.5 inch wide at widest part. Typically, tightly packed within an area, crowding out other plant species (invasive).**narrow-leaved cattail (*T. angustifolia*)**

Non-native, Invasive: Hybridization may have occurred if most plants within the same local stand do not cleanly fit the characteristics of either pure species described above. The gap between the male and female portions of the flower spikes is highly variable, with many plants within the same local stand having no gap, and many having relatively wide gaps. Typically, extremely vigorous and often tightly packed within an area, crowding out other plant species (invasive).**hybrid cattail (*T. x glauca*)**

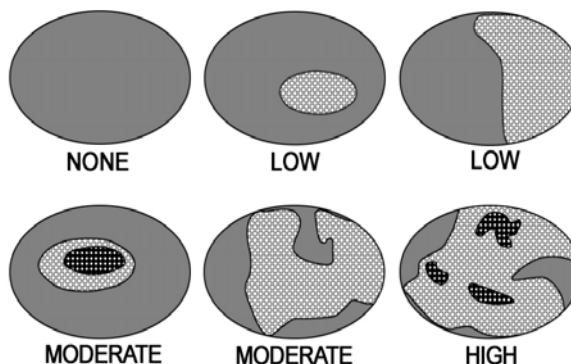
Estimate the total coverage. **Maximum 1 point.**

			Score
Virtually Absent:	<1% aerial coverage of highly-invasive species	1 pt	-5
Nearly Absent:	1% to <5% aerial coverage of highly-invasive species	0 pt	
Low:	5% to <25% aerial coverage of highly-invasive species	-1 pt	
Moderate:	25% to <75% aerial coverage of highly-invasive species	-3 pts	
Extensive:	≥75% aerial coverage of highly-invasive species	-5 pts	

6d. Horizontal (Plan View) Interspersion

Evaluate the Wetland from a "plan view," i.e., as if you are looking down upon it. The graphic shows hypothetical wetlands for estimating degree of interspersion.

Select only one option.
Maximum 5 points.



		Score
Wetland has a <u>high</u> degree of interspersion	5 pts	1
Wetland has a <u>moderate</u> degree of interspersion	3 pts	
Wetland has a <u>low</u> degree of interspersion	1 pt	
Wetland has <u>no</u> interspersion	0 pt	

6e. Habitat Features

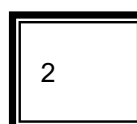
Determine the amount of each habitat feature that is present in the Wetland. **Maximum 3 points for each habitat feature.**

1. Hummocks/Tussocks/Tree Mounds , e.g., sedge/grass tussocks, decaying nursery logs (remnants of large logs), root tip-up mounds (uprooted trees), etc. Percent coverage is based on total area of all raised features (hummocks/tussocks/tree mounds) and includes the depressional matrix within any group of raised features.				Score
Virtually Absent: 0 pt <5% of the area	Sparse: 1 pt 5% to 10% of the area	Moderate: 2 pts 11% to 50% of the area	Dense: 3 pts >50% of the area	0

2. Coarse Woody Debris (CWD) . Per log, average width ≥6 inches; each at least 10 feet long. e.g., fallen trees and/or large branches, etc.				Score
Virtually Absent: 0 pt < 1 per acre	Sparse: 1 pt 1 to 5 per acre	Moderate: 2 pts 6 to 10 per acre	Dense: 3 pts >10 per acre	0

3. Large Standing Trees, Living or Dead (≥12 inches DBH).				Score
Virtually Absent: 0 pt < 1 per acre	Sparse: 1 pt 1 to 5 per acre	Moderate: 2 pts 6 to 10 per acre	Dense: 3 pts >10 per acre	1

4. Amphibian Breeding/Nursery Habitat , e.g., temporary pools with standing water of sufficient duration and depth to support frog and/or salamander reproduction. Permanent areas of vegetated standing water along the edges of ponds, lakes, and some streams also serve as amphibian habitat.				Score
Virtually Absent: 0 pt < 5% of the area	Sparse: 1 pt 5% to 10% of the area	Moderate: 2 pts 11% to 50% of the area	Dense: 3 pts >50% of the area	0



Metric 6 Total
add 6a – 6f
(20 points max.)

Metric 7. Scenic, Recreational, and Cultural Value

Maximum 3 points.

Select <u>all that apply</u> . Maximum 1 point per submetric.		Score
7a. Scenic: The public can view the Wetland from a public road or public land OR the Wetland has significant scenic value (assign 1 point).	1 pt	0
7b. Recreational: The general public has access to the Wetland or the Wetland is assumed to be used for recreational activities (assign 1 point).	1 pt	0
7c. Cultural/Historical: The Wetland, or any part of the Wetland, has been recognized as having important cultural or historic value (assign 1 point).	1 pt.	0

0	Metric 7 Total (3 points max.)
---	--

MiRAM Summary

Narrative Rating

- Question 1: U.S. Fish and Wildlife Service (USFWS) Critical Habitat
 Question 2: Threatened or Endangered (T/E) Species Habitat
 Question 3: Rare Wetland Natural Community Type
 Question 4: Great Lakes Coastal Wetland

- ☐ YES ☒ NO
☐ YES ☒ NO
☐ YES ☒ NO
☐ YES ☒ NO

Quantitative Rating

- Metric 1: Wetland Size and Distribution
 Metric 2: Upland Buffers and Intensity of Surrounding Land Use
 Metric 3: Hydrology
 Metric 4: Habitat Alteration and Habitat Structure Development
 Metric 5: Special Situations
 Metric 6: Vegetation, Interspersion, and Habitat Features
 Metric 7: Scenic, Recreational, and Cultural Value
Seasonally Adjusted Score (add 10 pts if outside the growing season)

Score	Maximum
6	9
6	12
17	26
12	20
5	10
2	20
0	3
10	10

Grand Total

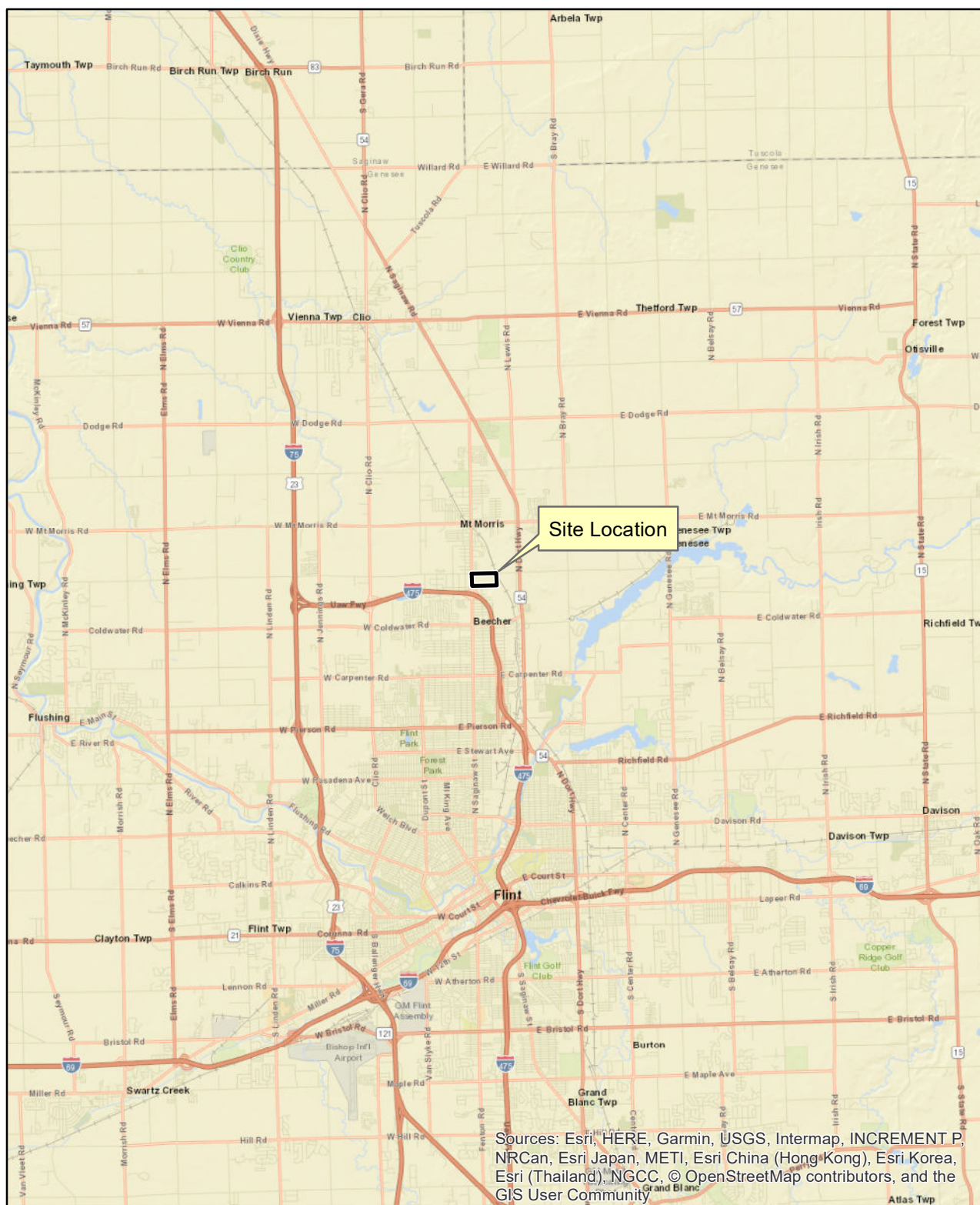
Add totals from
all seven metrics

58	100 Max.
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Scoring comments:

12/6/2018 10:10:50 AM

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LEGEND

 Site Vicinity

RACER TRUST
COLDWATER ROAD
LANDFILL FACILITY
MT. MORRIS, MICHIGAN
SITE VICINITY

15388/68545/002
DECEMBER 2018

0 5,000 10,000 20,000
Feet

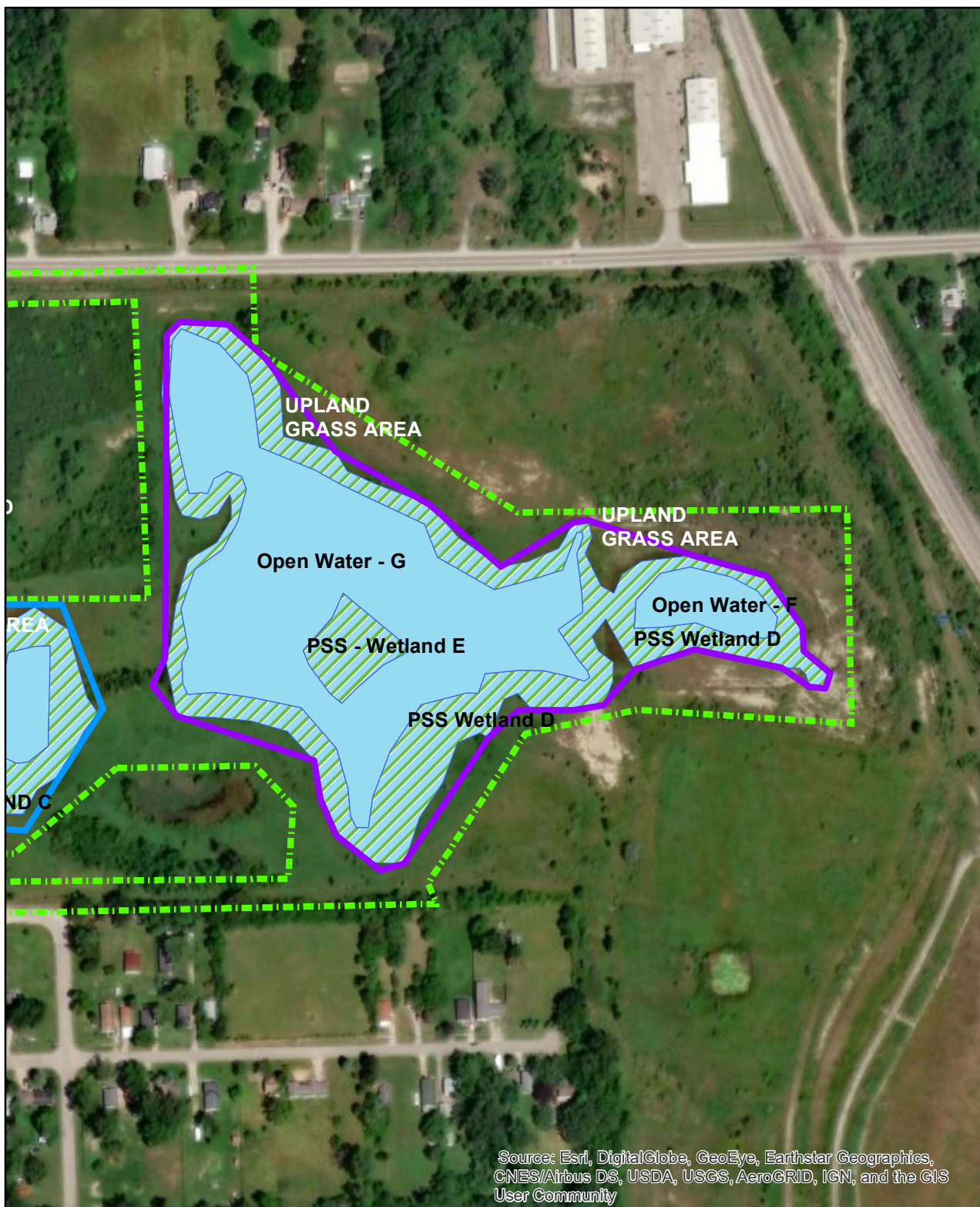


O'BRIEN & GERE ENGINEERS, INC.



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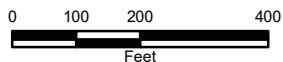
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LEGEND

- MiRAM Evaluation Area (Wetland A/B/C)
 - MiRAM Evaluation Area (Wetland D/E/F/G)
 - Jurisdictional Waters
 - Delineation Survey Area
 - Palustrine Scrub/Shrub Wetland
 - Palustrine Open Water
- 15388/68545/002
DECEMBER 2018

RACER TRUST
COLDWATER ROAD
LANDFILL FACILITY
MT. MORRIS, MICHIGAN
JURISDICTIONAL WATERS SURVEY



O'BRIEN & GERE ENGINEERS, INC.



WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Coldwater Road City/County: Genesee County Sampling Date: 11/28/2018
 Applicant/Owner: Racer Trust State: MI Sampling Point: TS-1
 Investigator(s): A. Rodrian L. Brewer Section, Township, Range: Section 18 Range 07E, Township 08N
 Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 43.102228 Long: -83.69285 Datum: NAD83
 Soil Map Unit Name: EtmaaE: Udorthents and Udipsamments, nearly level to hilly NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology No 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>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Test Site for Wetland C. The boundary between C and A is inaccessible to investigators, flagging/GPS points was placed a nearest practicable location with notes of observed distance and cardinal direction to the observed boundary.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1.					
2.					
3.					
4.					
5.					
			=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>106</u> x 1 = <u>106</u> FACW species <u>2</u> x 2 = <u>4</u> FAC species <u>3</u> x 3 = <u>9</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>111</u> (A) <u>119</u> (B) Prevalence Index = B/A = <u>1.07</u>
1. <u>Salix nigra</u>		<u>30</u>	<u>Yes</u>	<u>OBL</u>	
2.					
3.					
4.					
5.					
		<u>30</u>	=Total Cover		
Herb Stratum	(Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Typha latifolia</u>		<u>70</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Juncus effusus</u>		<u>5</u>	<u>No</u>	<u>OBL</u>	
3. <u>Juncus tenuis</u>		<u>3</u>	<u>No</u>	<u>FAC</u>	
4. <u>Carex lurida</u>		<u>1</u>	<u>No</u>	<u>OBL</u>	
5. <u>Carex vulpinoidea</u>		<u>2</u>	<u>No</u>	<u>FACW</u>	
6.					
7.					
8.					
9.					
10.					
		<u>81</u>	=Total Cover		
Woody Vine Stratum	(Plot size: <u>30</u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
1.					
2.					
			=Total Cover		

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

Wetland C is a fringe predominately PSS wetland to the Palustrine Open Water A. Wetland C does have a mosaic of PEM areas that are intersperse throughout the wetland dominated by T. latifolia. Due to the inaccessibility to areas of Wetland C, these PEM areas were not delineated separately.

SOIL

Sampling Point: TS-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR 3/2	98	10YR 5/2	2	C	M	Loamy/Clayey	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 Soils ³ :	
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ Coast Prairie Redox (A16)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Dark Surface (S7)	☐ Very Shallow Dark Surface (F22)
☐ Stratified Layers (A5)	☐ Loamy Mucky Mineral (F1)	☐ Other (Explain in Remarks)
☐ 2 cm Muck (A10)	☐ Loamy Gleyed Matrix (F2)	
☐ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 5 cm Mucky Peat or Peat (S3)	☐ Redox Depressions (F8)	

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

Restrictive Layer (if observed):	Hydric Soil Present?
Type: _____ Depth (inches): _____	Yes ☒ No ☐

Remarks:
This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

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

Field Observations:				Wetland Hydrology Present? Yes ☒ No ☐
Surface Water Present?	Yes ☒ No ☐	Depth (inches):	0	
Water Table Present?	Yes ☒ No ☐	Depth (inches):	0	
Saturation Present?	Yes ☒ No ☐	Depth (inches):	0	

(includes capillary fringe)

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Coldwater Road City/County: Genesee County Sampling Date: 11/28/2018
 Applicant/Owner: Racer Trust State: MI Sampling Point: TS-2
 Investigator(s): A. Rodrian L. Brewer Section, Township, Range: Section 18 Range 07E, Township 08N
 Landform (hillside, terrace, etc.): constructed embankment Local relief (concave, convex, none): convex
 Slope (%): 0 Lat: 43.102244 Long: -83.692933 Datum: NAD83
 Soil Map Unit Name: EtmaaE: Udorthents and Udipsamments, nearly level to hilly NWI classification: N/A

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

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N, Soil N, or Hydrology No 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> </u> No <u>X</u>
Hydric Soil Present? Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Upland test site for Wetlands A, B and C.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
1.																					
2.																					
3.																					
4.																					
5.																					
		=Total Cover			Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u> (A)</td> <td><u>210</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.00</u></td> </tr> </table>	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>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u> (A)	<u>210</u> (B)	Prevalence Index = B/A = <u>3.00</u>	
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>0</u>	x 4 = <u>0</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>70</u> (A)	<u>210</u> (B)																				
Prevalence Index = B/A = <u>3.00</u>																					
		=Total Cover																			
Sapling/Shrub Stratum	(Plot size: <u>15</u>)																				
1.																					
2.																					
3.																					
4.																					
5.																					
		=Total Cover																			
Herb Stratum	(Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1.	<u>Andropogon gerardii</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>																	
2.	<u>Panicum virgatum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>																	
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
		=Total Cover																			
Woody Vine Stratum	(Plot size: <u>30</u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
1.																					
2.																					
		=Total Cover																			

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

SOIL

Sampling Point: TS-2

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		
0-16	10YR 5/6	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)	☐ Sandy Gleyed Matrix (S4)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☐ Hydrogen Sulfide (A4)	☐ Dark Surface (S7)
☐ Stratified Layers (A5)	☐ Loamy Mucky Mineral (F1)
☐ 2 cm Muck (A10)	☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)
☐ 5 cm Mucky Peat or Peat (S3)	☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ 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 X**Remarks:**
 This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:Primary Indicators (minimum of one is required; check all that apply)

☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)
☐ Saturation (A3)	☐ True Aquatic Plants (B14)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Coldwater Road City/County: Genesee County Sampling Date: 11/28/2018
 Applicant/Owner: Racer Trust State: MI Sampling Point: TS-3
 Investigator(s): A. Rodrian L. Brewer Section, Township, Range: Section 18 Range 07E, Township 08N
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 43.102244 Long: -83.692933 Datum: NAD83
 Soil Map Unit Name: CvraB: Conover loam, 0 to 3 percent slopes NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology No 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>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Test Site for Wetland C. Wetland C is a fringe PEM wetland to the Palustrine Open Water A. The boundary between C and A is inaccessible to investigators, flagging/GPS points was placed a nearest practicable location with notes of observed distance and cardinal direction to the observed boundary.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
1. <u> </u>																					
2. <u> </u>																					
3. <u> </u>																					
4. <u> </u>																					
5. <u> </u>																					
		<u> </u> = Total Cover																			
Sapling/Shrub Stratum	(Plot size: <u>15</u>)				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>70</u></td> <td>x 2 = <u>140</u></td> </tr> <tr> <td>FAC species <u>55</u></td> <td>x 3 = <u>165</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>125</u> (A)</td> <td><u>305</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.44</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>70</u>	x 2 = <u>140</u>	FAC species <u>55</u>	x 3 = <u>165</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>125</u> (A)	<u>305</u> (B)	Prevalence Index = B/A = <u>2.44</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>70</u>	x 2 = <u>140</u>																				
FAC species <u>55</u>	x 3 = <u>165</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>125</u> (A)	<u>305</u> (B)																				
Prevalence Index = B/A = <u>2.44</u>																					
1. <u>Salix interior</u>		<u>60</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Populus deltoides</u>		<u>40</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u> </u>																					
4. <u> </u>																					
5. <u> </u>																					
		<u>100</u> = Total Cover																			
Herb Stratum	(Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Symphytotrichum lateriflorum</u>		<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Panicum virgatum</u>		<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u> </u>																					
4. <u> </u>																					
5. <u> </u>																					
6. <u> </u>																					
7. <u> </u>																					
8. <u> </u>																					
9. <u> </u>																					
10. <u> </u>																					
		<u>25</u> = Total Cover																			
Woody Vine Stratum	(Plot size: <u>30</u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
1. <u> </u>																					
2. <u> </u>																					
		<u> </u> = Total Cover																			

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

SOIL

Sampling Point: TS-3

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						
2-16	10YR 5/2	90	10YR 5/6	10	C	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)	☐ Sandy Gleyed Matrix (S4)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☐ Hydrogen Sulfide (A4)	☐ Dark Surface (S7)
☐ Stratified Layers (A5)	☐ Loamy Mucky Mineral (F1)
☐ 2 cm Muck (A10)	☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)
☐ 5 cm Mucky Peat or Peat (S3)	☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ 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 Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:Primary Indicators (minimum of one is required; check all that apply)

☒ Surface Water (A1)	☐ Water-Stained Leaves (B9)
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)
☒ Saturation (A3)	☐ True Aquatic Plants (B14)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☒	No _____	Depth (inches): <u>2</u>
Water Table Present?	Yes ☒	No _____	Depth (inches): <u>0</u>
Saturation Present?	Yes ☒	No _____	Depth (inches): <u>0</u>
(includes capillary fringe)			

Wetland Hydrology Present? Yes ☒ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Coldwater Road City/County: Genesee County Sampling Date: 11/29/2018
 Applicant/Owner: Racer Trust State: MI Sampling Point: TS-4
 Investigator(s): A. Rodrian L. Brewer Section, Township, Range: Section 18 Range 07E, Township 08N
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 43.103075 Long: -83.686325 Datum: NAD83
 Soil Map Unit Name: EtmaaE: Udorthents and Udipsamments, nearly level to hilly NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology No 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>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Test Site for Wetland D. Wetland D is a fringe PEM wetland to the Palustrine Open Water G. The boundary between D and G is inaccessible to investigators, flagging/GPS points was placed a nearest practicable location with notes of observed distance and cardinal direction to the observed boundary. Wetland F was visually observed from this point as well with similar vegetation.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
1.																					
2.																					
3.																					
4.																					
5.																					
		=Total Cover			Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>70</u></td> <td>x 1 = <u>70</u></td> </tr> <tr> <td>FACW species <u>40</u></td> <td>x 2 = <u>80</u></td> </tr> <tr> <td>FAC species <u>1</u></td> <td>x 3 = <u>3</u></td> </tr> <tr> <td>FACU species <u>1</u></td> <td>x 4 = <u>4</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>112</u> (A)</td> <td><u>157</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>1.40</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>70</u>	x 1 = <u>70</u>	FACW species <u>40</u>	x 2 = <u>80</u>	FAC species <u>1</u>	x 3 = <u>3</u>	FACU species <u>1</u>	x 4 = <u>4</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>112</u> (A)	<u>157</u> (B)	Prevalence Index = B/A = <u>1.40</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>70</u>	x 1 = <u>70</u>																				
FACW species <u>40</u>	x 2 = <u>80</u>																				
FAC species <u>1</u>	x 3 = <u>3</u>																				
FACU species <u>1</u>	x 4 = <u>4</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>112</u> (A)	<u>157</u> (B)																				
Prevalence Index = B/A = <u>1.40</u>																					
		=Total Cover																			
Sapling/Shrub Stratum	(Plot size: <u>15</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1.																					
2.																					
3.																					
4.																					
5.																					
		=Total Cover																			
Herb Stratum	(Plot size: <u>5</u>)				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
1.	<u>Typha angustifolia</u>	<u>70</u>	<u>Yes</u>	<u>OBL</u>																	
2.	<u>Phragmites australis</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>																	
3.	<u>Juncus tenuis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>																	
4.	<u>Symphotrichum pilosum</u>	<u>1</u>	<u>No</u>	<u>FACU</u>																	
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					
		<u>112</u> =Total Cover																			
Woody Vine Stratum	(Plot size: <u>30</u>)																				
1.																					
2.																					
		=Total Cover																			

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

SOIL

Sampling Point: TS-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/2	98	10YR 5/6	2	C	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:	Indicators for Problematic Hydric Soils ³ :	
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ Coast Prairie Redox (A16)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Dark Surface (S7)	☐ Very Shallow Dark Surface (F22)
☐ Stratified Layers (A5)	☐ Loamy Mucky Mineral (F1)	☐ Other (Explain in Remarks)
☐ 2 cm Muck (A10)	☐ Loamy Gleyed Matrix (F2)	
☐ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 5 cm Mucky Peat or Peat (S3)	☐ Redox Depressions (F8)	

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

Restrictive Layer (if observed):	Hydric Soil Present?
Type: _____ Depth (inches): _____	Yes _____ No _____

Remarks:
This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

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

Field Observations:				Wetland Hydrology Present? Yes ☒ No _____
Surface Water Present?	Yes ☒ No _____	Depth (inches):	0	
Water Table Present?	Yes ☒ No _____	Depth (inches):	0	
Saturation Present?	Yes ☒ No _____	Depth (inches):	0	

(includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
0

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Coldwater Road City/County: Genesee County Sampling Date: 11/29/2018
 Applicant/Owner: Racer Trust State: MI Sampling Point: TS-5
 Investigator(s): A. Rodrian L. Brewer Section, Township, Range: Section 18 Range 07E, Township 08N
 Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex
 Slope (%): 3 Lat: 43.103329 Long: -83.686426 Datum: NAD83
 Soil Map Unit Name: EtmaaE: Udorthents and Udipsamments, nearly level to hilly NWI classification: N/A

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

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N, Soil N, or Hydrology No 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> </u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Upland test site for Weland D.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
5.				
			=Total Cover	
Sapling/Shrub Stratum	(Plot size: <u>15</u>)			
1.	<u>Elaeagnus umbellata</u>	<u>30</u>	<u>Yes</u>	<u>UPL</u>
2.	<u>Juniperus virginiana</u>	<u>2</u>	<u>No</u>	<u>FACU</u>
3.				
4.				
5.				
		<u>32</u>	=Total Cover	
Herb Stratum	(Plot size: <u>5</u>)			
1.	<u>Juniperus virginiana</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
2.	<u>Panicum virgatum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>
3.	<u>Centaurea stoebe</u>	<u>5</u>	<u>No</u>	<u>UPL</u>
4.	<u>Symphotrichum pilosum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
5.	<u>Cichorium intybus</u>	<u>1</u>	<u>No</u>	<u>FACU</u>
6.				
7.				
8.				
9.				
10.				
		<u>76</u>	=Total Cover	
Woody Vine Stratum	(Plot size: <u>30</u>)			
1.				
2.				
			=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (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>60</u>	x 3 = <u>180</u>
FACU species <u>13</u>	x 4 = <u>52</u>
UPL species <u>35</u>	x 5 = <u>175</u>
Column Totals: <u>108</u> (A)	<u>407</u> (B)
Prevalence Index = B/A = <u>3.77</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.

Hydrophytic Vegetation Present? Yes No

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

SOIL

Sampling Point: TS-5

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 4/2	100					Loamy/Clayey	
3-16	10YR 5/3	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)	☐ Sandy Gleyed Matrix (S4)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)
☐ Hydrogen Sulfide (A4)	☐ Dark Surface (S7)
☐ Stratified Layers (A5)	☐ Loamy Mucky Mineral (F1)
☐ 2 cm Muck (A10)	☐ Loamy Gleyed Matrix (F2)
☐ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)
☐ 5 cm Mucky Peat or Peat (S3)	☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ 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 Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:Primary Indicators (minimum of one is required; check all that apply)

☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)
☐ Saturation (A3)	☐ True Aquatic Plants (B14)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Coldwater Road City/County: Genesee County Sampling Date: 11/29/2018
 Applicant/Owner: Racer Trust State: MI Sampling Point: TS-6
 Investigator(s): A. Rodrian L. Brewer Section, Township, Range: Section 18 Range 07E, Township 08N
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 43.102584 Long: -83.689729 Datum: NAD83
 Soil Map Unit Name: EtmaaE: Udorthents and Udipsamments, nearly level to hilly NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology No 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>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Remarks: Test Site for Wetland D. Wetland D is a fringe PEM wetland to the Palustrine Open Water G. The boundary between D and G is inaccessible to investigators, flagging/GPS points was placed a nearest practicable location with notes of observed distance and cardinal direction to the observed boundary.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
1. <u>Populus deltoides</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
5. <u> </u>	<u>25</u>	<u> </u>	<u> </u>																	
<u>25</u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>78</u></td> <td>x 1 = <u>78</u></td> </tr> <tr> <td>FACW species <u>75</u></td> <td>x 2 = <u>150</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>178</u> (A)</td> <td><u>303</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>1.70</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>78</u>	x 1 = <u>78</u>	FACW species <u>75</u>	x 2 = <u>150</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>178</u> (A)	<u>303</u> (B)	Prevalence Index = B/A = <u>1.70</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>78</u>	x 1 = <u>78</u>																			
FACW species <u>75</u>	x 2 = <u>150</u>																			
FAC species <u>25</u>	x 3 = <u>75</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>178</u> (A)	<u>303</u> (B)																			
Prevalence Index = B/A = <u>1.70</u>																				
1. <u>Salix interior</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
5. <u> </u>	<u>70</u>	<u> </u>	<u> </u>																	
<u>70</u> =Total Cover																				
Herb Stratum (Plot size: <u>5</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Typha angustifolia</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Boehmeria cylindrica</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Salix interior</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
4. <u>Lycopus virginicus</u>	<u>8</u>	<u>No</u>	<u>OBL</u>																	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
10. <u> </u>	<u>83</u>	<u> </u>	<u> </u>																	
<u>83</u> =Total Cover																				
Woody Vine Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>																	
<u> </u> =Total Cover																				

Remarks: (Include photo numbers here or on a separate sheet.)
 Wetland E was visually observed from this point as well with similar vegetation.

SOIL

Sampling Point: TS-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/2	90	2.5YR 6/8	10	C	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:	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1)	☐ ? Coast Prairie Redox (A16)
☐ Histic Epipedon (A2)	☐ Iron-Manganese Masses (F12)
☐ Black Histic (A3)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Very Shallow Dark Surface (F22)
☐ Stratified Layers (A5)	☐ Other (Explain in Remarks)
☐ 2 cm Muck (A10)	
☐ Depleted Below Dark Surface (A11)	
☐ Thick Dark Surface (A12)	
☐ Sandy Mucky Mineral (S1)	
☐ 5 cm Mucky Peat or Peat (S3)	
☐ Sandy Gleyed Matrix (S4)	
☐ Sandy Redox (S5)	
☐ Stripped Matrix (S6)	
☐ Dark Surface (S7)	
☐ Loamy Mucky Mineral (F1)	
☐ Loamy Gleyed Matrix (F2)	
☒ Depleted Matrix (F3)	
☐ Redox Dark Surface (F6)	
☐ Depleted Dark Surface (F7)	
☒ Redox Depressions (F8)	

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

Restrictive Layer (if observed):	Hydric Soil Present?
Type: _____ Depth (inches): _____	Yes ☒ No ☐

Remarks:
This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	Wetland Hydrology Present? Yes ☒ No ☐
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ True Aquatic Plants (B14)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ FAC-Neutral Test (D5)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Gauge or Well Data (D9)		
☐ Sparsely Vegetated Concave Surface (B8)	☐ Other (Explain in Remarks)		

Field Observations:			
Surface Water Present?	Yes ☐ No ☒	Depth (inches):	Wetland Hydrology Present? Yes ☒ No ☐
Water Table Present?	Yes ☒ No ☐	Depth (inches): 6	
Saturation Present?	Yes ☒ No ☐	Depth (inches): 6	

(includes capillary fringe)

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Coldwater Road City/County: Genesee County Sampling Date: 11/29/2018
 Applicant/Owner: Racer Trust State: MI Sampling Point: TS-7
 Investigator(s): A. Rodrian L. Brewer Section, Township, Range: Section 18 Range 07E, Township 08N
 Landform (hillside, terrace, etc.): constructed embankment Local relief (concave, convex, none): convex
 Slope (%): 0 Lat: 43.10262 Long: -83.689795 Datum: NAD83
 Soil Map Unit Name: EtmaaE: Udorthents and Udipsamments, nearly level to hilly NWI classification: N/A

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

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N, Soil N, or Hydrology No 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> </u> No <u>X</u>
Hydric Soil Present? Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	
Remarks: Upland test site for Wetland D.	

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
5.				
		=Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15</u>)			
1.				
2.				
3.				
4.				
5.				
		=Total Cover		
Herb Stratum	(Plot size: <u>5</u>)			
1.	<u>Andropogon gerardii</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
		<u>70</u> =Total Cover		
Woody Vine Stratum	(Plot size: <u>30</u>)			
1.				
2.				
		=Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (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>70</u>	x 3 = <u>210</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>70</u> (A)	<u>210</u> (B)
Prevalence Index = B/A = <u>3.00</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.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)
 Large amounts of bare ground and rocky areas due to the site location within a constructed embankment.

SOIL

Sampling Point: TS-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 5/2	100					Loamy/Clayey	
6-16	10YR 5/4	100					Loamy/Clayey	

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :	
☐ Histosol (A1)	☐ Sandy Gleyed Matrix (S4)	☐ Coast Prairie Redox (A16)
☐ Histic Epipedon (A2)	☐ Sandy Redox (S5)	☐ Iron-Manganese Masses (F12)
☐ Black Histic (A3)	☐ Stripped Matrix (S6)	☐ Red Parent Material (F21)
☐ Hydrogen Sulfide (A4)	☐ Dark Surface (S7)	☐ Very Shallow Dark Surface (F22)
☐ Stratified Layers (A5)	☐ Loamy Mucky Mineral (F1)	☐ Other (Explain in Remarks)
☐ 2 cm Muck (A10)	☐ Loamy Gleyed Matrix (F2)	
☐ Depleted Below Dark Surface (A11)	☒ Depleted Matrix (F3)	
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	
☐ 5 cm Mucky Peat or Peat (S3)	☐ Redox Depressions (F8)	

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

Restrictive Layer (if observed):	Hydric Soil Present?
Type: _____ Depth (inches): _____	Yes ☒ No ☐

Remarks:
This data form is revised from Midwest Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

HYDROLOGY

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

Field Observations:				Wetland Hydrology Present? Yes ☐ No ☒
Surface Water Present?	Yes ☐ No ☒	Depth (inches):		
Water Table Present?	Yes ☐ No ☒	Depth (inches):		
Saturation Present?	Yes ☐ No ☒	Depth (inches):		
(includes capillary fringe)				

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

Remarks:

Appendix D
Monthly Water Inventory
Report for Michigan
(November 2018)

(L)

Search Locations

Log in (/log...)



★ Popular Cities (Member favorites)

San Francisco, CA
31 ° F Rain Shower

Manhattan, NY
37 ° F Fair

Atlanta, GA
42 ° F Partly Cloudy

Elev 781ft 42.97 °N, 83.74 °W

Bishop International, MI ★ 🏠

☁ 26° BISHOP INTERNATIONAL STATION (/HISTORY/DAILY/US/MI/FLINT/KFNT/DATE/2018-12-5?CM_VEN=LOCALWX_PWSDASH) | CHANGE ✓

HISTORY (/HISTORY/DAILY/US/MI/FLINT/KFNT/DATE/2018-12-5)

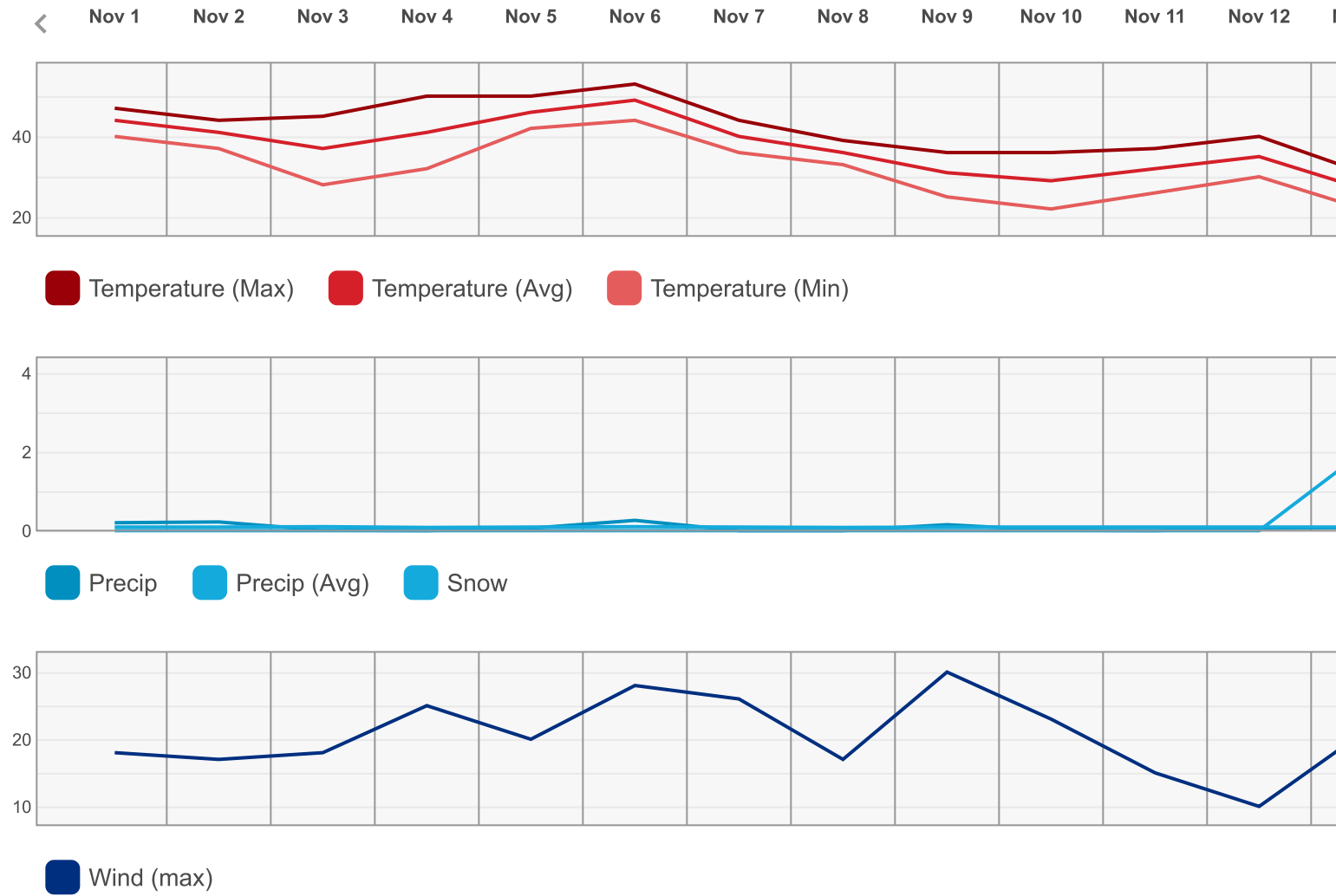
- [TODAY \(/WEATHER/US/OH/LOVELAND\)](/WEATHER/US/OH/LOVELAND)
- [HOURLY \(/HOURLY/US/OH/LOVELAND\)](/HOURLY/US/OH/LOVELAND)
- [10-DAY \(/FORECAST/US/OH/LOVELAND\)](/FORECAST/US/OH/LOVELAND)
- [CALENDAR \(/CALENDAR/US/MI/FLINT/KFNT/DATE/2018-12\)](/CALENDAR/US/MI/FLINT/KFNT/DATE/2018-12)
- [HISTORY \(/HISTORY/DAILY/US/MI/FLINT/KFNT/DATE/2018-12-5\)](/HISTORY/DAILY/US/MI/FLINT/KFNT/DATE/2018-12-5)
- [WUNDERMAP \(/WUNDERMAP?LAT=42.96527863&LON=-83.74333191\)](/WUNDERMAP?LAT=42.96527863&LON=-83.74333191)

Daily Weekly **Monthly**

November

2018

View



Summary

Temperature (° F)	Max	Average	Min	Sum	▲
Max Temperature	53	49	44	-	
Avg Temperature	38	34	28	-	
Min Temperature	28	23	17	-	
Precipitation (Inches)	Max	Average	Min	Sum	▲
Precipitation	0.32	0.08	0	1.76	
Dew Point (° F)	Max	Average	Min	Sum	▲
Dew Point	51	28	7	-	

Daily Observations

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure	
Nov	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
1	47	44	40	43	40	37	96	-	82	18	-	0	29.96	-
2	44	41	37	39	37	36	92	-	76	17	-	0	29.88	-
3	45	37	28	37	33	28	100	-	53	18	-	0	30.36	-
4	50	41	32	41	35	29	89	-	66	25	-	0	30.42	-
5	50	46	42	46	43	37	93	-	61	20	-	5	29.99	-
6	53	49	44	51	45	39	93	-	68	28	-	7	29.85	-
7	44	40	36	38	31	28	83	-	62	26	-	8	30.22	-
8	39	36	33	32	27	23	89	-	54	17	-	0	30.39	-
9	36	31	25	33	29	16	96	-	63	30	-	0	30.32	-
10	36	29	22	27	22	16	85	-	63	23	-	5	30.36	-
11	37	32	26	23	21	17	81	-	47	15	-	0	30.38	-
12	40	35	30	30	27	23	92	-	64	10	-	0	30.32	-
13	31	27	22	29	24	10	100	-	60	21	-	0	30.45	-
14	32	25	17	17	14	10	81	-	47	14	-	0	30.61	-
15	32	28	23	31	28	17	92	-	68	12	-	0	30.46	-
16	36	33	29	31	30	27	100	-	82	18	-	6	30.08	-
17	35	30	25	30	27	24	100	-	69	20	-	0	30.36	-
18	37	31	25	27	25	23	100	-	59	14	-	0	30.35	-
19	37	30	23	30	26	23	92	-	70	14	-	0	30.16	-
20	32	28	24	30	22	14	100	-	57	18	-	6	30.2	-
21	33	26	19	27	17	8	78	-	47	25	-	7	30.52	-
22	28	23	18	19	11	7	68	-	55	20	-	5	30.59	-

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure	
23	48	37	26	34	27	18	81	-	53	20	-	9	30.38	-
24	46	44	41	45	42	34	93	-	70	17	-	7	29.81	-
25	42	39	35	40	33	30	89	-	70	20	-	0	29.92	-
26	36	32	28	32	29	22	100	-	78	25	-	12	29.8	-
27	29	27	25	23	21	16	81	-	63	20	-	9	29.87	-
28	28	27	25	20	19	19	81	-	69	22	-	5	30.09	-
29	30	27	24	28	23	20	92	-	75	13	-	0	30.1	-
30	37	30	23	29	27	22	100	-	70	8	-	0	30.15	-

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Appendix E

Photographic Log

APPENDIX E – PHOTOGRAPH LOG

CLIENT NAME: Racer Trust		SITE LOCATION: Genesee Township, Mt. Morris, Michigan	PROJECT NO. 15388/68545
PHOTO NO. 1	DATE: 11/28/2018		
DESCRIPTION View of Palustrine Open Water Feature (POW) A and Wetland C. Photo taken facing east. Photo credit: A. Rodrian			
CLIENT NAME: Racer Trust		SITE LOCATION: Genesee Township, Mt. Morris, Michigan	PROJECT NO. 15388/68545
PHOTO NO. 2	DATE: 11/28/2018		
DESCRIPTION View of Palustrine Open Water Feature (POW) A and Wetland C. Photo taken facing west. Photo credit: A. Rodrian			

CLIENT NAME: Racer Trust		SITE LOCATION: Genesee Township, Mt. Morris, Michigan		PROJECT NO. 15388/68545
PHOTO NO. 3	DATE: 11/28/2018			
DESCRIPTION View of Test Site (TS) 1 for Wetland C. Photo taken facing west. Photo credit: A. Rodrian				
CLIENT NAME: Racer Trust		SITE LOCATION: Genesee Township, Mt. Morris, Michigan		PROJECT NO. 15388/68545
PHOTO NO. 4	DATE: 11/28/2018			
DESCRIPTION View of Test Site 3 for Wetland B. Photo taken facing southeast. Photo credit: A. Rodrian				

CLIENT NAME: Racer Trust		SITE LOCATION: Genesee Township, Mt. Morris, Michigan	PROJECT NO. 15388/68545
PHOTO NO. 5	DATE: 11/29/2018		
DESCRIPTION View of Test Site 6 for Wetland D. Photo taken facing east. Photo credit: A. Rodrian			
CLIENT NAME: Racer Trust		SITE LOCATION: Genesee Township, Mt. Morris, Michigan	PROJECT NO. 15388/68545
PHOTO NO. 6	DATE: 11/29/2018		
DESCRIPTION View of POW G and Wetland E. Photo taken facing east. Photo credit: A. Rodrian			

Client Name: Racer Trust		Site Location: Genesee Township, Mt. Morris, Michigan	Project No. 15388/68545
Photo No. 7	Date: 11/29/2018		
Description Representative view of upland area and existing gravel road south of Wetland D. Photo taken facing east. Photo credit: A. Rodrian			
Client Name: Racer Trust		Site Location: Genesee Township, Mt. Morris, Michigan	Project No. 15388/68545
Photo No. 8	Date: 11/29/2018		
Description Representative view of Wetland D and POW G. Photo taken facing north. Photo credit: A. Rodrian			

Client Name: Racer Trust		Site Location: Genesee Township, Mt. Morris, Michigan	Project No. 15388/68545
Photo No. 9	Date: 11/29/2018		
Description View of Test Site 4 for Wetland D. Photo taken facing east. Photo credit: A. Rodrian			
Client Name: Racer Trust		Site Location: Genesee Township, Mt. Morris, Michigan	Project No. 15388/68545
Photo No. 10	Date: 11/29/2018		
Description Representative view of Wetland D and POW G. Photo taken facing west. Photo credit: A. Rodrian			

Client Name: Racer Trust		Site Location: Genesee Township, Mt. Morris, Michigan	Project No. 15388/68545
Photo No. 11	Date: 11/29/2018		
Description Representative view of upland area at edge of Wetland D. Photo taken facing north. Photo credit: A. Rodrian			
Client Name: Racer Trust		Site Location: Genesee Township, Mt. Morris, Michigan	Project No. 15388/68545
Photo No. 12	Date: 11/29/2018		
Description Representative view of Wetland D, Wetland E and POW G. Photo taken facing south. Photo credit: A. Rodrian			

Client Name: Racer Trust		Site Location: Genesee Township, Mt. Morris, Michigan	Project No. 15388/68545
Photo No. 13	Date: 11/29/2018		
Description Representative view of upland area and constructed berm on western edge of Wetland D. Photo taken facing north. Photo credit: A. Rodrian			
Client Name: Racer Trust		Site Location: Genesee Township, Mt. Morris, Michigan	Project No. 15388/68545
Photo No. 14	Date: 11/29/2018		
Description Representative view of Wetland C and POW A. Representative view of upland berm area between Wetlands C and Wetland D. Photo taken facing west. Photo credit: A. Rodrian			