

FINAL ECOLOGICAL ASSESSMENT REPORT

**MICHIGAN DEPARTMENT OF TRANSPORTATION
M-153 (Ford Rd) at I-275 Study Area
JN 115177
CS 82292**

Wayne County, Michigan

(Cardno JFNew Project No. 1201079)

Prepared for:



8164 Executive Court, Suite A
Lansing, Michigan 48917

Prepared by:



11181 Marwill Avenue
West Olive, Michigan 49460

June 29, 2013

**FINAL ECOLOGICAL ASSESSMENT REPORT
M-153 (FORD ROAD) at I-275 STUDY AREA
JN 115177, CS 82292**

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	METHODOLOGY.....	1
2.1	Regulatory Definitions	1
2.1.1	Streams	1
2.1.2	Wetlands	2
2.1.2.1	Hydrophytic Vegetation	3
2.1.2.2	Hydric Soils	4
2.1.2.3	Wetland Hydrology	5
2.1.2.4	Wetland Definition Summary	5
2.1.3	Threatened and Endangered Species.....	5
2.2	Background Information and Reference Map Review	5
2.2.1	USGS Topographic and National Hydrography Dataset Map	6
2.2.2	National Wetland Inventory (NWI) Map	6
2.2.3	Soil Survey	6
2.2.4	Michigan Natural Features Inventory (MNFI) Natural Heritage Database (NHD)....	7
2.2.4.1	Goldenseal (<i>Hydrastis canadensis</i>) - State Threatened.....	7
2.2.4.2	Shumard's Oak (<i>Quercus shumardii</i>) - State Special Concern	7
2.2.4.3	American Chestnut (<i>Castanea dentata</i>) - State Endangered	7
2.2.4.4	Cup Plant (<i>Silphium perfoliatum</i>) - State Threatened.....	7
2.3	Site Investigation and Field Reconnaissance.....	8
2.3.1	Wetland and Stream Delineation.....	8
2.3.2	Stream Assessment	9
2.3.3	Vegetative Community Assessment and Mapping.....	9
2.3.4	Threatened and Endangered Species Survey	10
3.0	RESULTS.....	11
3.1	Wetland and Stream Delineation.....	11
3.2	Stream Assessment	11
3.2.1	Habitat Assessment	12
3.2.2	Macroinvertebrate Community Assessment.....	12
3.2.3	Fish Community Assessment.....	12
3.3	Vegetative Community Assessment.....	12
3.3.1	Vegetative Community Types	12
3.3.2	Threatened and Endangered Species.....	14
3.3.2.1	Plants	14
3.3.2.2	Animals.....	14
4.0	DISCUSSION AND RECOMMENDATIONS.....	15
4.1	Wetland and Stream Delineation.....	15
4.2	Stream Assessment	16
4.3	Vegetative Community Assessment.....	16
4.4	Threatened and Endangered Species Assessment	16
5.0	REFERENCES.....	17

TABLES

TABLE 1	Primary Rivers, Streams, and Drainage Systems Mapped within the Study Area
TABLE 2	NWI Wetland Types Mapped within the Study Area
TABLE 3	Soil Types Mapped within the Study Area
TABLE 4	Summary of Delineated Wetlands and Representative Upland Communities within the Study Area
TABLE 5	Summary of Stream Habitat Scores within the Study Area
TABLE 6	Summary of Stream Macroinvertebrate Sampling Results within the Study Area
TABLE 7	Summary of Stream Macroinvertebrate Metric Evaluation within the Study Area
TABLE 8	Summary of Stream Fish Sampling Results within the Study Area
TABLE 9	Summary of Stream Fish Metric Evaluation within the Study Area
TABLE 10	Summary of Documented Vertebrate Species

FIGURES

FIGURE 1	Location Map
FIGURE 2	USGS Topographic Map and National Hydrography Dataset Map
FIGURE 3	National Wetland Inventory Map
FIGURE 4	USDA NRCS Soil Survey
FIGURE 5	Wetland/Stream Delineation and Vegetative Community Maps
FIGURE 6	Stream Assessment (Procedure 51) Maps

APPENDICES

APPENDIX A	USACE Wetland Determination Data Forms
APPENDIX B	Representative Wetland Complex and Vegetative Community Photos
APPENDIX C	Representative Wetland Delineation Data Point Photos
APPENDIX D	Michigan Rapid Assessment Method for Wetlands (MiRAM) Field Forms
APPENDIX E	Representative Stream Assessment Photos
APPENDIX F	Stream Assessment (Procedure 51) Field Forms

**FINAL ECOLOGICAL ASSESSMENT REPORT
M-153 (FORD ROAD) AT I-275 STUDY AREA
WAYNE COUNTY, MICHIGAN**

1.0 INTRODUCTION

Recent residential and commercial growth in the western portion of Wayne County has resulted in an increase in traffic volume on the I-275 interstate and on key commercial and residential corridors, straining the area's transportation infrastructure. The I-275/Ford Road (M-153) interchange area has been identified as a candidate area for potential changes to address traffic flow and safety concerns along Ford Road including the network of local roads within the study area.

Cardno JFNew performed an ecological assessment of the corridor surrounding the I-275/Ford Road interchange and associated roadways, including an approximately 2.5 mile section of M-153 (Ford Road), which occur within the Michigan Department of Transportation (MDOT) designated study area, located in Canton Township, Wayne County, Michigan (**Figure 1**). The ecological assessments conducted included regulatory wetland and stream delineations, vegetative community assessments, and stream biological and habitat assessments. MDOT biologists also conducted a threatened and endangered species assessment of the study area. This report identifies the methods that were used to conduct the assessments within the study area as well as the results of the investigations.

2.0 METHODOLOGY

From July 2 to August 1, 2012, Cardno JFNew conducted an ecological assessment of the study area (**Figure 1**). The study area was walked with specific intent of conducting ecological assessments that included regulatory wetland delineations, vegetative community assessments, and Procedure 51 stream assessments for the entire study area. A formal threatened and endangered species survey was not conducted by Cardno JFNew, but MDOT biologists conducted a separate evaluation and survey for threatened or endangered species on May 30 and September 6, 2012, and April 22 and May 9, 2013.

2.1 Regulatory Definitions

2.1.1 Streams

The MDEQ regulates various activities that may impact an inland lake or stream under Part 301, Inland Lakes and Streams, of the Natural Resources and Environmental Protection Act (NREPA), P.A. 451 of 1994, as amended. Activities requiring a permit from the MDEQ pursuant to Part 301 of NREPA include:

- (a) Dredge or fill bottomland.
- (b) Construct, enlarge, extend, remove, or place a structure on bottomland.
- (c) Construct, reconfigure, or expand a marina.
- (d) Create, enlarge, or diminish an inland lake or stream.

- (e) Structurally interfere with the natural flow of an inland lake or stream.
- (f) Construct, dredge, commence, extend, or enlarge an artificial canal, channel, ditch, lagoon, pond, lake, or similar waterway where the purpose is ultimate connection with an existing inland lake or stream, or where any part of the artificial waterway is located within 500 feet of the ordinary high-water mark of an existing inland lake or stream.
- (g) Connect any natural or artificially constructed waterway, canal, channel, ditch, lagoon, pond, lake, or similar water with an existing inland lake or stream for navigation or any other purpose.
- (h) Remove submerged logs from rivers or streams for the purpose of submerged log recovery.

Part 301 of NREPA defines a stream as a river, stream, or creek which may or may not be serving as a drain as defined by the drain code of 1956, 1956 PA 40, MCL 280.1 to 280.630; or any other body of water that has definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water, including the St. Marys, St. Clair, and Detroit Rivers.

2.1.2 Wetlands

The MDEQ regulates various activities that may impact wetlands under Part 303, Wetland Protection, of NREPA. Activities requiring a permit from the MDEQ pursuant to Part 303 of NREPA include:

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

Part 303 of NREPA defines a wetland as “land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life, and is commonly referred to as a bog, swamp, or marsh, and which is any of the following:

- (a) Contiguous to the Great Lakes or Lake St. Clair, an inland lake or pond, or a river or stream.
- (b) Not contiguous to the Great Lakes, an inland lake or pond, or a river or stream; and more than 5 acres in size.
- (c) Not contiguous to the Great Lakes, an inland lake or pond, or a river or stream; and 5 acres or less in size if the department determines that protection of the area is essential to the preservation of the natural resources of the state from pollution, impairment, or destruction and the department has so notified the owner.”

As adopted by the MDEQ and described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version

2.0) (USACE 2012), wetland boundaries are delineated using three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology.

2.1.2.1 Hydrophytic Vegetation

On June 1, 2012, the National Wetland Plant List (NWPL), formerly called the National List of Plant Species that Occur in Wetlands (Reed 1988), went into effect after being released by the USACE as part of an interagency effort with the U.S. Fish and Wildlife Service (FWS), the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) (Lichvar and Kartesz 2009). The NWPL, along with the information implied by its wetland plant species status ratings, provides general botanical information about wetland plants and is used extensively in wetland delineation, restoration, and mitigation efforts. The NWPL consists of a comprehensive list of wetland plant species that occur within the United States along with their respective wetland indicator statuses by region. An indicator status reflects the likelihood that a particular plant species occurs in a wetland or upland (Lichvar 2012). Definitions of the five indicator categories are presented below.

OBL (Obligate Wetland Plants): almost always occur in wetlands. With few exceptions, these plants (herbaceous or woody) are found in standing water or seasonally saturated soils (14 or more consecutive days) near the surface. These plants are of four types: submerged, floating, floating-leaved, and emergent.

FACW (Facultative Wetland Plants): usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

FAC (Facultative Plants): occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.

FACU (Facultative Upland Plants): usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soils or floods the soil surface seasonally.

UPL (Upland Plants): almost never occur in wetlands. These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

According to the USACE's Northcentral and Northeast Regional Supplement, plants that are rated as FAC, FACW, or OBL are classified as wetland plant species. The percentage of dominant wetland species in each of the four vegetation strata (tree, shrub/sapling, herbaceous, and woody vine) in the sample area determines the hydrophytic (wetland) status of the plant community. Dominant species are chosen independently from each stratum of the community. In general, dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for at least 20 percent of the total.

For the purposes of determining dominant plant species, the four vegetation strata are defined. Trees consist of woody species 3 inches or greater in diameter at breast height (DBH). Shrubs and saplings are woody species that are over 1 meter in height and less than 3 inches DBH. Herbaceous species consist of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants less than 1 meter tall. Woody vines consist of vine species greater than 1 meter in height.

2.1.2.2 Hydric Soils

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper soil profile. In general, hydric soils are flooded, ponded, or saturated for a week or more during the growing season when soil temperature measured at 12 inches (30cm) depth is 41 degrees Fahrenheit. The anaerobic conditions created by repeated or prolonged saturation or flooding result in permanent changes in soil color and chemistry, which are used to differentiate hydric from non-hydric soils.

In this report, soil colors are described using the Munsell notation system. This method of describing soil color consists of separate notations for hue, value, and chroma that are combined in that order to form the color designation. The hue notation of a color indicates its relation to red, yellow, green, blue, and purple; the value notation indicates its lightness, and the chroma notation indicates its strength or departure from a neutral of the same lightness.

The symbol for hue consists of a number from 1 to 10, followed by the letter abbreviation of the color. Within each letter range, the hue becomes more yellow and less red as the numbers increase. The notation for value consists of numbers from 0 representing absolute black, to 10 representing absolute white. The notation for chroma consists of numbers beginning with /0 for neutral grays and increasing at equal intervals. Soil color, along with texture and depth, provides the basis for assigning a hydric soil indicator.

The implementation of USACE regional supplements in this area of the country significantly updated the criteria for hydric soils based on guidance and indicators defined by the National Technical Committee for Hydric Soils. Updated indicators are not meant to replace or relieve the requirements contained in the USACE definition of a hydric soil, but they have been integrated to capture all of the characteristic morphologies that result from repeated periods of saturation and inundation.

2.1.2.3 Wetland Hydrology

Wetland hydrology is defined as the presence of water for a significant period of time at or near the surface (within the root zone) during the growing season. Wetland hydrology is present only seasonally in many cases, and is often inferred by indirect evidence. Hydrology is controlled by such factors as seasonal and long-term rainfall patterns, local geology and topography, soil type, local water table conditions, and drainage. Primary indicators of hydrology provide stand-alone evidence of a current or recent hydrologic event. Secondary indicators provide evidence of recent inundation or saturation when supported by one or more other primary or secondary wetland hydrology indicators. However, a single secondary indicator should not be used alone to conclude that wetland hydrology is present. One primary indicator or two or more secondary indicators are required to establish a positive indication of hydrology.

2.1.2.4 Wetland Definition Summary

In general, an area must meet all three criteria (i.e., hydrophytic vegetation, hydric soils and wetland hydrology) to be classified as a wetland. In certain problem areas such as seasonal wetlands, which are not wet at all times, or in atypical, recently disturbed situations, areas may be considered wetland if only two criteria are met. In other situations, areas that meet the wetland definition may not fall under MDEQ jurisdiction because they are not within 500 feet of a river, stream, lake, or pond; do not have a surface water connection to a river, stream, lake, or pond; or are not contiguous and not greater than five acres in size.

2.1.3 Threatened and Endangered Species

Threatened and Endangered species are legally protected by the State of Michigan's Natural Resources and Environmental Protection Act, Act 451 of the Public Acts of 1994, Part 365; and the Federal Endangered Species Act of 1973, as amended. An endangered species (E) under the Acts is defined as being in danger of extinction throughout all or a significant portion of its range. A threatened species (T) under the Acts is likely to become an endangered species within the near future throughout all or a significant portion of its range. Special concern species (SC) are not afforded legal protection under the Acts, but are of concern because of declining or relict populations within Michigan or are species for which more information is needed.

2.2 **Background Information and Reference Map Review**

Prior to conducting the field work, background information was reviewed to establish the probability and approximate location of streams and potential wetlands within the study area. Several sources of information were consulted to identify potential streams, wetlands, and hydric soil units within the study area prior to the investigation. These include the United States Geological Survey (USGS) topographic maps, National Hydrography Dataset (NHD), USFWS National Wetlands Inventory (NWI), and the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil surveys. These sources identify potential drainageways, streams, waterbodies, wetlands, and hydric soil units within the study area.

2.2.1 USGS Topographic and National Hydrography Dataset Map

USGS topographic maps provide a two-dimensional view of the earth's surface utilizing contour lines to show elevation changes. Information contained in these maps varies, but may include waterways (rivers and streams), ponds, lakes, roads, and other regionally significant items. The accuracy of these maps is variable. They can be greatly affected by the date they were created and the amount of development within an area.

The National Hydrography Dataset (NHD) is the surface water component of *The National Map*, as assembled by the USGS. The NHD is a comprehensive set of digital spatial data representing the surface water of the United States using common features such as lakes, ponds, streams, rivers, canals, and oceans. These data are designed for use in general mapping and in the analysis of surface-water systems using geographic information systems (GIS).

The two aforementioned maps were combined to indicate the potential presence of watercourses and waterbodies which may potentially occur within the study area (**Figure 2**). Several primary streams, watercourses, and drainage systems are mapped within the study area (**Table 1**). It should be noted that other smaller, secondary, or unnamed watercourses are also mapped within the study area, but may not be indicated in the summary table.

2.2.2 National Wetland Inventory (NWI) Map

The NWI maps were prepared from high altitude photography and in most cases were not field checked. Because of this, wetlands are sometimes erroneously identified, missed, or misidentified on wetland inventory maps. Additionally, the criteria used to identify these wetlands were different from those currently used by the MDEQ. Wetlands on the NWI maps are classified in accordance with the Cowardin wetland classification system (U.S. Department of the Interior 1979).

The NWI maps identified numerous wetland types within the study area (**Figure 3**). All NWI wetland types which are mapped within the study area are summarized in **Table 2**. Information on wetland type and a description of each wetland type are presented.

2.2.3 Soil Survey

In contrast to the NWI maps, the county soil surveys were developed from actual field investigations. However, they address only one of the three required wetland criteria and may reflect historical conditions rather than current site conditions. The resolution of the soil maps limits their accuracy as well. The mapping units are often generalized based on topography and many mapping units contain inclusions of other soil types for up to 15 percent of the area of the unit. The USACE and MDEQ do not accept the use of either of these maps to make wetland determinations; however, they are used as reference to understand possible site conditions.

The USDA NRCS Soil Survey identified numerous soil types within the survey area (**Figure 4**). All soils which cross the study area are listed in **Table 3**. Information on the map unit symbol, soil unit name, and hydric classification (hydric, partially hydric (contains hydric inclusions), or not hydric) is presented.

2.2.4 Michigan Natural Features Inventory (MNFI) Natural Heritage Database (NHD)

A search of the Michigan Natural Features Inventory Natural Heritage Database indicates four species of concern within one mile of the project study area including:

2.2.4.1 Goldenseal (*Hydrastis canadensis*) - State Threatened

This species prefers rich and shady mesic woodlands under maple canopies. It tends to be associated with wetter conditions near small streams and creeks. It prefers to grow in sandy loam soils with moist forest conditions where little undergrowth is present for competition. This low growing plant is easily identified in the late spring by its single stem that bares one or two leaves, palmately lobed, shiny and wrinkled with a solitary flower ½" wide.

2.2.4.2 Shumard's Oak (*Quercus shumardii*) - State Special Concern

This oak can live under a variety of conditions but prefers southern swamp forests with mesic to wet soils dominated by clay. While this species is listed as Special Concern in Michigan, MDOT does everything possible to protect these species and prevent them from becoming further listed in the future. This species is recognizable by its leaf shape which is similar to red oak (*Quercus rubra*) but has brown gray buds before leaf out. Surveys are best completed after trees have fully developed when acorns are present.

2.2.4.3 American Chestnut (*Castanea dentata*) - State Endangered

This species is known to grow very large and consists of four sub-species. This species prefers full sun and a wide canopy at maturity. It grows best in sandy well drained soils that hold adequate moisture and are acidic in nature. The species is becoming very rare and is recognized by its vine like bark, leaves with sharply pointed widely spaced teeth and chestnut fruits in the late fall. Surveys are best completed in the summer after the leaves have fully developed.

2.2.4.4 Cup Plant (*Silphium perfoliatum*) - State Threatened

This species is known to inhabit numerous prairie types and woodland edges. This species prefers dry sandy conditions with at least half a day of open sunlight. This species is often found in open fields, woodland fringes and maintained ROW adjacent to highways. This plant is easily recognizable by the opposite cupping leaves and yellow flowers in the fall. Surveys for this species should be completed in late August/September when the plant is flowering.

As the project progresses through the planning phase, additional reviews of the Michigan Natural Features Inventory database will be conducted in order to verify that no new T/E/SC species have been found. If any state or federally listed T/E/SC plant or

animal species are located that will be affected by construction activities, then consultation with the MDNR and the USFWS will be initiated immediately. This may require an Endangered Species Permit from the MDNR or Section 7 Consultation with the USFWS.

No listed animal species records were found within, or near the project limits. Future field surveys will be undertaken based upon project schedule and once the area of direct impact is identified.

2.3 Site Investigation and Field Reconnaissance

2.3.1 Wetland and Stream Delineation

Cardno JFNew conducted wetland investigations of the study area from July 2 to July 26, 2012. The delineation of wetlands within the designated study area was based on the methodology described in the *Corps of Engineers Wetland Delineation Manual* and corresponding *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE 2012) as required by current MDEQ/USACE policy.

Streams were identified based on criteria outlined in Part 301 of NREPA. A watercourse is regulated as a stream if it has a bed, banks, and continued occurrence of water or evidence of flow. For the purposes of this study, streams were included within delineated wetland boundaries.

All wetlands were identified within the study area and nine sets of paired data points were established in representative wetlands that were chosen based on wetland type, location, and habitat quality. According to accepted methodology, paired data points were located on either side of the delineated boundaries to document soil characteristics, evidence of hydrology, and dominant vegetation (**Appendix A**). Complete descriptions of typical soil series can be found in the USDA NRCS Soil Surveys for the subject counties (**Table 3**); however, no attempt was made to confirm any soil series designations during this site assessment.

Wetland boundaries were located using Trimble Geo XH GPS units, capable of sub-meter accuracy. GPS data was downloaded and integrated into the Wetland/Stream Delineation and Vegetative Community Maps (**Figure 5**) using ArcView GIS software. Pursuant to MDOT's request, wetland boundaries were not marked with flags in the field.

Representative photographs of the delineated features are provided in **Appendix B**. These photographs represent the visual documentation of geographic feature conditions at the time of inspection. Photographs of representative wetland data point locations are included in **Appendix C**. The photographs are intended to provide representative visual depictions of all wetlands and representative data points found within the study area. Each wetland complex was labeled with WC (i.e., wetland complex) followed by a three-digit sequential wetland number (e.g., 001, 002, etc.). Data points were labeled with the aforementioned wetland identifier followed by DP1 (i.e., data point 1; wetland) or DP2 (i.e., data point 2; upland).

Additionally, a Michigan Rapid Assessment Method for Wetlands (MiRAM) was completed for representative wetland complexes throughout the study area. Wetland complexes were chosen to encompass a representative range of wetland type, location, and quality present within the study area. The goal of the MiRAM is to assess and compare the functional value of wetlands by assigning them a value based on objective, measurable parameters (Michigan Department of Natural Resources 2012). MiRAM forms for each of the representative wetlands are provided in **Appendix D**.

2.3.2 Stream Assessment

Cardno JFNew conducted stream assessments at six locations within the study area on July 31 and August 1, 2012 in order to provide an understanding of existing stream habitat and biological communities (**Figure 6**). The Michigan Surface Water Assessment Section Procedure 51 Qualitative Biological and Habitat Survey Protocol (Procedure 51) methodology (Michigan Department of Environmental Quality 2008) was used to characterize each stream site. Three streams (Tonquish Creek, Willow Creek, and Fellow's Creek) were selected within areas of potential impact. On each of the three streams, two representative stream reaches were sampled in order to characterize habitat, benthic macroinvertebrate, and fish communities. The streams and sample locations were selected to be representative of watercourses within the study area based on both desktop and field reviews of perennial streams within the study area. Representative photographs of the assessed streams are provided in **Appendix E**.

Macroinvertebrate and fish communities were sampled and analyzed using protocols detailed in the MDEQ's Procedure 51 (Michigan Department of Environmental Quality 2008). For both macroinvertebrates and fish, each stream site was assigned a rating of poor, acceptable, or excellent based on a multi-factor system which generates a score ranging from -9 to 9. The metrics used to generate the macroinvertebrate and fish ratings appear in the field forms provided in **Appendix F**. The fish community at Site 6 (Tonquish Creek) was not sampled due to technical equipment failure.

Habitat conditions at each of the six assessment sites was evaluated based on the *Habitat Assessment Field Data Sheet*, provided in the MDEQ Procedure 51 protocols (Michigan Department of Environmental Quality 2008). The assessment contains two versions (riffle/run and pool/glide); the version used for each stream site was based on local stream morphology and professional judgment by field crews. Stream habitats were rated as poor, marginal, good, or excellent, based on a multi-factor system which generates scores on scales from 0 to 180 (pool/glide version) or 0 to 200 (riffle/run version). The metrics used to evaluate habitat condition appear on the stream assessment data sheets provided in **Appendix F**.

2.3.3 Vegetative Community Assessment and Mapping

Cardno JFNew identified and mapped the general wetland and upland plant communities located within the study area (**Figure 5**). Mapping was completed using a combination of field surveyed boundaries and recent aerial photographs to determine the extent of each plant community type. Three wetland and three upland community types

were identified during the study based on the type of vegetation structure present. Wetland community types included were emergent (dominated by herbaceous vegetation), scrub-shrub (dominated by woody vegetation less than 20 feet in height), and forested (dominated by woody vegetation greater than 20 feet in height). Upland communities included old field (dominated by herbaceous vegetation), shrubland (dominated by woody vegetation less than 20 feet in height), and woodland (dominated by woody vegetation greater than 20 feet in height). Areas primarily used and maintained for commercial or residential purposes were considered developed.

A floristic quality assessment (FQA) was conducted in each wetland complex and in representative upland communities, according to the methodology described in Herman et al. (2001). A floristic quality index (FQI), a measure of habitat quality, was calculated for each wetland complex and representative upland community using a coefficient of conservatism (C) and the total number of species found on the site (n), as follows:

$$FQI = \bar{C}\sqrt{n} \quad \text{where } \bar{C} = \frac{\sum C}{n}$$

The C value is a number ranging from 0 to 10 that indicates the fidelity of a plant species to a particular natural community type. Plants that occur in almost any kind of habitat have a C of 0, and plants that only occur in rare communities have a C of 10. The C values for Michigan plant species were assigned by the Michigan Department of Natural Resources with assistance from local plant experts (Herman et al. 2001). The FQI, therefore, is a measure of the quality of the habitat with respect to its vegetative composition relative to undisturbed habitats of the same type.

According to Herman et al. (2001), natural communities with an FQI value less than 20 have “minimal significance from a natural quality perspective,” and natural communities with an FQI greater than 35 are “floristically important from a statewide perspective.” Thus, a rating of “low quality” was given to communities with an FQI less than 20, a rating of “moderate quality” was given to communities with an FQI between 20 and 35, and a rating of “high quality” was given to communities with an FQI of 35 or greater.

2.3.4 Threatened and Endangered Species Survey

Based on reviews of aerial photographs, national wetland inventory maps, soil survey conditions, and vegetative cover types, it was determined that suitable habitat for all four species identified in the MNFI records within one mile of the study area could persist within the proposed study area.

Field surveys for listed plant species were conducted on May 30, 2012 from 0900-1700 and September 6, 2012 from 0900-1730. All surveys were conducted as meander surveys for plant species. Numerous portions of the ROW along I-275 have been mowed and/or maintained to the ROW fence. Surveys in these areas were conducted at a faster pace than areas that remained less disturbed. The project study area as defined earlier in the document (**Figure 1**) indicates those areas that were surveyed with the exception of the eastern boulevard that is not located within current MDOT ROW. This area is under private ownership and therefore was not surveyed as part of this assessment.

3.0 **RESULTS**

3.1 **Wetland and Stream Delineation**

Cardno JFNew identified 112 wetland complexes within or immediately adjacent to the study area. Stream segments occurred within 19 of the wetland complexes. For the purposes of this study, a wetland complex is defined as a continuous wetland (i.e., not divided by a road, bridge, upland, or other non-wetland feature). Of the wetlands identified within the study area, 62 complexes were identified as emergent wetland (approximately 19.6 total acres), 19 complexes were scrub-shrub wetland (approximately 4.7 acres), and 31 complexes were forested wetlands (approximately 15.7 acres).

It should be noted that not all delineated wetlands are regulated by the MDEQ. Based on the criteria outlined in the Michigan Natural Resources and Environmental Protection Act (P.A. 451 of 1994, Part 303, Wetland Protection), a wetland is regulated if it has a direct or seasonal surface water connection to an inland lake, pond, river, or stream; is within 500 feet of one of the above-mentioned waterbodies; or has a total area greater than 5 acres and is therefore considered contiguous. A list of wetland features identified within the study area during the ecological assessment is presented along with a preliminary determination as to whether each wetland is regulated under Part 303 (**Table 4**). Final determination of the regulatory status of these wetlands resides with the MDEQ.

Preliminary data provided by MDOT indicates that there are several wetlands within and nearby the study area that are currently under MDEQ conservation easements. The wetlands within the study area that are likely under easement include those associated with wc-023, wc-067, and wc-081 (**Figure 5**).

A total of four streams were identified within wetland complexes throughout the study area. These included Tonquish Creek, Willow Creek, Fellows Creek, and a tributary to Willow Creek (**Figure 5**). All of the streams were perennial.

Based on the criteria outlined in the Michigan Natural Resources and Environmental Protection Act (P.A. 451 of 1994, Part 301, Inland Lakes and Streams), a watercourse is regulated as a stream if it has a bed, banks, and continued occurrence of water or evidence of flow. All of the streams identified during the field investigation meet these criteria and are regulated by the MDEQ.

3.2 **Stream Assessment**

On July 31 and August 1, 2012, Cardno JFNew assessed six stream segments on three streams (Tonquish Creek, Willow Creek, and Fellows Creek) within the study area (**Figure 6**). Stream assessments were based on habitat condition, macroinvertebrate community, and fish community according to the MDEQ's Procedure 51 stream sampling protocol. Results of the stream assessments are summarized in **Tables 5 – 9**.

3.2.1 Habitat Assessment

Based on physical and geomorphic characteristics, all of the assessment sites had a habitat rating of “marginal”, except for Site 5 (Willow Creek), which had a habitat rating of “poor” (**Table 5**). Most of the assessment sites were characterized by stained or slightly turbid water, poor bank stability, low sinuosity, and low pool/riffle variability.

3.2.2 Macroinvertebrate Community Assessment

Thirty-two macroinvertebrate taxa were identified within the six stream assessment sites (**Table 6**). Overall, the most abundant taxa was Chironomidae (midges), which typically is an indicator of low water quality when found in high abundance. All of the assessment sites had a macroinvertebrate assessment rating of “poor”, except for Site 2 (Willow Creek), which had a macroinvertebrate assessment rating of “acceptable” (**Table 7**).

3.2.3 Fish Community Assessment

Thirteen species of fish were identified within the six stream assessment sites (**Table 8**). In general, the fish communities were dominated by species tolerant of low water quality. Based on the assessment of fish communities, Tonquish Creek (Site 1) was rated as “poor”; Willow Creek (Sites 2 and 5) was rated as “poor”, and Fellows Creek (Sites 3 and 4) was rated as “acceptable” (**Table 9**).

3.3 **Vegetative Community Assessment**

3.3.1 Vegetative Community Types

A total of six upland and wetland vegetative community types were identified within the study area based on the type of vegetation structure present (**Figure 5**). Photographs of representative plant communities are provided in **Appendix B**. Based on the FQI values generated for each community (**Table 4**), most vegetative communities within the study area were determined to be of low quality utilizing the FQI categories established by Herman et al. (2001). Five main areas, which occurred in woodland or forested wetland communities, were considered to be of moderate quality; there were no high quality areas documented within the study area. Each combination of vegetative community and quality observed within the study area is described below.

Low Quality Palustrine Emergent (PEM) Wetland vegetative communities (approximately 19.6 total acres) had an FQI less than 20 and were generally located as depressions within fields and linear ditches parallel to roadways. These wetlands are dominated by invasive species such as narrow-leaf cattail (*Typha angustifolia*), giant reed (*Phragmites australis*), and purple loosestrife (*Lythrum salicaria*). Other vegetation within these wetlands includes swamp milkweed (*Asclepias incarnata*), fox sedge (*Carex vulpinoidea*), and Dudley’s rush (*Juncus dudleyi*).

Low Quality Palustrine Scrub-shrub (PSS) Wetland vegetative communities (approximately 4.7 total acres) had an FQI less than 20 and were generally located along stream edges and in transitional areas between forested and emergent wetlands. These wetlands are dominated by invasive species such as common buckthorn

(*Rhamnus cathartica*) and glossy buckthorn (*R. frangula*). Other vegetation within these wetlands includes gray dogwood (*Cornus foemina*), silky dogwood (*Cornus amomum*), and narrow-leaf willow (*Salix exigua*).

Low Quality Palustrine Forested (PFO) Wetland vegetative communities (approximately 8.8 total acres) had an FQI less than 20 and were generally located within forested upland/wetland mosaics adjacent to development, and also along stream banks and floodplains. These wetlands are dominated by American elm (*Ulmus americana*), silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), and basswood (*Tilia americana*).

Moderate Quality Palustrine Forested (PFO) Wetland vegetative communities (approximately 6.9 total acres) had an FQI between 20 and 35 and were located within forested upland/wetland mosaics set back from roadways and development. These wetlands are dominated by mature American elm, silver maple, green ash, and basswood and have a relatively diverse understory of shrubs and herbaceous vegetation. These wetlands likely provide habitat for a variety of wildlife, including breeding amphibians.

Low Quality Old Field vegetative communities (approximately 54.7 total acres) had an FQI less than 20 and were generally located alongside developed areas or areas of recent soil and/or vegetative disturbance, or are overgrown lawns. These communities are dominated by exotic species such as common teasel (*Dipsacus sylvestris*), spotted knapweed (*Centaurea maculosa*), white sweet clover (*Melilotus alba*), smooth brome (*Bromus inermis*) and Canada thistle (*Cirsium arvense*). Other vegetation within these sites included Canada goldenrod (*Solidago canadensis*), annual fleabane (*Erigeron annuus*), horseweed (*Conyza canadensis*), fescue (*Festuca arundinacea*), and bluegrass (*Poa compressa*).

Low Quality Shrubland vegetative communities (approximately 20.6 total acres) had an FQI less than 20 and were generally located near developed areas where shrubs and small trees have been allowed to establish among old field vegetation. These communities are dominated by invasive species such as autumn olive (*Elaeagnus umbellata*), honeysuckle (*Lonicera* spp.), multiflora rose (*Rosa multiflora*), and common buckthorn. Other vegetation within these sites includes poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), gray dogwood, and prickly ash (*Zanthoxylum americanum*).

Low Quality Woodland vegetative communities (approximately 27.3 total acres) had an FQI less than 20 and were generally located in woodlots adjacent to development and along streams. These communities were dominated by green ash, American elm, basswood, American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), prickly ash, and Virginia creeper. The understory was typically dominated by invasive species such as autumn olive, honeysuckle, multiflora rose, and common buckthorn.

Moderate Quality Woodland vegetative communities (approximately 27.3 total acres) had an FQI between 20 and 35, and were generally set back from development. These

communities were dominated by American beech, sugar maple, red maple (*Acer rubrum*), red oak (*Quercus rubra*), basswood, and spicebush (*Lindera benzoin*), and have a relatively diverse understory of shrubs and herbaceous vegetation. These areas contain pockets of forested wetland, which may provide suitable breeding habitat for amphibians and a variety of other wildlife.

Developed areas were located in areas where there was little or no natural vegetation due to intensive human land use such as roadways, buildings, or maintained lawns. Floristic Quality Assessments were not conducted in these areas due to their high level of vegetative disturbance.

3.3.2 Threatened and Endangered Species

3.3.2.1 Plants

During the field surveys conducted by both Cardno JFNew and MDOT biologists, no state or federally listed endangered, threatened, or special concern plant species were located within the project study area. Furthermore, the vast majority of this study area no longer serves as suitable habitat for these species due to previous development and ongoing maintenance activities within it.

Given the level of disturbance due to human activity and population density, it is highly unlikely that listed species use the study area for breeding purposes or for foraging on a persistent basis.

3.3.2.2 Animals

Site visits to document wildlife use within the project study area were undertaken during the spring of 2013. Observations were collected by use of both point counts and timed meander searches of the major cover types found within and along the study area. Land use adjacent to existing natural cover (native or adventive vegetative cover exclusive of turf or ornamental plantings) includes commercial and residential areas, and associated transportation infrastructure. All wildlife species observed during site visits as well as observations obtained from the Friends of the Rouge (FOTR) Frog and Toad Survey, eBird, and the Michigan Breeding Bird Atlas I and II (MBBA I/II) are presented in **Table 10**.

A total of seven amphibians, zero reptiles, three mammals, and 105 birds were documented from the study area, or areas within 0.5 miles of the study area (**Figure 1**). Existing data sets used to compile **Table 10** represent different time periods and two vertebrate groups; amphibians and birds. No data sets were found for reptiles and mammals at a spatial scale that would provide meaningful information for the study area. The Frog and Toad Survey spans a period of six years (2007-2012), while the dates of observations from eBird that were available represent the years and months of 2000 (May), 2001 (May), 2002 (May), 2009 (Oct), 2013 (Feb, Apr). The MBBA data represent observations collected during the breeding seasons from 1983-1988 (MBBA I) and 2001-2008 (MBBA II). MDOT field surveys conducted on April 22 and May 9, 2013 documented species listed under the MDOT column of **Table 10**.

The use of citizen science data from the FOTR Frog and Toad Survey and eBird represent the best available data for these vertebrate groups at a scale that is suitable for inclusion in an overview of the region surrounding the study area. Observations relating to use of the remaining areas of forested cover directly adjacent to the project by birds was possible by using a combination of MBBA data and eBird observations. Bird observations collected at the William P. Holliday Forest and Wildlife Preserve approximately 0.5 mile from the north end of the study area allowed for extrapolation from this forested preserve to the remaining forested cover directly adjacent to I-275 on the east and south of Ford Road.

Although no formal threatened and endangered species field surveys were conducted during the course of the wetland, stream, and vegetative community studies, three trees which may provide suitable habitat for the federally endangered Indiana bat (*Myotis sodalis*) were observed by Cardno JFNew within the moderate quality woodlands (Figure 5). These potentially suitable roost trees all were dead or dying with at least 10% exfoliating bark, were at least 3 inches diameter at breast height (DBH), and had sufficient solar exposure along a wooded edge or in a canopy gap.

4.0 DISCUSSION AND RECOMMENDATIONS

Cardno JFNew performed ecological assessments of the I-275 study area in Canton Township, Wayne County, Michigan from July 2 to August 1, 2012. These ecological assessments included regulatory wetland delineations, vegetative community assessments, and Michigan Surface Water Assessment Section Procedure 51 Qualitative Biological and Habitat Survey Protocol (Procedure 51) evaluations. MDOT biologists performed additional threatened and endangered species assessments within the study area from May 30, 2012 through May 9, 2013.

4.1 Wetland and Stream Delineation

A total of 112 wetland complexes, of which 19 contained stream segments, were identified within or immediately adjacent to the study area. Of the 112 wetland complexes identified during the study, 110 are likely regulated by the MDEQ under Part 303 of P.A. 452 due to their close proximity to a river, stream, lake, or pond, or because they are greater than five acres in size. The remaining 2 delineated wetlands are, in our opinion, not likely regulated by the MDEQ since they appear to be greater than 500 feet away from any defined waterbody or watercourse and are less than five acres in size (Table 4). Any dredging, draining, filling, or construction in any of the regulated wetlands will require a permit from the Michigan Department of Environmental Quality (MDEQ) under Part 303.

All four streams identified in the study area (Tonquish Creek, Willow Creek, Fellows Creek, and a tributary to Willow Creek; Figure 5) have a defined bed and bank, meet the MDEQ definition of a stream, and are therefore regulated under Part 301 of P.A. 451. Any manipulation of regulated lakes, ponds, streams, or drains will require a permit from the MDEQ under Part 301.

While this report represents our best professional judgment based on our knowledge and experience, it is important to note that the MDEQ and USACE have final discretionary authority over all jurisdictional determinations of wetlands, streams, and waterbodies within the state of Michigan.

4.2 Stream Assessment

The macroinvertebrate community, fish community, and habitat conditions were assessed at six locations along three streams within the study area. In all streams, macroinvertebrate and fish communities were rated as poor or acceptable, and habitat conditions were rated as poor or marginal. These conditions are typical of streams in highly urbanized settings. Urban streams often experience high stormwater flows and high inputs of sediments, road salts, and other pollutants because of the high percentage of impervious surfaces within the watershed. These conditions can reduce the quality of instream habitat and prohibit the full development of macroinvertebrate and fish communities. Because the streams located within the study area are already of low ecological quality, it is the professional opinion of Cardno JFNew that proposed project activities may have minimal impact on the quality of stream resources within the study area. Applicable water resource regulations and permit conditions will serve to protect or potentially enhance existing stream conditions.

4.3 Vegetative Community Assessment

Six distinct vegetative community types were identified within the study area, of which three were wetland and three were upland. Based on FQI values, most areas were considered to be low quality. Five main areas of moderate quality occurred in woodland and forested wetland vegetative communities; there were no high quality areas documented within the study area. Therefore, it is the professional opinion of Cardno JFNew that proposed project activities may have minimal impact on most vegetative communities within the study area. However, Cardno JFNew recommends avoiding construction activities that would impact the moderate quality woodlands because of their higher ecological quality and their potential to provide suitable habitat for Indiana bat and/or other threatened and endangered species.

4.4 Threatened and Endangered Species Assessment

No state or federally listed plant or animal species were observed within the study area during the field surveys. Based on the findings of the field surveys and vegetative community assessments performed for this project, it is highly unlikely that there are state or federally listed plant or animal species within the project limits. Since there are no listed species present, no further coordination is currently required with the Michigan Department of Natural Resources (state listed species) or the U.S. Fish and Wildlife Service (federally listed species).

5.0 REFERENCES

- Brewer, R., G.A. McPeck, and R.J. Adams, Jr. 1991. *The Atlas of Breeding Birds of Michigan*. Michigan State University Press. East Lansing, MI.
- Chartier, A.T., J.J. Baldy, and J.M. Brenneman. 2011. *The Second Michigan Breeding Bird Atlas, 2002-2008*. Kalamazoo Nature Center. Kalamazoo, MI. Accessed online at: www.MIBirdAtlas.org.
- Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual*. Technical report Y-87-1. U.S. Army Engineers Waterways Experiment Station, Vicksburg, Mississippi. On-line version.
- Friends of the Rouge. 2007 – 2012. Rouge River Frog and Toad Survey. University of Michigan, Dearborn. Accessed online at: <http://therouge.org/index.php?id=692869>.
- Herman, K.D., L.A. Masters, M.R. Penskar, A.A. Reznicek, G.S. Wilhelm, W.W. Brodovich, and K.P. Gardiner. 2001. *Floristic Quality Assessment with Wetland Categories and Examples of Computer Applications for the State of Michigan*. Report by the MI Dept. of Natural Resources, Wildlife Division, Natural Heritage Program. Michigan Natural Features Inventory report number 2001-17. 19 pp. + appendices.
- Lichvar, R.W. 2012. *The National Wetland Plant List*. USACE Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH. 224 pp.
- Lichvar, R.W. and J.T. Kartesz. 2009. *North American digital flora: national wetland plant list, version 2.4.0*. USACE Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. Accessed https://wetland_plants.usace.army.mil.
- Michigan Department of Environmental Quality: Water Bureau. 2008. *Qualitative Biological and Habitat Survey Protocols for Wadeable Streams and Rivers: Revised 2008*. Lansing, MI.
- Michigan Department of Natural Resources. 2012. *Michigan Rapid Assessment Method for Wetlands (MiRAM), Version 2.1*. DNRE, Lansing, Michigan.
- Reed, P.B., Jr. 1988. *National list of plant species that occur in wetlands: national summary*. U.S. Fish and Wildlife Service Biological Report 88(24). 244 pp.
- Sullivan, B.L., C.L. Wood, M.J. Iliff, R.E. Bonney, D. Fink, and S. Kelling. 2009. eBird: a Citizen-based Bird Observation Network in the Biological Sciences. *Biological Conservation* 142: 2282-2292.

- U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, C.V. Noble, and J.F. Berkowitz. ERDC/EL TR-12-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Department of the Interior. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-79/31. L.M. Cowardin, V. Carter, F. Golet, and E.T. LaRoe. Washington DC: Fish and Wildlife Service Office of Biological Services.

TABLES

Table 1. Primary Rivers, Streams, and Drainage Systems Mapped within the Study Area

Watercourse
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area
Fellows Creek
Tonquish Creek
Willow Creek

Table 2. NWI Wetland Types Mapped within the Study Area

Wetland Type (Symbol)	Wetland Classification Description
Michigan Department of Transportation I-275 and M-153 (Ford Road) Study Area	
PEMAd	Palustrine, Emergent, Temporarily Flooded, Partially Drained/Ditched
PEMB	Palustrine, Emergent, Saturated
PFOC	Palustrine, Forested, Seasonally Flooded
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
PUBGx	Palustrine, Unconsolidated Bottom, Intermittently Exposed, Excavated

Table 3. Soil Types Mapped within the Study Area

Map Unit Symbol	Soil Unit Name	Hydric Classification
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area		
Ba	Belleville loamy fine sand	Partially Hydric
BbB	Blount loam, 0 to 4 percent slopes	Partially Hydric
BcA	Blount-Pewamo loams, 0-2 percent slopes	Partially Hydric
Co	Corunna fine sandy loam	Partially Hydric
Cu	Cut and fill land	Unknown Hydric
Gf	Gilford sandy loam	Partially Hydric
Gr	Granby loamy fine sand	Partially Hydric
KnA	Kibbie fine sandy loam, 0 to 3 percent slopes	Partially Hydric
Ma	Made land	Unknown Hydric
MeA	Metamora sandy loam, 0 to 3 percent slopes	Partially Hydric
MfA	Metamora-Pewamo complex, 0 to 3 percent slopes	Partially Hydric
MhB	Metea loamy sand, 2 to 6 percent slopes	Not Hydric
OaB	Oakville fine sand, 0 to 6 percent slopes	Not Hydric
OwB	Owosso-Morley complex, 2 to 6 percent slopes	Not Hydric
Pc	Pella silt loam	Partially Hydric
Pe	Pewamo loam	Partially Hydric
SeA	Selfridge loamy sand, 0 to 3 percent slopes	Partially Hydric
ShB	Shoals silt loam	Partially Hydric
So	Sloan silt loam, wet	All Hydric
SpB	Spinks loamy sand, 0 to 6 percent slopes	Not Hydric
TeA	Tedrow loamy fine sand, 0 to 2 percent slopes	Partially Hydric
TfA	Tedrow loamy fine sand, loamy substratum, 0 to 2 percent slopes	Partially Hydric
ThA	Thetford loamy sand, 0 to 2 percent slopes	Partially Hydric
W	Water	Unknown Hydric
WaA	Wasepi loamy sand, 0 to 2 percent slopes	Partially Hydric
WeA	Wasepi loamy sand, loamy substratum, 0 to 2 percent slopes	Partially Hydric

Table 4. Summary of Delineated Wetlands and Representative Upland Communities within the Study Area

Feature ID	Likely Regulatory Status	Acres	FQI
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area			
WC-001	Regulated	0.27	10.3
WC-002	Not Regulated	0.01	9.9
WC-003	Regulated	0.12	4.2
WC-004	Regulated	0.32	6.9
WC-005	Regulated	0.01	5.1
WC-006	Regulated	0.03	6.0
WC-007	Regulated	0.02	1.0
WC-008	Regulated	0.01	3.0
WC-009	Regulated	0.01	0.0
WC-010	Regulated	0.03	3.5
WC-011	Regulated	0.01	8.5
WC-012	Regulated	0.03	4.9
WC-013	Regulated	0.02	3.4
WC-014	Regulated	0.01	3.1
WC-015	Regulated	0.07	8.5
WC-016	Regulated	0.03	7.7
WC-017	Regulated	0.50	10.8
WC-018	Regulated	0.25	8.7
WC-019	Regulated	0.01	8.1
WC-020	Regulated	0.30	8.9
WC-021	Regulated	0.15	5.8
WC-022	Regulated	0.26	13.8
WC-023	Regulated	1.06	11.5
WC-024	Regulated	0.02	3.0
WC-025	Regulated	0.01	5.0
WC-026	Regulated	0.01	10.9
WC-027	Regulated	0.01	8.3
WC-028	Regulated	0.34	10.3
WC-029	Regulated	0.12	6.7
WC-030	Regulated	0.37	6.3
WC-031	Regulated	0.61	11.9
WC-032	Regulated	0.07	4.9
WC-033	Regulated	0.19	10.6
WC-034	Regulated	0.46	6.9
WC-035	Regulated	0.03	5.3
WC-036	Regulated	0.26	10.1
WC-037	Regulated	0.02	7.8
WC-038	Regulated	0.05	4.6
WC-039	Regulated	0.24	6.0
WC-040	Regulated	0.48	14.0
WC-041	Regulated	0.26	11.1
WC-042	Regulated	0.21	9.6
WC-043	Regulated	0.01	4.0
WC-044	Regulated	0.17	9.2
WC-045	Regulated	0.53	6.8
WC-046	Regulated	0.05	3.9

Table 4. Summary of Delineated Wetlands and Representative Upland Communities within the Study Area

Feature ID	Likely Regulatory Status	Acres	FQI
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area			
WC-047	Regulated	0.25	7.0
WC-048	Regulated	0.15	7.8
WC-049	Regulated	0.08	6.6
WC-050 Along Ditch	Regulated	0.70	9.3
WC-050 Along Stream	Regulated	1.04	10.9
WC-051	Regulated	1.38	12.9
WC-052	Regulated	0.26	7.8
WC-053	Regulated	0.26	10.7
WC-054	Regulated	0.16	4.1
WC-055	Regulated	0.04	2.3
WC-056	Regulated	0.02	4.9
WC-057	Not Regulated	0.53	9.6
WC-058	Regulated	4.93	11.5
WC-059	Regulated	0.52	9.3
WC-060	Regulated	0.08	3.0
WC-061	Regulated	0.15	8.3
WC-062	Regulated	0.12	4.9
WC-063	Regulated	0.06	6.5
WC-064	Regulated	0.02	4.0
WC-065	Regulated	0.14	13.2
WC-066	Regulated	0.09	11.6
WC-067 Along Ditch	Regulated	2.46	11.9
WC-067 Along Stream	Regulated	2.04	12.2
WC-068	Regulated	0.03	13.4
WC-069	Regulated	0.29	11.5
WC-070	Regulated	0.12	7.9
WC-071	Regulated	0.16	4.2
WC-072	Regulated	0.04	11.3
WC-073	Regulated	0.07	7.1
WC-074	Regulated	0.15	19.4
WC-075	Regulated	0.40	8.7
WC-076	Regulated	0.03	9.8
WC-077	Regulated	0.13	17.2
WC-078	Regulated	0.01	2.0
WC-079	Regulated	0.32	18.3
WC-080	Regulated	0.01	8.1
WC-081	Regulated	2.47	25.6
WC-082	Regulated	0.41	13.2
WC-083	Regulated	0.00	7.3
WC-084	Regulated	0.03	5.8
WC-085	Regulated	1.38	16.9
WC-086	Regulated	0.02	4.0
WC-087	Regulated	0.26	7.6
WC-088	Regulated	0.05	4.0
WC-089	Regulated	0.33	11.4

Table 4. Summary of Delineated Wetlands and Representative Upland Communities within the Study Area

Feature ID	Likely Regulatory Status	Acres	FQI
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area			
WC-090	Regulated	0.98	8.2
WC-091	Regulated	0.26	12.6
WC-092	Regulated	0.04	8.7
WC-093	Regulated	0.07	6.7
WC-094	Regulated	0.92	9.4
WC-095	Regulated	0.02	9.5
WC-096	Regulated	0.04	1.5
WC-097	Regulated	0.02	6.3
WC-098	Regulated	0.03	8.3
WC-099	Regulated	0.07	5.9
WC-100	Regulated	0.01	3.0
WC-101	Regulated	0.15	12.1
WC-102	Regulated	0.04	9.5
WC-103	Regulated	0.03	10.8
WC-104	Regulated	4.40	23.8
WC-105	Regulated	0.02	10.0
WC-106	Regulated	0.14	15.0
WC-107	Regulated	0.83	11.1
WC-108	Regulated	0.05	7.8
WC-109	Regulated	0.01	7.9
WC-110	Regulated	0.37	13.0
WC-111	Regulated	0.36	12.5
WC-112	Regulated	0.02	10.8
Representative Old Field 1	N/A	4.52	5.1
Representative Old Field 2	N/A	1.90	11.7
Representative Shrubland 1	N/A	1.94	5.8
Representative Shrubland 2	N/A	2.52	8.3
Representative Woodland 1	N/A	8.19	12.0
Representative Woodland 2	N/A	1.37	7.0
Representative Woodland 3	N/A	6.59	22.5
Representative Woodland 4	N/A	7.85	32.5
Representative Woodland 5	N/A	5.00	20.2

Table 5. Summary of Stream Habitat Scores within the Study Area

Stream	Habitat Score	Habitat Rating
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area		
Tonquish Creek - Site 1	95	Marginal
Willow Creek - Site 2	63	Marginal
Fellows Creek - Site 3	59	Marginal
Fellows Creek - Site 4	70	Marginal
Willow Creek - Site 5	52	Poor
Tonquish Creek - Site 6	87	Marginal

Table 6. Summary of Stream Macroinvertebrate Sampling Results within the Study Area

TAXA	Tonquish Creek Site 1	Willow Creek Site 2	Fellows Creek Site 3	Fellows Creek Site 4	Willow Creek Site 5	Tonquish Creek Site 6
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area						
PLATYHELMINTHES (flatworms)						
Turbellaria	0	1	4	3	0	0
ANNELIDA (segmented worms)						
Hirudinea (leeches)	0	4	2	0	0	0
Oligochaeta (worms)	2	6	1	4	0	0
ARTHROPODA						
Crustacea						
Amphipoda (scuds)	8	3	0	4	2	0
Decapoda (crayfish)	23	7	10	13	16	17
Isopoda (sowbugs)	0	0	7	3	4	0
Hydracarina	1	0	0	0	0	0
Insecta						
Ephemeroptera (mayflies)						
Baetidae	2	0	0	0	0	0
Odonata						
Anisoptera (dragonflies)						
Aeshnidae	0	0	1	0	0	1
Gomphidae	0	9	0	0	0	0
Libellulidae	0	3	0	0	0	0
Zygoptera (damselflies)						
Calopterygidae	1					
Coenagrionidae	24	12		6		1
Hemiptera (true bugs)						
Corixidae	3	0	9	0	0	0
Gerridae	17	0	0	0	4	5
Notonectidae	0	0	4	0	0	0
Pleidae	0	0	0	1	1	0
Veliidae	0	0	0	1	0	0
Trichoptera (caddisflies)						
Hydropsychidae	34	0	0	22	0	0
Limnephilidae	0	0	0	3	0	0

Table 6. Summary of Stream Macroinvertebrate Sampling Results within the Study Area

TAXA	Tonquish Creek Site 1	Willow Creek Site 2	Fellows Creek Site 3	Fellows Creek Site 4	Willow Creek Site 5	Tonquish Creek Site 6
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area						
Coleoptera (beetles)						
Dytiscidae (total)	0	2	0	0	0	0
Psephenidae (adults)	0	0	48	0	0	0
Elmidae	4	0	0	0	0	0
Diptera (flies)						
Ceratopogonidae	2	0	0	0	0	0
Chironomidae	114	51	42	70	72	14
Simuliidae	4	0	0	0	0	0
MOLLUSCA						
Gastropoda (snails)						
Ancylidae (limpets)	14	0	4	29	0	3
Physidae	0	69	12	4	0	1
Planorbidae	0	0	0	1	0	0
Viviparidae	0	1	0	0	0	0
Pelecypoda (bivalves)						
Sphaeriidae (clams)	0	28	17	0	0	0
Corbiculidae	0	7	0	8	4	0
Total Individuals	253	203	161	172	103	42

Table 7. Summary of Stream Macroinvertebrate Metric Evaluation within the Study Area

Macroinvertebrate Metrics	Tonquish Creek Site 1		Willow Creek Site 2		Fellows Creek Site 3		Fellows Creek Site 4		Willow Creek Site 5		Tonquish Creek Site 6	
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area												
	Metric Value	Metric Score	Metric Value	Metric Score	Metric Value	Metric Score	Metric Value	Metric Score	Metric Value	Metric Score	Metric Value	Metric Score
Metric 1 - Total Number Of Taxa	15	0	14	0	13	0	15	0	7	-1	8	-1
Metric 2 - Number Of Mayfly Taxa	1	-1	0	-1	0	-1	0	-1	0	-1	0	-1
Metric 3 - Number Of Caddisfly Taxa	1	-1	0	-1	0	-1	2	0	0	-1	0	-1
Metric 4 - Number Of Stonefly Taxa	0	-1	0	-1	0	-1	0	-1	0	-1	0	-1
Metric 5 - Percent Mayfly Composition	0.07%	-1	0%	-1	0%	-1	0%	-1	0%	-1	0%	-1
Metric 6 - Percent Caddisfly Composition	0%	-1	0%	-1	0%	-1	15%	-1	0%	-1	5%	-1
Metric 7 - Percent Dominant Taxon	45%	-1	34%	0	30%	0	41%	-1	70%	-1	40%	-1
Metric 8 - Percent Isopod, Snail, Leech	6%	0	2%	1	8%	0	19%	-1	0%	1	7%	0
Metric 9 - Percent Surface Dependent	9%	0	0.98%	1	38%	-1	1%	1	2%	1	12%	1
Total of Metric Scores	-6		-3		-6		-5		-5		-6	
Macroinvertebrate Community Rating	Poor		Acceptable		Poor		Poor		Poor		Poor	

Table 8. Summary of Stream Fish Sampling Results within the Study Area

Common Name	Scientific Name	Tonquish Creek Site 1	Willow Creek Site 2	Fellows Creek Site 3	Fellows Creek Site 4	Willow Creek Site 5	Tonquish Creek Site 6
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area							
Blacknose dace	<i>Rhinichthys atratulus</i>	16					no data
Bluegill	<i>Lempomis macrochirus</i>	1			1	2	no data
Bluntnose minnow	<i>Pimephales notatus</i>		3			29	no data
Central mudminnow	<i>Umbra limi</i>				1		no data
Central stoneroller	<i>Campostoma anomalum pullum</i>				2		no data
Common shiner	<i>Luxilus cornutus</i>		1	3	6	5	no data
Creek chub	<i>Semotilus atromaculatus</i>	35	5		51	83	no data
Fathead minnow	<i>Pimephales promelas</i>	28					no data
Green sunfish	<i>Lempomis cyanellus</i>	3	2	1	31	14	no data
Johnny darter	<i>Etheostoma nigrum nigrum</i>	2	11	74	117	31	no data
Largemouth bass	<i>Micropterus salmoides</i>		1	1			no data
Mottled sculpin	<i>Cottus bairdii</i>				1		no data
White sucker	<i>Catostomus commersonii</i>				12	1	no data
	Total	85	23	79	222	165	no data

Table 9. Summary of Stream Fish Metric Evaluation within the Study Area

Fish Metrics	Tonquish Creek Site 1		Willow Creek Site 2		Fellows Creek Site 3		Fellows Creek Site 4		Willow Creek Site 5		Tonquish Creek Site 6
Michigan Department of Transportation I-275 at M-153 (Ford Road) Study Area											
Measurements											
Water temperature (F°)	74		76		76		75		77		no data
Total time in station (minutes)	50		40		48		50		47		no data
Total number of fish identified	85		23		79		222		165		no data
Metrics											
Metric 1 - Total Number of Fish Species	6	-1	6	-1	4	-1	9	0	7	-1	no data
Metric 2 - Number of Darter Species	1	-1	1	-1	1	-1	1	-1	1	-1	no data
Metric 3 - Number of Sunfish Species	2	0	1	-1	1	-1	2	0	2	0	no data
Metric 4 - Number of Sucker Species	0	-1	0	-1	0	-1	1	-1	1	0	no data
Metric 5 - Number of Intolerant Species	0	-1	0	-1	0	-1	1	-1	0	-1	no data
Metric 6 - Percentage of Total Sample as Omnivores	93%	-1	35%	0	0%	1	30%	0	68%	-1	no data
Metric 7 - Percentage of Total Sample as Insectivorous Fish	7%	-1	57%	0	99%	1	70%	1	30%	-1	no data
Metric 8 - Percentage of Total Sample as Piscivores	0%	-1	4%	0	1%	0	0%	-1	0%	-1	no data
Metric 9 - Percentage of Total Sample as Tolerant Species	99%	-1	91%	-1	95%	-1	95%	-1	96%	-1	no data
Metric 10 - Percentage of Total Sample as Simple Lithophilic Spawners	19%	0	4%	0	4%	0	8%	0	4%	0	no data
Total of Metric Scores	-8		-6		-4		-4		-7		no data
Fish Community Rating	Poor		Poor		Acceptable		Acceptable		Poor		no data

Table 10. Summary of Documented Vertebrate Species

Common Name	Scientific Name	FOTR ¹	eBird ²	MBBA I/II ³	MDOT ⁴	Map Location ⁵
Wood Frog	<i>Rana sylvatica</i>	X				outside mapped limits
Chorus Frog	<i>Psuedacris triseriata</i>	X			X	WC-104
Spring Peeper	<i>Psuedacris crucifer</i>	X				outside mapped limits
American Toad	<i>Bufo americanus</i>	X				outside mapped limits
Leopard Frog	<i>Rana pipiens</i>	X				outside mapped limits
Gray Tree Frog	<i>Hyla versicolor</i>	X			X	outside mapped limits
Green Frog	<i>Rana calmitans</i>	X				outside mapped limits
Raccoon	<i>Procyon lotor</i>				X	WC-061 and WC-066
Fox Squirrel	<i>Sciurus niger</i>				X	woodland
White-tailed Deer	<i>Odocoileus virginianus</i>				X	WC-012
Canada Goose	<i>Branta canadensis</i>			/ - ON	X	developed and wetland
Wood Duck	<i>Aix sponsa</i>		X	P - P	X	woodland and edge
Mallard	<i>Anas platyrhynchos</i>		X	FL - NE	X	WC-089, WC-104
Great Egret	<i>Ardea alba</i>			NR - O	X	WC-089
Green Heron	<i>Butorides virescens</i>			NR - V	X	generalist
American Woodcock	<i>Scolopax minor</i>			C - S		open field and shrub
Spotted Sandpiper	<i>Actitis macularius</i>			NR - P		open field
Killdeer	<i>Charadrius vociferous</i>			P - NE	X	WC-066
Ring-billed Gull	<i>Larus delawarensis</i>		X	NR - NR	X	developed
Herring Gull	<i>Larus argentatus</i>			O - NR		developed
Rock Pigeon	<i>Columba livia</i>		X	ON - ON	X	developed
Mourning Dove	<i>Zenaida macroura</i>		X	ON - NB	X	generalist
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>			X - NR		woodland
Eastern Screech-owl	<i>Megascops asio</i>			NY - NR		woodland
Great Horned Owl	<i>Bubo virginianus</i>			FL - ON		woodland
Turkey Vulture	<i>Cathartes aura</i>		X	C - P	X	generalist
Cooper's Hawk	<i>Accipter cooperii</i>			NR - P		woodland
Red-tailed Hawk	<i>Buteo jamaicensis</i>			ON - V		woodland
American Kestrel	<i>Falco sparverius</i>			/ - NR		open field and edge
Ring-necked Pheasant	<i>Phasianus colchicus</i>			P - NR		open field and edge
Northern Bobwhite	<i>Colinus virginianus</i>			X - NR		open field and edge
Chimney Swift	<i>Chaetura pelagica</i>			NR - S		generalist
Ruby-throated Hummingbird	<i>Archilochus colubris</i>			NR - A		woodland
Belted Kingfisher	<i>Megaceryle alcyon</i>			NR - V		stream and lake
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>		X	NR - FY	X	woodland
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>		X	NR - O		woodland
Downy Woodpecker	<i>Picoides pubescens</i>		X	P - FY	X	woodland
Hairy Woodpecker	<i>Picoides villosus</i>		X	NR - FL		woodland
Northern Flicker	<i>Colaptes auratus</i>		X	P - S	X	woodland and edge
Eastern Wood-pewee	<i>Contopus virens</i>		X	X - FL		woodland
Acadian Flycatcher	<i>Empidonax virescens</i>			X - NR		shrub
Willow Flycatcher	<i>Empidonax traillii</i>			X - S		shrub

Table 10. Summary of Documented Vertebrate Species

Common Name	Scientific Name	FOTR ¹	eBird ²	MBBA I/II ³	MDOT ⁴	Map Location ⁵
Least Flycatcher	<i>Empidonax minimus</i>		X	X - NR		woodland
Eastern Phoebe	<i>Sayornis phoebe</i>			NR - ON		generalist
Great Crested Flycatcher	<i>Myiarchus crinitus</i>		X	X - S		woodland
Eastern Kingbird	<i>Tyrannus tyrannus</i>			X - P	X	open field and edge
Blue Jay	<i>Cyanocitta cristata</i>		X	AY - FY	X	woodland
American Crow	<i>Corvus brachyrhynchos</i>		X	ON - NY	X	woodland
Blue-headed Vireo	<i>Vireo solitarius</i>		X			woodland
Yellow-throated Vireo	<i>Vireo flavifrons</i>		X	X - NR		woodland
Red-eyed Vireo	<i>Vireo olivaceus</i>		X	P - P		woodland
Warbling Vireo	<i>Vireo gilvus</i>			X - FY	X	woodland and edge
Cedar Waxwing	<i>Bombycilla cedorum</i>			/ - FL		edge and developed
Verry	<i>Catharus fuscescens</i>		X			woodland
Swainson's Thrush	<i>Catharus ustulatus</i>		X	O - NR		woodland
Hermit Thrush	<i>Catharus guttatus</i>		X		X	woodland
Wood Thrush	<i>Hylocichla mustelina</i>		X	NR - ON		woodland
American Robin	<i>Turdus migratorius</i>		X	AY - NE	X	woodland and edge
Gray Catbird	<i>Dumetella carolinensis</i>		X	X - NB		woodland and edge
Brown Thrasher	<i>Toxostoma rufum</i>			X - NR		edge
European Starling	<i>Sturnus vulgaris</i>		X	AY - FY	X	edge and developed
Red-breasted Nuthatch	<i>Sitta Canadensis</i>		X			Woodland developed
White-breasted Nuthatch	<i>Sitta carolinensis</i>		X	NR - FY	X	woodland
Brown Creeper	<i>Certhia Americana</i>			NR - O		woodland
Carolina Wren	<i>Thryothorus ludovicianus</i>			NR - FL	X	woodland and edge
House Wren	<i>Troglodytes aedon</i>		X	X - FY	X	woodland and edge
Blue-gray Gnatcatcher	<i>Poliopitila caerulea</i>			NR - X	X	woodland
Tree Swallow	<i>Tachycineta bicolor</i>			NR - V	X	generalist
Purple Martin	<i>Progne subis</i>			NY - NR		generalist
Northern Rough-wing. Swallow	<i>Stelgidopteryx serripennis</i>			NR - FY	X	edge and developed
Barn Swallow	<i>Hirundo rustica</i>			ON - FY	X	WC-066
Ruby-crowned Kinglet	<i>Regulus calendula</i>		X		X	woodland and edge
Black-capped Chickadee	<i>Poecile atricapillus</i>		X	P - FY	X	woodland
Tufted Titmouse	<i>Baeolophus bicolor</i>		X	X - FY	X	woodland
Horned Lark	<i>Eremophila alpestris</i>			/ - P		open field
House Sparrow	<i>Passer domesticus</i>		X	AY - NB	X	edge and developed
Pine Siskin	<i>Spinus pinus</i>			O - NR		generalist
American Goldfinch	<i>Spinus tristis</i>		X	ON - FY	X	edge and developed
House Finch	<i>Carpodacus mexicanus</i>		X	P - NE	X	edge and developed
Blue-winged Warbler	<i>Vermivora cyanoptera</i>		X			shrub and edge
Tennessee Warbler	<i>Oreothlypis peregrina</i>		X			woodland
Orange-crowned Warbler	<i>Oreothlypis celata</i>		X			woodland
Nashville Warbler	<i>Oreothlypis ruficapilla</i>		X			woodland
Northern Parula	<i>Setophaga americana</i>		X			woodland
Palm Warbler	<i>Setophaga palmarum</i>		X			woodland
Bay-breasted Warbler	<i>Setophaga castanea</i>		X			woodland

Table 10. Summary of Documented Vertebrate Species

Common Name	Scientific Name	FOTR ¹	eBird ²	MBBA I/II ³	MDOT ⁴	Map Location ⁵
American Redstart	<i>Setophaga ruticilla</i>		X	NR - O		woodland
Black-and-white Warbler	<i>Mniotilta varia</i>		X			woodland
Ovenbird	<i>Seiurus aurocapillus</i>		X	X - O		woodland
Common Yellowthroat	<i>Geothlypis trichas</i>		X	X - S		edge and developed
Yellow Warbler	<i>Setophaga petechia</i>		X	X - S	X	edge and developed
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>		X			woodland
Magnolia Warbler	<i>Setophaga magnolia</i>		X			woodland
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>		X			woodland
Yellow-rumped Warbler	<i>Setophaga coronata</i>		X		X	woodland and edge
Black-throated Green Warbler	<i>Setophaga virens</i>		X			woodland
Blackburnian Warbler	<i>Setophaga fusca</i>		X			woodland
Song Sparrow	<i>Melospiza melodia</i>		X	AY - NY	X	edge and developed
White-throated Sparrow	<i>Zonotrichia albicollis</i>		X			woodland and edge
Dark-eyed Junco	<i>Junco hyemalis</i>		X			edge and developed
Savannah Sparrow	<i>Passerculus sandwichensis</i>		X	A - S		open field
American Tree Sparrow	<i>Spizella arborea</i>		X			open field and edge
Chipping Sparrow	<i>Spizella passerine</i>			X - FL	X	edge and developed
Field Sparrow	<i>Spizella pusilla</i>			X - NR		open field and shrub
Eastern Towhee	<i>Pipilo erythrophthalmus</i>		X	X - NR		edge
Scarlet Tanager	<i>Piranga olivacea</i>		X	NR - O		mesic woodland
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>			NR - V		mesic woodland
Northern Cardinal	<i>Cardinalis cardinalis</i>		X	AY - NE	X	woodland and edge
Indigo Bunting	<i>Passerina cyanea</i>			X - S		woodland and edge
Baltimore Oriole	<i>Icterus galbula</i>		X	X - FY	X	woodland and edge
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			ON - NY	X	WC-033, 095, & 066
Eastern Meadowlark	<i>Sturnella magna</i>			AY		open field
Common Grackle	<i>Quiscalus quiscula</i>		X	P - NY	X	edge and developed
Brown-headed Cowbird	<i>Molothrus ater</i>		X	FL - NE	X	open field and shrub
Bobolink	<i>Dolichonyx oryzivorus</i>			AY		open field

1 FOTR = Friends of the Rouge Frog and Toad Survey (<http://therouge.org/index.php?id=692869>).

2 eBird = eBird (<http://ebird.org>) survey results within 0.5 miles of study area.

3 MBBA I-II = Michigan Breeding Bird Atlas (www.MIBirdAtlas.org). MBBA data represent an entire quarter township in terms of survey area and those species in bold typeface represent species that would be expected to occupy cover types within the study area. Breeding codes are presented below.

OBSERVED

O = Species observed during its breeding season but no evidence of breeding in block. Individual birds in unlikely breeding habitat, flying over, or out of their normal breeding range without any indication of breeding belong in this category.

POSSIBLE

/ or # = Species (male or female) observed in suitable nesting habitat during its breeding season.

X = Singing male present in suitable nesting habitat during its breeding season.

PROBABLE

M = Seven or more singing males present in suitable nesting habitat during their breeding season.

S = Singing male present at same location on at least two dates at least seven days apart or multiple (five or more) singing males on the same date during the breeding season.

P = Pair observed in suitable nesting habitat during its breeding season.

Table 10. Summary of Documented Vertebrate Species

Common Name	Scientific Name	FOTR ¹	eBird ²	MBBA I/II ³	MDOT ⁴	Map Location ⁵
-------------	-----------------	-------------------	--------------------	---------------------------	-------------------	---------------------------

T = Permanent territory presumed through defense (e.g., chasing other birds, or song at the same location on at least two occasions a week or more apart).

C = Courtship behavior or copulation.

N = Visiting probable nest-site.

A = Agitated behavior or anxiety calls from adult(s).

B = Nest building by wrens or excavation of holes by woodpeckers.

CONFIRMED

NB = Nest building by all except woodpeckers and wrens.

PE = Physiological evidence of breeding (e.g., highly vascularized, edematous incubation [brood] patch or egg in oviduct) based on bird in hand. Banders or biologists actually handling the birds are to use this code.

DD = Distraction display or injury feigning.

UN = Used nest or eggshells found. (These must be carefully identified.)

FL = Recently fledged young (of altricial species) incapable of sustained flight or downy young (of precocial species) restricted to the natal area by dependence on adults or limited mobility.

ON = Occupied nest: adults entering or leaving nest site in circumstances indicating occupied nest (includes high nests or nest holes, the contents of which cannot be seen) or adult incubating or brooding.

AY = Attending young: adult carrying fecal sac or food for young, or feeding recently fledged young.

FY = Adults with food for young (carrying food) or feeding young. Use caution as some species will continue to feed young for a number of weeks after leaving the nest and may move some distance.

FS = Adult carrying fecal sac.

NE = Nest with egg(s).

NY = Nest with young seen or heard. Presence of a Brown-headed Cowbird egg or young is confirmation for both the cowbird and the host species.

NR = Not Reported during atlas period.

4 MDOT = Michigan Department of Transportation biologist observation

5 Map Location = Location of observation or suitable habitat as depicted on Figure 5 Wetland/Stream Delineation and Vegetative Community Maps

FIGURES

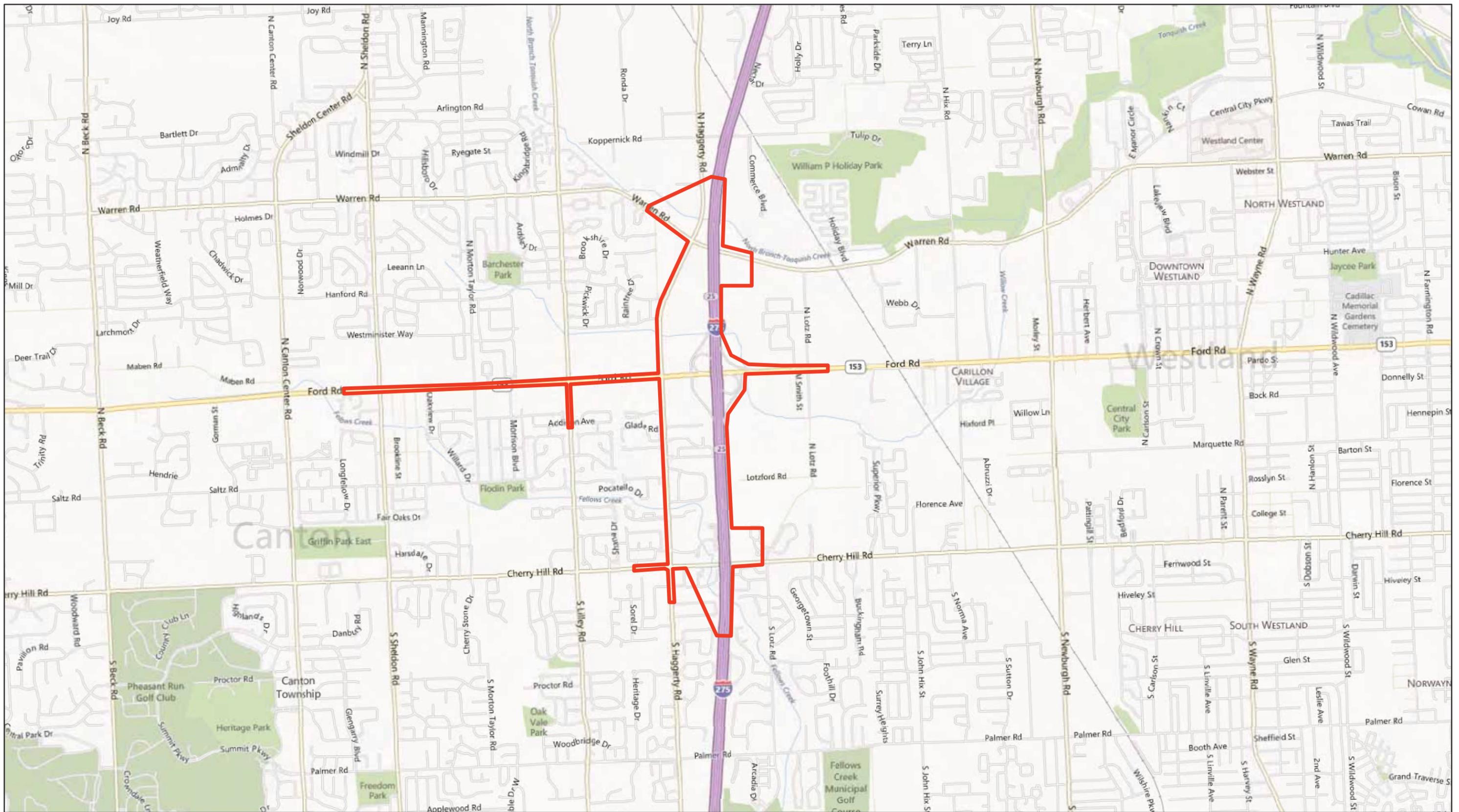


Figure 1:
Location Map
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan



0 1,250 2,500 5,000 Feet
 1 inch = 2,500 feet

 Study Area Boundary



Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnojfnew.com

Source:
 Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/8/2013 11:16:24 AM
 Path: R:\Projects\12011201079_WilburSmith_I275_M153\GIS\20120821_Fig1_Location.mxd

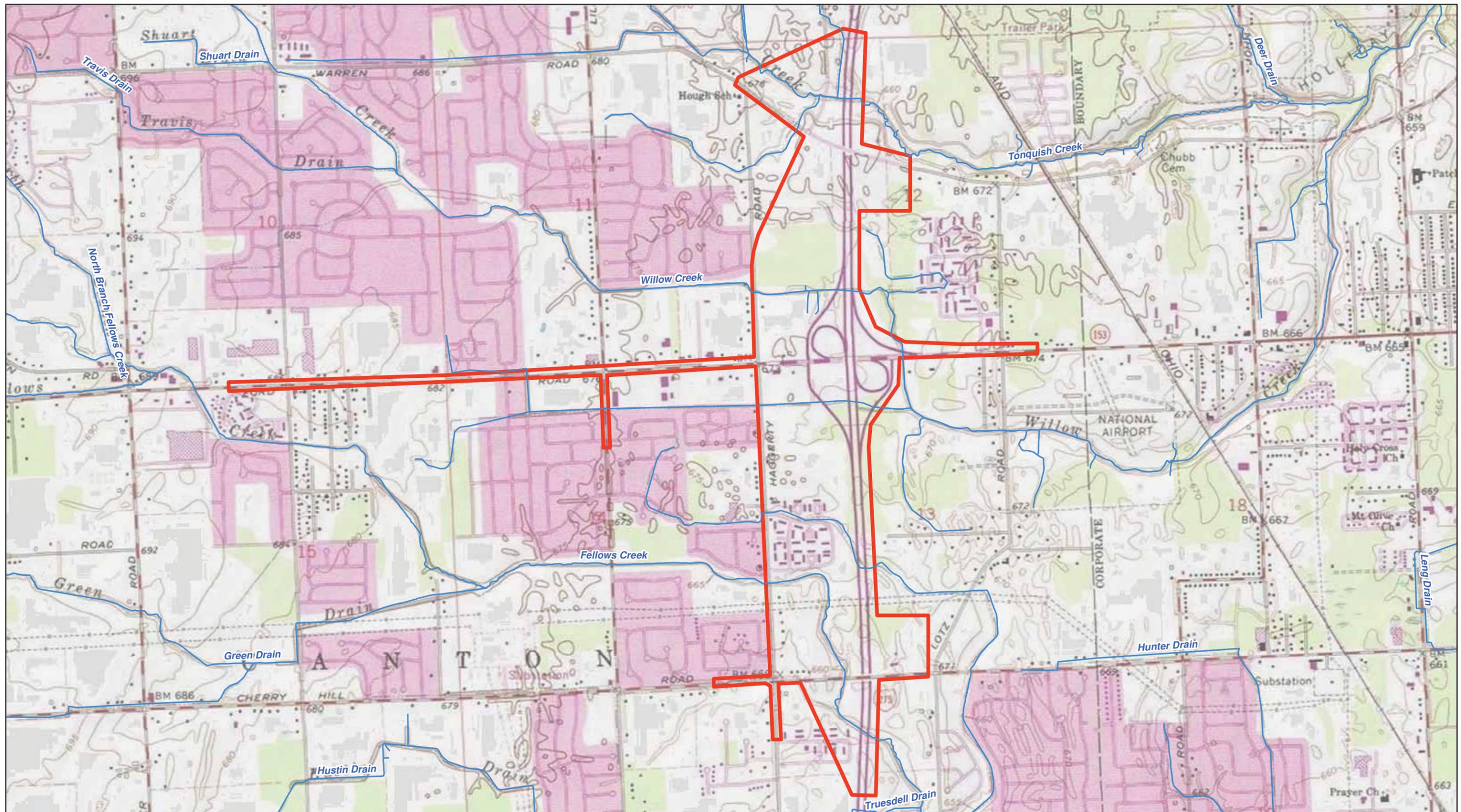
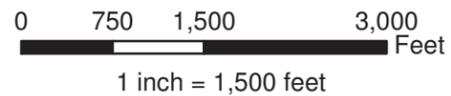


Figure 2:
USGS Topographic and National Hydrography Dataset Map
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan
 January 2013
 Job No. 1201079.00

Source:
 USA Topo Maps - Copyright © 2011 National Geographic Society, i-cubed
 Date Saved: 1/8/2013 11:17:46 AM
 Path: R:\Projects\12011201079_WilburSmith_I275_M153\GIS\20120821_Fig2_Topo_NHD.mxd



- National Hydrography Dataset (NHD)
- Study Area Boundary



Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnojfnew.com

CLASSIFICATION	WETLAND CLASSIFICATION DESCRIPTION
PEMAd	Palustrine, Emergent, Temporarily Flooded, Partly Drained/Ditched
PEMB	Palustrine, Emergent, Saturated
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
PFOC	Palustrine, Forested, Seasonally Flooded
PSS1C	Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded
PUBGx	Palustrine, Unconsolidated Bottom, Intermittently Exposed, Excavated



Figure 3:
National Wetland Inventory Map
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00



0 750 1,500 3,000
 Feet
 1 inch = 1,500 feet

 National Wetland Inventory (NWI)
 Study Area Boundary



Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnojfnew.com

Source:
 Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 1:26:50 PM
 Path: R:\Projects\12011201079_WilburSmith_I275_M153\GIS\20120821_Fig3_NWI.mxd

Symbol	Name	Symbol	Name
Ba	Belleville loamy fine sand	OwB	Owosso-Morley complex, 2 to 6 percent slopes
BbB	Blount loam, 0 to 4 percent slopes	Pc	Pella silt loam
BcA	Blount-Pewamo loams, 0 to 2 percent slopes	Pe	Pewamo loam
Co	Corunna fine sandy loam	SeA	Selfridge loamy sand, 0 to 3 percent slopes
Cu	Cut and fill land	ShB	Shoals silt loam
Gf	Gilford sandy loam	So	Sloan silt loam, wet
Gr	Granby loamy fine sand	SpB	Spinks loamy sand, 0 to 6 percent slopes
KnA	Kibbie fine sandy loam, 0 to 3 percent slopes	TeA	Tedrow loamy fine sand, 0 to 2 percent slopes
Ma	Made land	TfA	Tedrow loamy fine sand, loamy substratum, 0 to 2 percent slopes
MeA	Metamora sandy loam, 0 to 3 percent slopes	ThA	Thetford loamy sand, 0 to 2 percent slopes
MfA	Metamora-Pewamo complex, 0 to 3 percent slopes	W	Water
MhB	Metea loamy sand, 2 to 6 percent slopes	WaA	Wasepi loamy sand, 0 to 2 percent slopes
OaB	Oakville fine sand, 0 to 6 percent slopes	WeA	Wasepi loamy sand, loamy substratum, 0 to 2 percent slopes

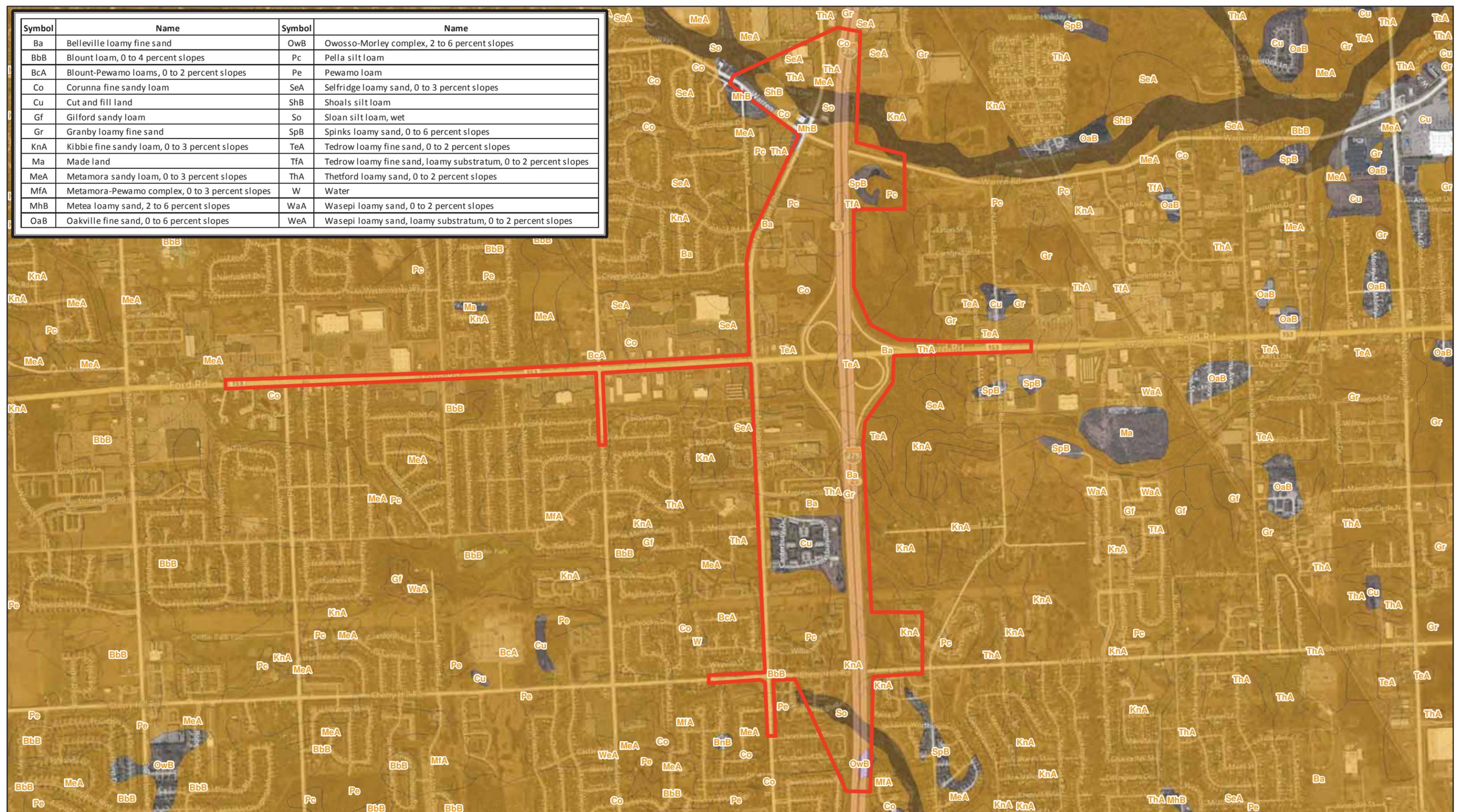


Figure 4:
USDA NRCS Soil Survey Map
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan
 January 2013
 Job No. 1201079.00



 1 inch = 1,500 feet

Source: Soil Survey Geographic (SSURGO) database for Wayne County, Michigan
 URL: <http://SoilDataMart.nrcs.usda.gov/>
 Date Saved: 1/8/2013 11:21:18 AM
 Path: R:\Projects\12\011201079_WilburSmith_I275_M153\GIS\20120822_Fig4_SOILS.mxd

-  Non-Hydric Soils
-  Partially Hydric Soils
-  Hydric Soils
-  Study Area Boundary



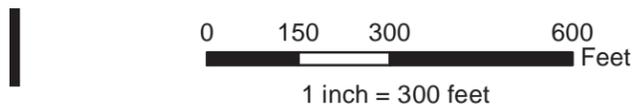

 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
www.cardnojfnew.com



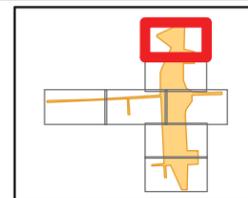
**Figure 5: Sheet 1 of 7
Wetland/Stream Delineation and Vegetative Community Maps
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan**

January 2013
Job No. 1201079.00

Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
Date Saved: 1/10/2013 2:08:44 PM
Path: R:\Projects\120111201079_WilburSmith_I275_M153\GIS\20120821_Fig5_WetCommunities.mxd



- | | |
|------------------------------|-----------------------|
| Potential Bat Roost (Single) | Low Quality Shrubland |
| Stream/River/Drain | Low Quality PEM |
| Developed Land | Low Quality PSS |
| Low Quality Woodland | Low Quality PFO |
| Moderate Quality Woodland | Moderate Quality PFO |
| Low Quality Old Field | Study Area Boundary |



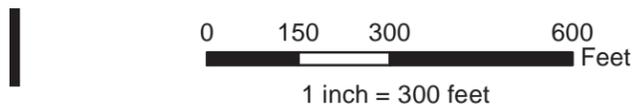
**Cardno
JFNew**
11181 Marwill Avenue, West Olive, MI 49460
Phone 616-847-1680 / Fax 616-847-9970
www.cardnofnew.com



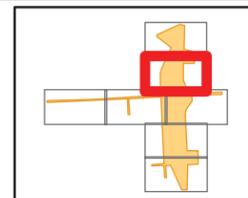
**Figure 5: Sheet 2 of 7
Wetland/Stream Delineation and Vegetative Community Maps
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan**

January 2013
Job No. 1201079.00

Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
Date Saved: 1/10/2013 2:08:44 PM
Path: R:\Projects\12011201079_WilburSmith_I275_M153\GIS\20120821_Fig5_WetlandCommunities.mxd



- | | |
|------------------------------|-----------------------|
| Potential Bat Roost (Single) | Low Quality Shrubland |
| Stream/River/Drain | Low Quality PEM |
| Developed Land | Low Quality PSS |
| Low Quality Woodland | Low Quality PFO |
| Moderate Quality Woodland | Moderate Quality PFO |
| Low Quality Old Field | Study Area Boundary |



**Cardno
JFNew**
11181 Marwill Avenue, West Olive, MI 49460
Phone 616-847-1680 / Fax 616-847-9970
www.cardnofnew.com

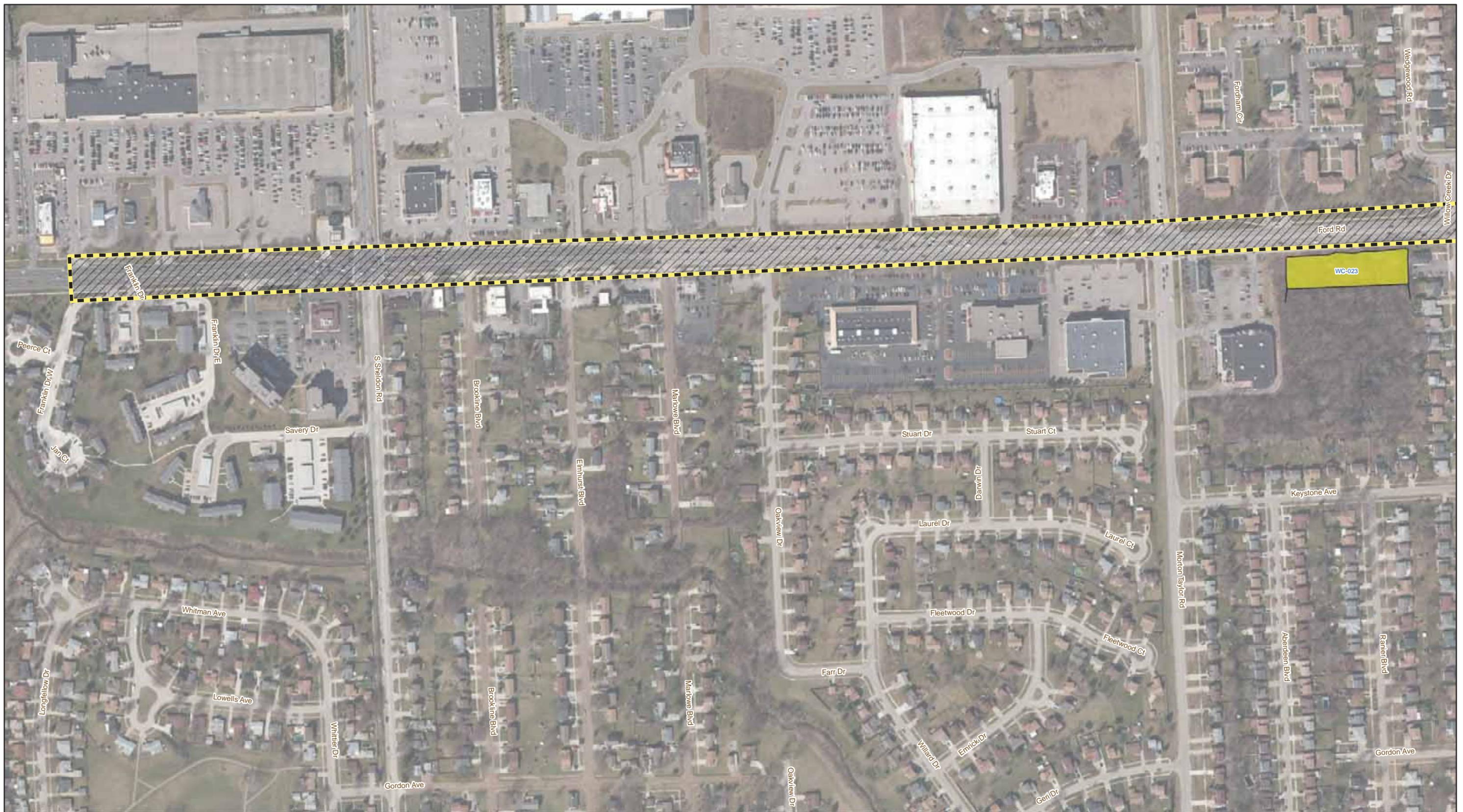
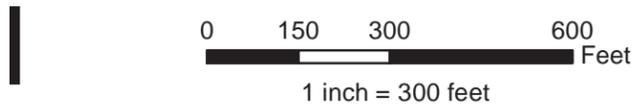


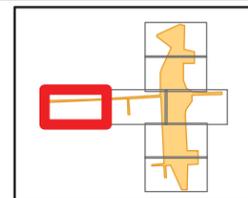
Figure 5: Sheet 3 of 7
Wetland/Stream Delineation and Vegetative Community Maps
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00

Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 2:08:44 PM
 Path: R:\Projects\1201079_WilburSmith_L275_M153\GIS\20120821_Fig5_WindCommunities.mxd



- | | |
|------------------------------|-----------------------|
| Potential Bat Roost (Single) | Low Quality Shrubland |
| Stream/River/Drain | Low Quality PEM |
| Developed Land | Low Quality PSS |
| Low Quality Woodland | Low Quality PFO |
| Moderate Quality Woodland | Moderate Quality PFO |
| Low Quality Old Field | Study Area Boundary |



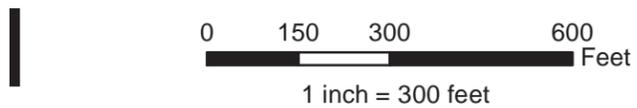
Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com



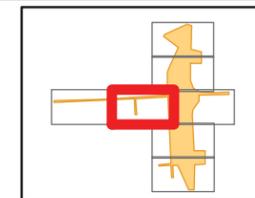
**Figure 5: Sheet 4 of 7
Wetland/Stream Delineation and Vegetative Community Maps
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan**

January 2013
Job No. 1201079.00

Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
Date Saved: 1/10/2013 2:08:44 PM
Path: R:\Projects\1201079\WiburSmith_I275_M153\GIS\20120821_Fig5_WindCommunities.mxd



- | | |
|------------------------------|-----------------------|
| Potential Bat Roost (Single) | Low Quality Shrubland |
| Stream/River/Drain | Low Quality PEM |
| Developed Land | Low Quality PSS |
| Low Quality Woodland | Low Quality PFO |
| Moderate Quality Woodland | Moderate Quality PFO |
| Low Quality Old Field | Study Area Boundary |



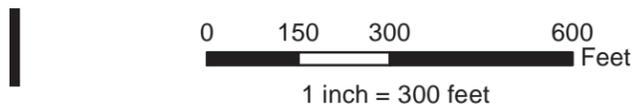
**Cardno
JFNew**
11181 Marwill Avenue, West Olive, MI 49460
Phone 616-847-1680 / Fax 616-847-9970
www.cardnofnew.com



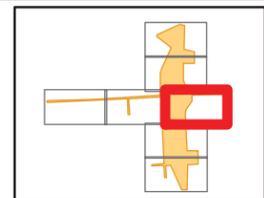
**Figure 5: Sheet 5 of 7
Wetland/Stream Delineation and Vegetative Community Maps
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan**

January 2013
Job No. 1201079.00

Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
Date Saved: 1/10/2013 2:08:44 PM
Path: R:\Projects\1201079\WilburSmith_I275_M153\GIS\20120821_Fig5_WindCommunities.mxd



- | | |
|------------------------------|-----------------------|
| Potential Bat Roost (Single) | Low Quality Shrubland |
| Stream/River/Drain | Low Quality PEM |
| Developed Land | Low Quality PSS |
| Low Quality Woodland | Low Quality PFO |
| Moderate Quality Woodland | Moderate Quality PFO |
| Low Quality Old Field | Study Area Boundary |



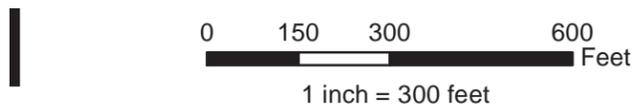
**Cardno
JFNew**
11181 Marwill Avenue, West Olive, MI 49460
Phone 616-847-1680 / Fax 616-847-9970
www.cardnofnew.com



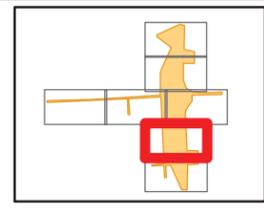
Figure 5: Sheet 6 of 7
Wetland/Stream Delineation and Vegetative Community Maps
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00

Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 2:08:44 PM
 Path: R:\Projects\12011201079_WilburSmith_I275_M153\GIS\20120821_Fig5_WetlandCommunities.mxd



- | | |
|------------------------------|-----------------------|
| Potential Bat Roost (Single) | Low Quality Shrubland |
| Stream/River/Drain | Low Quality PEM |
| Developed Land | Low Quality PSS |
| Low Quality Woodland | Low Quality PFO |
| Moderate Quality Woodland | Moderate Quality PFO |
| Low Quality Old Field | Study Area Boundary |



Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com

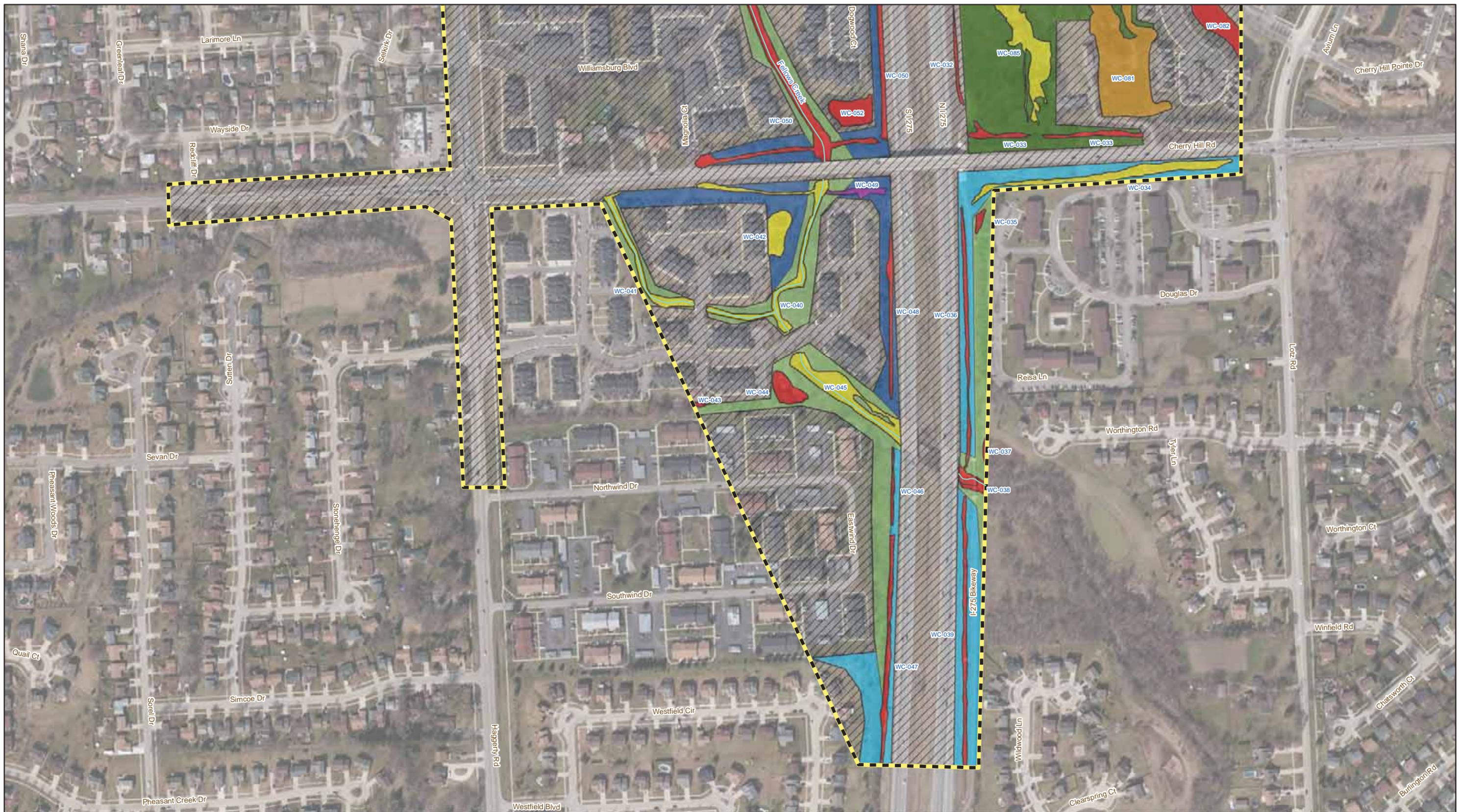
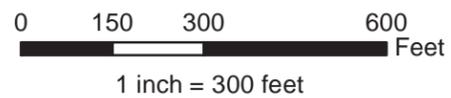


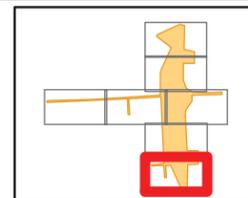
Figure 5: Sheet 7 of 7
Wetland/Stream Delineation and Vegetative Community Maps
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00

Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 2:08:44 PM
 Path: R:\Projects\1201079_WilburSmith_I275_M153\GIS\20120821_Fig5_WindCommunities.mxd



	Potential Bat Roost (Single)		Low Quality Shrubland
	Stream/River/Drain		Low Quality PEM
	Developed Land		Low Quality PSS
	Low Quality Woodland		Low Quality PFO
	Moderate Quality Woodland		Moderate Quality PFO
	Low Quality Old Field		Study Area Boundary

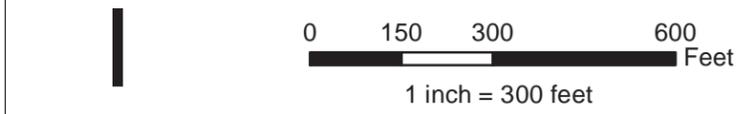


Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com



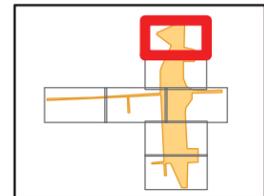
Figure 6: Sheet 1 of 7
Stream Assessment Locations
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00



Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 1:34:28 PM
 Path: R:\Projects\1201079\WiburSmith_I275_M153\GIS\20130108_Fig6_StreamSampling.mxd

-  Stream Assessment Location
-  Stream/River/Drain
-  Study Area Boundary

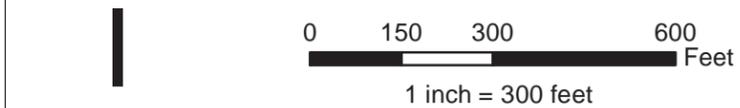



 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com



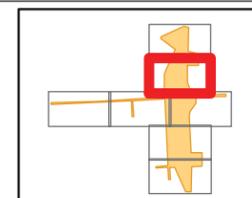
Figure 6: Sheet 2 of 7
Stream Assessment Locations
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00



Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 1:34:28 PM
 Path: R:\Projects\1201079\WiburSmith_I275_M153\GIS\20130108_Fig6_StreamSampling.mxd

-  Stream Assessment Location
-  Stream/River/Drain
-  Study Area Boundary

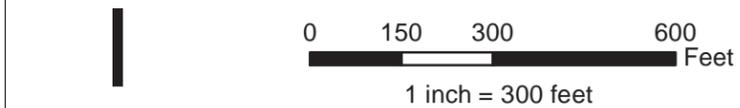


Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com



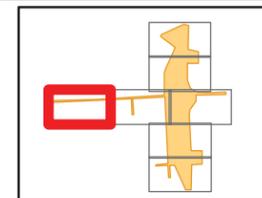
Figure 6: Sheet 3 of 7
Stream Assessment Locations
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00



Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 1:34:28 PM
 Path: R:\Projects\1201079_WilburSmith_I275_M153\GIS\20130108_Fig6_StreamSampling.mxd

-  Stream Assessment Location
-  Stream/River/Drain
-  Study Area Boundary

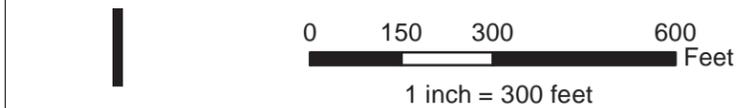



 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com



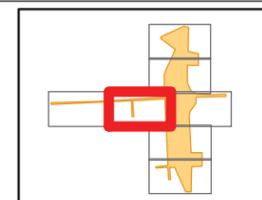
Figure 6: Sheet 4 of 7
Stream Assessment Locations
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00



Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 1:34:28 PM
 Path: R:\Projects\120111201079_WilburSmith_I275_M153\GIS\20130108_Fig6_StreamSampling.mxd

-  Stream Assessment Location
-  Stream/River/Drain
-  Study Area Boundary




 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com

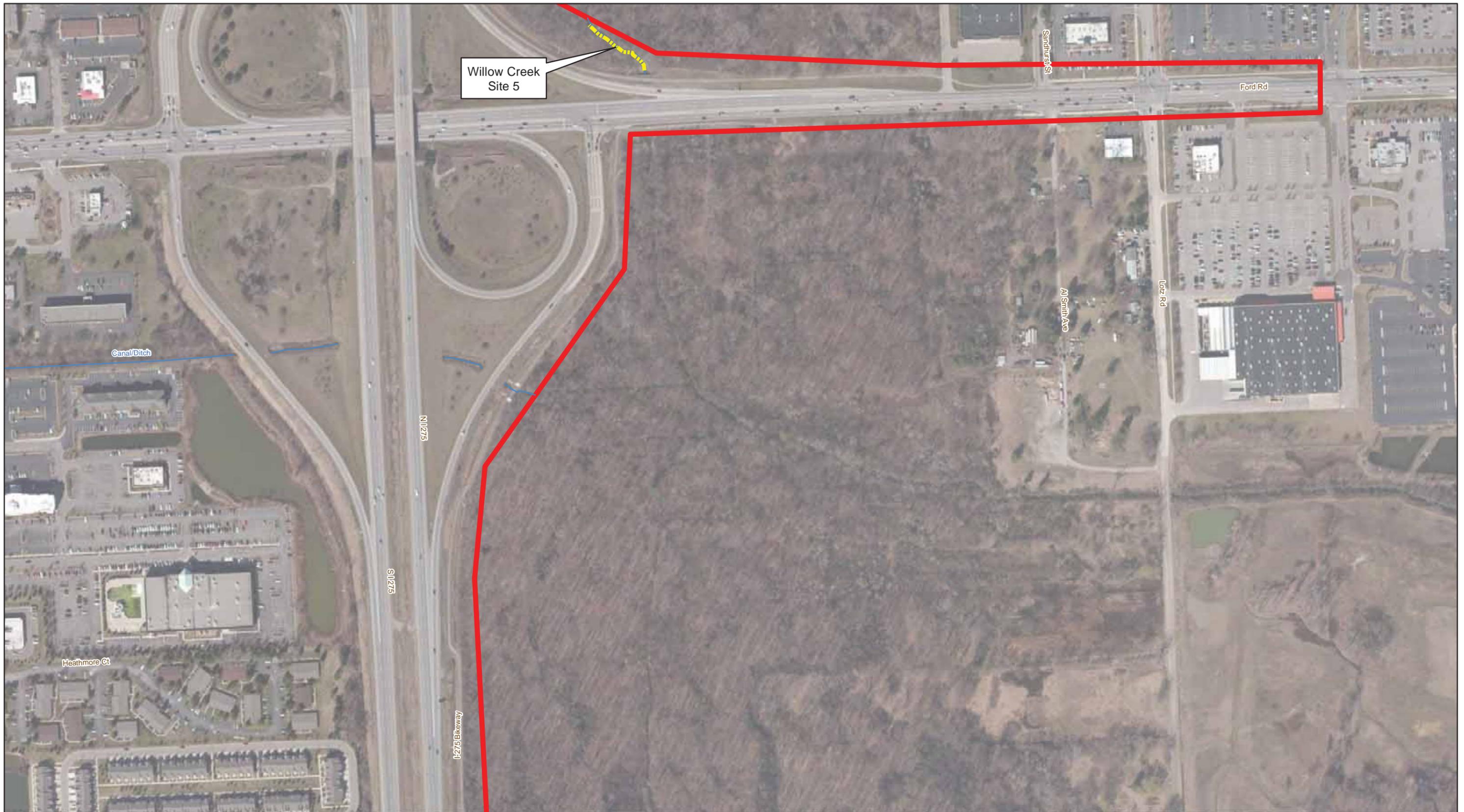
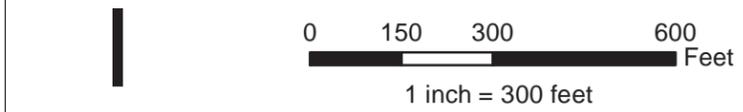


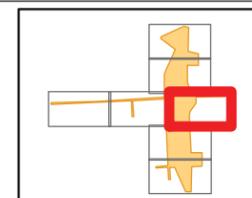
Figure 6: Sheet 5 of 7
Stream Assessment Locations
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00



Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 1:34:28 PM
 Path: R:\Projects\1201079\1201079_WilburSmith_I275_M153\GIS\20130108_Fig6_StreamSampling.mxd

-  Stream Assessment Location
-  Stream/River/Drain
-  Study Area Boundary




 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com

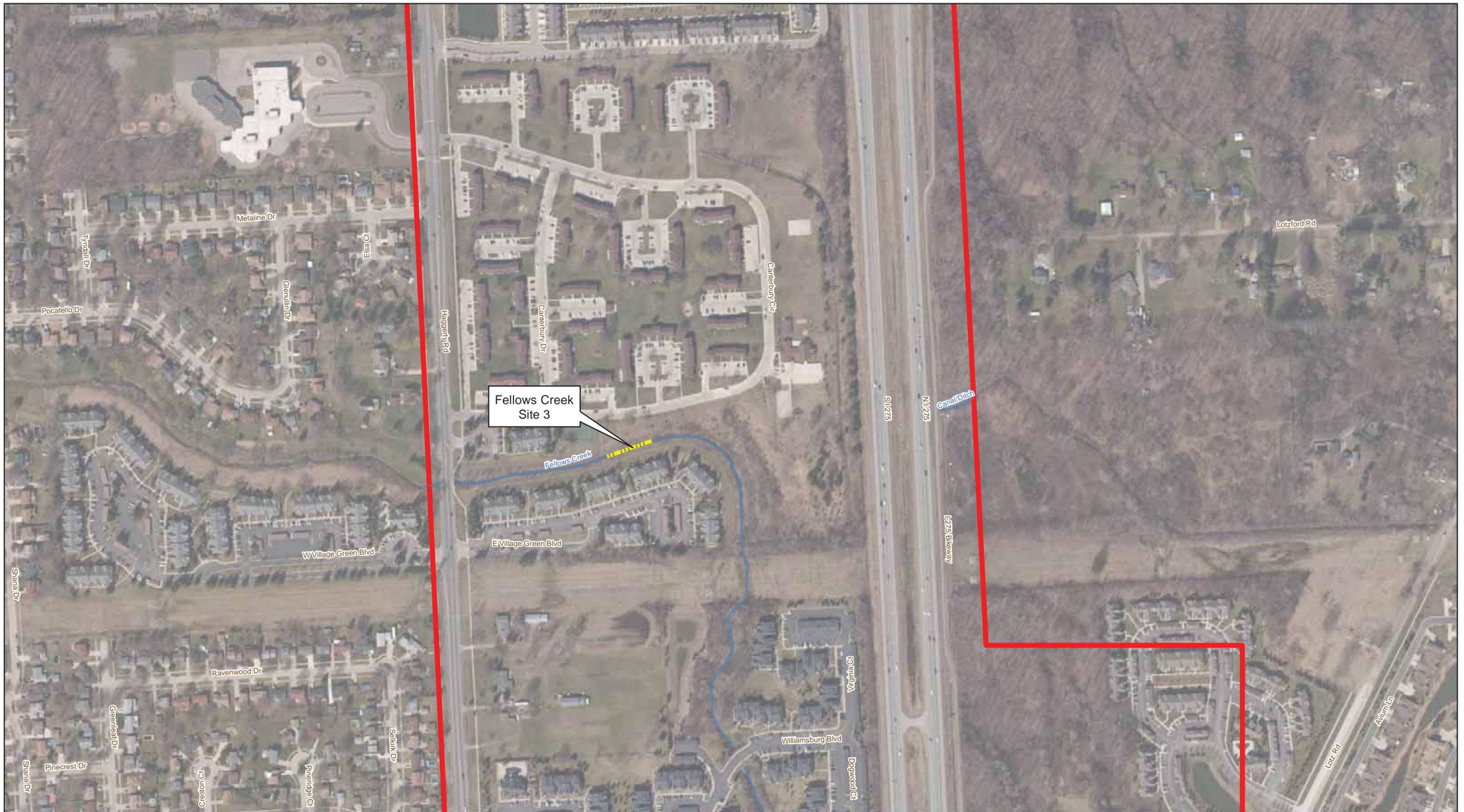
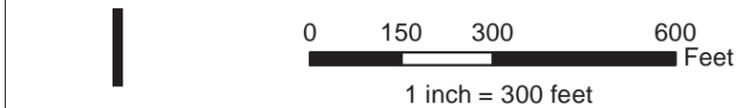


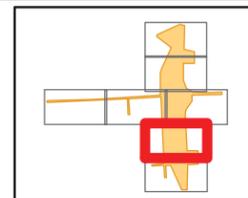
Figure 6: Sheet 6 of 7
Stream Assessment Locations
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00



Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 1:34:28 PM
 Path: R:\Projects\1201079\WiburSmith_I275_M153\GIS\20130108_Fig6_StreamSampling.mxd

-  Stream Assessment Location
-  Stream/River/Drain
-  Study Area Boundary



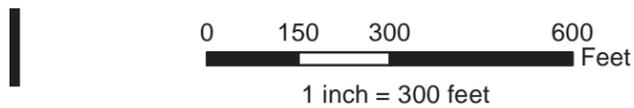
Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com



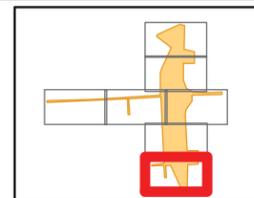
Figure 6: Sheet 7 of 7
Stream Assessment Locations
I-275 and M-153
CDM Smith Inc.
Wayne County, Michigan

January 2013
 Job No. 1201079.00

Source: Bing Maps Aerial - (c) 2010 Microsoft Corporation and its data suppliers
 Date Saved: 1/10/2013 1:34:28 PM
 Path: R:\Projects\1201079\WiburSmith_I275_M153\GIS\20130108_Fig6_StreamSampling.mxd



- - - - - Stream Assessment Location
- Stream/River/Drain
- Study Area Boundary



Cardno
JFNew
 11181 Marwill Avenue, West Olive, MI 49460
 Phone 616-847-1680 / Fax 616-847-9970
 www.cardnofnew.com

**APPENDIX A:
USACE Wetland Determination
Data Forms**

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Wayne County Sampling Date: 7.9.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-023-DP1
 Investigator(s): J. Heslinga, R. Roos Section, Township, Range: T8E, R2S, S12
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 1% Lat: 42 19'19.84" Long: 83 27'55.91" Datum: UTM 16N
 Soil Map Unit Name: Pewamo Loam NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil n, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation n, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u>x</u> No <u> </u> Wetland Hydrology Present? Yes <u>x</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>x</u> No <u> </u> If yes, optional Wetland Site ID: <u>WC-023</u>
Remarks: (Explain alternative procedures here or in a separate report.) Below average rainfalls for this time of year. According to NOAA, 2012 has been an abnormally dry year for this area.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <table style="width:100%; border: none;"> <tr> <td><u> </u> Surface Water (A1)</td> <td><u> </u> Water-Stained Leaves (B9)</td> </tr> <tr> <td><u> </u> High Water Table (A2)</td> <td><u> </u> Aquatic Fauna (B13)</td> </tr> <tr> <td><u> </u> Saturation (A3)</td> <td><u> </u> Marl Deposits (B15)</td> </tr> <tr> <td><u> </u> Water Marks (B1)</td> <td><u> </u> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><u> </u> Sediment Deposits (B2)</td> <td><u>x</u> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><u> </u> Drift Deposits (B3)</td> <td><u> </u> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><u> </u> Algal Mat or Crust (B4)</td> <td><u> </u> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><u> </u> Iron Deposits (B5)</td> <td><u> </u> Thin Muck Surface (C7)</td> </tr> <tr> <td><u> </u> Inundation Visible on Aerial Imagery (B7)</td> <td><u> </u> Other (Explain in Remarks)</td> </tr> <tr> <td><u> </u> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<u> </u> Surface Water (A1)	<u> </u> Water-Stained Leaves (B9)	<u> </u> High Water Table (A2)	<u> </u> Aquatic Fauna (B13)	<u> </u> Saturation (A3)	<u> </u> Marl Deposits (B15)	<u> </u> Water Marks (B1)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Sediment Deposits (B2)	<u>x</u> Oxidized Rhizospheres on Living Roots (C3)	<u> </u> Drift Deposits (B3)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Algal Mat or Crust (B4)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)	<u> </u> Iron Deposits (B5)	<u> </u> Thin Muck Surface (C7)	<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Other (Explain in Remarks)	<u> </u> Sparsely Vegetated Concave Surface (B8)		Secondary Indicators (minimum of two required) <table style="width:100%; border: none;"> <tr><td><u> </u> Surface Soil Cracks (B6)</td></tr> <tr><td><u> </u> Drainage Patterns (B10)</td></tr> <tr><td><u> </u> Moss Trim Lines (B16)</td></tr> <tr><td><u> </u> Dry-Season Water Table (C2)</td></tr> <tr><td><u> </u> Crayfish Burrows (C8)</td></tr> <tr><td><u> </u> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><u> </u> Stunted or Stressed Plants (D1)</td></tr> <tr><td><u>x</u> Geomorphic Position (D2)</td></tr> <tr><td><u> </u> Shallow Aquitard (D3)</td></tr> <tr><td><u> </u> Microtopographic Relief (D4)</td></tr> <tr><td><u>x</u> FAC-Neutral Test (D5)</td></tr> </table>	<u> </u> Surface Soil Cracks (B6)	<u> </u> Drainage Patterns (B10)	<u> </u> Moss Trim Lines (B16)	<u> </u> Dry-Season Water Table (C2)	<u> </u> Crayfish Burrows (C8)	<u> </u> Saturation Visible on Aerial Imagery (C9)	<u> </u> Stunted or Stressed Plants (D1)	<u>x</u> Geomorphic Position (D2)	<u> </u> Shallow Aquitard (D3)	<u> </u> Microtopographic Relief (D4)	<u>x</u> FAC-Neutral Test (D5)
<u> </u> Surface Water (A1)	<u> </u> Water-Stained Leaves (B9)																															
<u> </u> High Water Table (A2)	<u> </u> Aquatic Fauna (B13)																															
<u> </u> Saturation (A3)	<u> </u> Marl Deposits (B15)																															
<u> </u> Water Marks (B1)	<u> </u> Hydrogen Sulfide Odor (C1)																															
<u> </u> Sediment Deposits (B2)	<u>x</u> Oxidized Rhizospheres on Living Roots (C3)																															
<u> </u> Drift Deposits (B3)	<u> </u> Presence of Reduced Iron (C4)																															
<u> </u> Algal Mat or Crust (B4)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)																															
<u> </u> Iron Deposits (B5)	<u> </u> Thin Muck Surface (C7)																															
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Other (Explain in Remarks)																															
<u> </u> Sparsely Vegetated Concave Surface (B8)																																
<u> </u> Surface Soil Cracks (B6)																																
<u> </u> Drainage Patterns (B10)																																
<u> </u> Moss Trim Lines (B16)																																
<u> </u> Dry-Season Water Table (C2)																																
<u> </u> Crayfish Burrows (C8)																																
<u> </u> Saturation Visible on Aerial Imagery (C9)																																
<u> </u> Stunted or Stressed Plants (D1)																																
<u>x</u> Geomorphic Position (D2)																																
<u> </u> Shallow Aquitard (D3)																																
<u> </u> Microtopographic Relief (D4)																																
<u>x</u> FAC-Neutral Test (D5)																																

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

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

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: WC-023-DP1

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft.</u>)					
1. <u><i>Ulmus americana</i></u>	40	Yes	FACW	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
2. <u><i>Acer saccharinum</i></u>	5	No	FACW		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	45	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>122</u> x 2 = <u>244</u> FAC species <u>32</u> x 3 = <u>96</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>159</u> (A) <u>360</u> (B) Prevalence Index = B/A = <u>2.26</u>	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u><i>Fraxinus pennsylvanica</i></u>	60	Yes	FACW		
2. <u><i>Ulmus americana</i></u>	10	No	FACW		
3. <u><i>Rhamnus cathartica</i></u>	5	No	FACU		
4. _____					
5. _____					
6. _____					
7. _____					
	75	= Total Cover			
Herb Stratum (Plot size: <u>5 ft.</u>)					
1. <u><i>Fraxinus pennsylvanica</i></u>	5	Yes	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u><i>Toxicodendron radicans</i></u>	2	Yes	FAC		
3. <u><i>Aster lanceolatus</i></u>	1	No	FACW		
4. <u><i>Acer saccharinum</i></u>	1	No	FACW		
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	9	= Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft.</u>)					
1. <u><i>Toxicodendron radicans</i></u>	30	Yes	FAC	Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.	
2. _____					
3. _____					
4. _____					
	30	= Total Cover			
				Hydrophytic Vegetation Present ? Yes <u>x</u> No _____	
Remarks: (Include photo numbers here or on a separate sheet.)					

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Wayne County Sampling Date: 7.9.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-023-DP2
 Investigator(s): J. Heslinga, R. Roos Section, Township, Range: T8E, R2S, S12
 Landform (hillslope, terrace, etc.): road-side burm Local relief (concave, convex, none): convex
 Slope (%): 2% Lat: 42 19'20.08" Long: 83 27'55.87" Datum: UTM 16N
 Soil Map Unit Name: Pewamo Loam NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil y, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation n, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>x</u> Wetland Hydrology Present? Yes <u> </u> No <u>x</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>x</u> If yes, optional Wetland Site ID: <u> </u>
Remarks: (Explain alternative procedures here or in a separate report.) Below average rainfalls for this time of year. According to NOAA, 2012 thus far has been an abnormally dry year. Soils include rocky fill dirt along this roadside berm. Meets indicator or hydrophytic vegetation, but there is no evidence of hydrology or hydric soils.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u>x</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION - Use scientific names of plants.

Sampling Point: WC-023-DP2

	Absolute % Cover	Dominant Species?	Indicator Status				
Tree Stratum (Plot size: <u>30 ft.</u>)				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>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)			
1. <u>None observed</u>							
2. _____							
3. _____							
4. _____							
5. _____							
6. _____							
7. _____							
			= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)							
1. <u>None observed</u>							
2. _____							
3. _____							
4. _____							
5. _____							
6. _____							
7. _____							
			= Total Cover				
Herb Stratum (Plot size: <u>5 ft.</u>)							
1. <u>Agrostis gigantea</u>	25	Yes	FACW				
2. <u>Poa pratensis</u>	25	Yes	FAC				
3. <u>Agropyron repens</u>	15	Yes	FACU				
4. <u>Apocynum cannabinum</u>	5	No	FAC				
5. <u>Toxicodendron radicans</u>	2	No	FAC				
6. _____							
7. _____							
8. _____							
9. _____							
10. _____							
11. _____							
12. _____							
			72 = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)							
1. <u>None observed</u>							
2. _____							
3. _____							
4. _____							
			= Total Cover				
Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>25</u> x 2 = <u>50</u> FAC species <u>32</u> x 3 = <u>96</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>72</u> (A) <u>206</u> (B) Prevalence Index = B/A = <u>2.86</u>							
				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)			
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.			
				Hydrophytic Vegetation Present ? Yes <u>x</u> No _____			
				Remarks: (Include photo numbers here or on a separate sheet.) 			

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Canton / Wayne County Sampling Date: 7.24.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-030-DP1
 Investigator(s): R. Roos, S. Kogge Section, Township, Range: T8E, R2S, S12
 Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave
 Slope (%): 0% Lat: 42 19'02.67" Long: 83 26'33.11" Datum: UTM 16N
 Soil Map Unit Name: Kibbie fine sandy loam NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation y, Soil n, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation n, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u>x</u> No <u> </u> Wetland Hydrology Present? Yes <u>x</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>x</u> No <u> </u> If yes, optional Wetland Site ID: <u>WC-030</u>
Remarks: (Explain alternative procedures here or in a separate report.) We are currently experiencing a severe drought for this area according to NOAA - July 17, 2012	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u>x</u> No <u> </u> Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>x</u> No <u> </u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

SOIL

Sampling Point: WC-030-DP1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 2/2	100%					Silty Loam	lots of decomposing plant material
4-12	10YR 2/1	30%	10YR 6/6	20%	C	M	Clay Loam	
	10YR 4/2	50%					Clay Loam	
12-22	10YR 5/1	80%	7.5YR 5/8	5%	C	M	Clay Loam	
			10YR 6/6	15%	C	M	Clay Loam	

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, LRR M, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L, M)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None observed

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: WC-030-DP2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Ambrosia artemisiifolia</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Plantago major</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
3. <u>Sonchus asper</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Medicago lupulina</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>Cirsium arvense</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
6. <u>Plantago lanceolata</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Poa compressa</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
8. <u>Trifolium repens</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
9. <u>Stellaria sp.</u>	<u>2</u>	<u>No</u>		
10. <u>Equisetum arvense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
11. _____				
12. _____				
			= Total Cover	
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
			= Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present ? Yes _____ No <u>x</u>

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Wayne County Sampling Date: 7.9.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-036-DP1
 Investigator(s): J. Heslinga, R. Roos Section, Township, Range: T8E, R2S, S12
 Landform (hillslope, terrace, etc.): roadside ditch Local relief (concave, convex, none): concave
 Slope (%): 5% Lat: 42 18'28.67" Long: 83 26'31.70" Datum: UTM 16N
 Soil Map Unit Name: Kibbie Fine Sandy Loam NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil y, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation n, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u>x</u> No <u> </u> Wetland Hydrology Present? Yes <u>x</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>x</u> No <u> </u> If yes, optional Wetland Site ID: <u>WC-036</u>
Remarks: (Explain alternative procedures here or in a separate report.) The average rainfall this year has been lower than normal. According to NOAA, 2012 has been an abnormally dry year in this part of the state.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>x</u> No <u> </u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Location is between bikepath and highway.	

VEGETATION - Use scientific names of plants.

Sampling Point: WC-036-DP1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				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%</u> (A/B)
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u>Typha xglauca</u>	35	Yes	OBL	
2. <u>Xanthium strumarium</u>	30	Yes	FAC	
3. <u>Sium suave</u>	5	No	OBL	
4. <u>Phalaris arundinacea</u>	10	No	FACW	
5. <u>Lythrum salicaria</u>	3	No	OBL	
6. <u>Rumex crispus</u>	10	No	FAC	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
			93 = Total Cover	
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
			= Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.) 				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>43</u> x 1 = <u>43</u> FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>40</u> x 3 = <u>120</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>93</u> (A) <u>183</u> (B) Prevalence Index = B/A = <u>1.97</u>
				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.
				Hydrophytic Vegetation Present ? Yes <u>x</u> No _____

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Wayne County Sampling Date: 7.9.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-036-DP2
 Investigator(s): J. Heslinga, R. Roos Section, Township, Range: T8E, R2S, S12
 Landform (hillslope, terrace, etc.): pathside burm, hillslope Local relief (concave, convex, none): convex
 Slope (%): 5% Lat: 42 18'28.62" Long: 83 26'31.59" Datum: UTM 16N
 Soil Map Unit Name: Kibbie Fine Sandy Loam NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil y, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation n, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>x</u> Wetland Hydrology Present? Yes <u> </u> No <u>x</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>x</u> If yes, optional Wetland Site ID: <u> </u>
Remarks: (Explain alternative procedures here or in a separate report.) Area is having below normal rainfalls. According to NOAA, 2012 has been an abnormally dry year.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u>x</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION - Use scientific names of plants.

Sampling Point: WC-036-DP2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				
1. <u>Ulmus americana</u>	5	Yes	FACW	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>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	5	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>None observed</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>64</u> x 3 = <u>192</u> FACU species <u>40</u> x 4 = <u>160</u> UPL species <u>7</u> x 5 = <u>35</u> Column Totals: <u>116</u> (A) <u>397</u> (B) Prevalence Index = B/A = <u>3.42</u>
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		= Total Cover		
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u>Centaurea maculosa</u>	5	No	UPL	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Melilotus alba</u>	10	No	FACU	
3. <u>Trifolium pratense</u>	30	Yes	FACU	
4. <u>Poa pratensis</u>	50	Yes	FAC	
5. <u>Plantago lanceolata</u>	10	No	FAC	
6. <u>Plantago major</u>	2	No	FAC	
7. <u>Erigeron annuus</u>	2	No	FAC	
8. <u>Daucus carota</u>	2	No	UPL	
9. _____				
10. _____				
11. _____				
12. _____				
	111	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u>None observed (over 5%)</u>				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
		= Total Cover		
Hydrophytic Vegetation Present ? Yes <u>x</u> No _____				
Remarks: (Include photo numbers here or on a separate sheet.) 				

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Canton / Wayne County Sampling Date: 7.16.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-067-DP1
 Investigator(s): R. Roos, A. Reinhardt Section, Township, Range: T8E, S12, R2S
 Landform (hillslope, terrace, etc.): depression, ditch along highway Local relief (concave, convex, none): concave
 Slope (%): 0% Lat: 42 19'44.4" Long: 83 26'38.4" Datum: UTM 16N
 Soil Map Unit Name: Kibbie fine sandy loam NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil y, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation n, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u>x</u> No <u> </u> Wetland Hydrology Present? Yes <u>x</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>x</u> No <u> </u> If yes, optional Wetland Site ID: <u>WC-067 Ditch</u>
Remarks: (Explain alternative procedures here or in a separate report.) Emergent, highway ditch along west side of I-275. Disturbed soil profile along highway corridor. Unseasonably low rainfall, droughty conditions.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u>x</u> No <u> </u> Depth (inches): <u>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>x</u> No <u> </u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION - Use scientific names of plants.

Sampling Point: WC-067-DP1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				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%</u> (A/B)
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Asclepias incarnata</u>	<u>1</u>	<u>No</u>	<u>OBL</u>	
2. <u>Typha angustifolia</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	
3. <u>Carex cristatella</u>	<u>2</u>	<u>No</u>	<u>FACW</u>	
4. <u>Lycopus americanus</u>	<u>7</u>	<u>No</u>	<u>OBL</u>	
5. <u>Lythrum salicaria</u>	<u>5</u>	<u>No</u>	<u>OBL</u>	
6. <u>Cyperus strigosus</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	
7. <u>Solanum dulcamara</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
			= Total Cover	
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.
1. <u>Vitis riparia</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	
2. _____				
3. _____				
4. _____				
			= Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present ? Yes <u>x</u> No _____

VEGETATION - Use scientific names of plants.

Sampling Point: WC-67-DP2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Dipsacus laciniatus</u>	30	Yes	UPL	
2. <u>Cirsium arvense</u>	10	No	FACU	
3. <u>Festuca arundinacea</u>	40	Yes	FACU	
4. <u>Agrostis gigantea</u>	10	No	FACW	
5. <u>Plantago lanceolata</u>	2	No	FAC	
6. <u>Dipsacus fullonum</u>	2	No	FACU	
7. <u>Poa pratensis</u>	10	No	FAC	
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
			104 = Total Cover	
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
			= Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present ? Yes <u> </u> No <u> </u> x

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Canton / Wayne County Sampling Date: 7.16.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-067-DP1
 Investigator(s): R. Roos, A. Reinhardt Section, Township, Range: T8E, S12, R2S
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0% Lat: 42 19'33.6" Long: 83 26'45.59" Datum: UTM 16N
 Soil Map Unit Name: Corunna fine sandy loam NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil n, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation y, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u>x</u> No <u> </u> Wetland Hydrology Present? Yes <u>x</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>x</u> No <u> </u> If yes, optional Wetland Site ID: <u>WC-067 Scrub-Shrub</u>
Remarks: (Explain alternative procedures here or in a separate report.) Area is heavily impacted by invasive Common Buckthorn (Rhamnus cathartica). Unseasonably low rainfall, droughty conditions.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <table style="width:100%; border: none;"> <tr><td><input type="checkbox"/> Surface Water (A1)</td><td><input checked="" type="checkbox"/> Water-Stained Leaves (B9)</td></tr> <tr><td><input type="checkbox"/> High Water Table (A2)</td><td><input type="checkbox"/> Aquatic Fauna (B13)</td></tr> <tr><td><input type="checkbox"/> Saturation (A3)</td><td><input type="checkbox"/> Marl Deposits (B15)</td></tr> <tr><td><input checked="" type="checkbox"/> Water Marks (B1)</td><td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td></tr> <tr><td><input type="checkbox"/> Sediment Deposits (B2)</td><td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td></tr> <tr><td><input type="checkbox"/> Drift Deposits (B3)</td><td><input type="checkbox"/> Presence of Reduced Iron (C4)</td></tr> <tr><td><input type="checkbox"/> Algal Mat or Crust (B4)</td><td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td></tr> <tr><td><input type="checkbox"/> Iron Deposits (B5)</td><td><input type="checkbox"/> Thin Muck Surface (C7)</td></tr> <tr><td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td><td><input type="checkbox"/> Other (Explain in Remarks)</td></tr> <tr><td><input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td><td></td></tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		Secondary Indicators (minimum of two required) <table style="width:100%; border: none;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td><input checked="" type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td><input type="checkbox"/> FAC-Neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)																															
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)																															
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)																															
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																															
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)																															
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)																															
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																															
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)																															
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)																															
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)																																
<input type="checkbox"/> Surface Soil Cracks (B6)																																
<input type="checkbox"/> Drainage Patterns (B10)																																
<input type="checkbox"/> Moss Trim Lines (B16)																																
<input type="checkbox"/> Dry-Season Water Table (C2)																																
<input type="checkbox"/> Crayfish Burrows (C8)																																
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)																																
<input type="checkbox"/> Stunted or Stressed Plants (D1)																																
<input checked="" type="checkbox"/> Geomorphic Position (D2)																																
<input type="checkbox"/> Shallow Aquitard (D3)																																
<input type="checkbox"/> Microtopographic Relief (D4)																																
<input type="checkbox"/> FAC-Neutral Test (D5)																																
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>x</u> No <u> </u>																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks:																																

VEGETATION - Use scientific names of plants.

Sampling Point: WC-067-DP1

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft.</u>)					
1. <u>Populus deltoides</u>	10	Yes	FAC	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>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)	
2. <u>Fraxinus pennsylvanica</u>	10	Yes	FACW		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	20	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>60</u> x 2 = <u>120</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species <u>70</u> x 4 = <u>280</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>150</u> (A) <u>440</u> (B) Prevalence Index = B/A = <u>2.93</u>	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u>Rhamnus cathartica</u>	60	Yes	FACU		
2. <u>Fraxinus pennsylvanica</u>	20	Yes	FACW		
3. <u>Salix exigua</u>	10	No	OBL		
4. <u>Cornus amomum</u>	5	No	FACW		
5. _____					
6. _____					
7. _____					
	95	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: <u>5 ft.</u>)					
1. <u>Lysimachia nummularia</u>	25	Yes	FACW		
2. <u>Rhamnus cathartica</u>	10	Yes	FACU		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	35	= Total Cover		Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.	
Woody Vine Stratum (Plot size: <u>30 ft.</u>)					
1. <u>None observed</u>					
2. _____					
3. _____					
4. _____					
		= Total Cover		Hydrophytic Vegetation Present ? Yes <u>x</u> No _____	
Remarks: (Include photo numbers here or on a separate sheet.)					

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Canton / Wayne County Sampling Date: 7.16.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-067-DP2
 Investigator(s): R. Roos, A. Reinhardt Section, Township, Range: T8E, S12, R2S
 Landform (hillslope, terrace, etc.): hillslope along scrub-shrub edge Local relief (concave, convex, none): convex
 Slope (%): 3% Lat: 42 19'33.6" Long: 83 26'45.59" Datum: UTM 16N
 Soil Map Unit Name: Corunna fine sandy loam NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil n, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation y, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>x</u> Wetland Hydrology Present? Yes <u> </u> No <u>x</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>x</u> If yes, optional Wetland Site ID: <u> </u>
Remarks: (Explain alternative procedures here or in a separate report.) Area is heavily invaded by Common Buckthorn (Rhamnus cathartica). Unseasonably low rainfall, droughty conditions according to NOAA. Vegetation meets dominance test, but there is no evidence of hydrology or hydric soils.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u>x</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION - Use scientific names of plants.

Sampling Point: WC-067-DP2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</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>75%</u> (A/B)
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>10</u> x 1 = <u>10</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>45</u> x 3 = <u>135</u> FACU species <u>84</u> x 4 = <u>336</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>144</u> (A) <u>491</u> (B) Prevalence Index = B/A = <u>3.41</u>
1. <u>Rhamnus cathartica</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
2. <u>Cornus amomum</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Salix exigua</u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>	
4. _____				
5. _____				
6. _____				
7. _____				
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Toxicodendron radicans</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
2. <u>Agrimonia gryposepala</u>	<u>10</u>	<u>No</u>	<u>FACU</u>	
3. <u>Poa pratensis</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Festuca arundinacea</u>	<u>20</u>	<u>No</u>	<u>FACU</u>	
5. <u>Rosa multiflora</u>	<u>2</u>	<u>No</u>	<u>FACU</u>	
6. <u>Fragaria virginiana</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
7. <u>Solidago altissima</u>	<u>50</u>	<u>Yes</u>	<u>FACU</u>	
8. _____				
9. _____				
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present ? Yes <u>x</u> No _____
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

VEGETATION - Use scientific names of plants.

Sampling Point: WC-074-DP1

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft.</u>)					
1. <u><i>Ulmus americana</i></u>	20	Yes	FACW	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%</u> (A/B)	
2. <u><i>Carpinus caroliniana</i></u>	10	Yes	FAC		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	30	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>61</u> x 2 = <u>122</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>2</u> x 4 = <u>8</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>78</u> (A) <u>175</u> (B) Prevalence Index = B/A = <u>2.24</u>	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u><i>Lindera benzoin</i></u>	25	Yes	FACW		
2. <u><i>Carpinus caroliniana</i></u>	5	No	FAC		
3. <u><i>Fraxinus pennsylvanica</i></u>	5	No	FACW		
4. _____					
5. _____					
6. _____					
7. _____					
	35	= Total Cover			
Herb Stratum (Plot size: <u>5 ft.</u>)					
1. <u><i>Lindera benzoin</i></u>	10	Yes	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u><i>Rhamnus cathartica</i></u>	2	No	FACU		
3. <u><i>Onoclea sensibilis</i></u>	1	No	FACW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	13	= Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft.</u>)					
1. <u><i>None observed</i></u>				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.	
2. _____					
3. _____					
4. _____					
				Hydrophytic Vegetation Present ? Yes <u>x</u> No _____	

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

VEGETATION - Use scientific names of plants.

Sampling Point: WC-074-DP2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				
1. <u><i>Tilia americana</i></u>	40	Yes	FACU	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
2. <u><i>Acer saccharum</i></u>	15	Yes	FACU	
3. <u><i>Fagus grandifolia</i></u>	20	Yes	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
	75	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u><i>Lindera benzoin</i></u>	5	No	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>6</u> x 2 = <u>12</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>126</u> x 4 = <u>504</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>132</u> (A) <u>516</u> (B) Prevalence Index = B/A = <u>3.91</u>
2. <u><i>Acer saccharum</i></u>	30	Yes	FACU	
3. <u><i>Tilia americana</i></u>	10	Yes	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
	45	= Total Cover		
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u><i>Circaea lutetiana</i></u>	10	Yes	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Acer saccharum</i></u>	1	No	FACU	
3. <u><i>Lindera benzoin</i></u>	1	No	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	12	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u><i>None observed</i></u>				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
		= Total Cover		
Hydrophytic Vegetation Present ? Yes _____ No <u>x</u>				
Remarks: (Include photo numbers here or on a separate sheet.) 				

VEGETATION - Use scientific names of plants.

Sampling Point: WC-081-DP1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				
1. <u><i>Acer saccharinum</i></u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Populus deltoides</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
3. <u><i>Acer rubrum</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. _____				
5. _____				
6. _____				
7. _____				
	<u>70</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u><i>Acer saccharinum</i></u>	<u>1</u>	<u>No</u>	<u>FACW</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>2</u> x 1 = <u>2</u> FACW species <u>151</u> x 2 = <u>302</u> FAC species <u>16</u> x 3 = <u>48</u> FACU species <u>1</u> x 4 = <u>4</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>170</u> (A) <u>356</u> (B) Prevalence Index = B/A = <u>2.09</u>
2. <u><i>Fraxinus pennsylvanica</i></u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<u>41</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u><i>Fraxinus pennsylvanica</i></u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Lysimachia nummularia</i></u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	
3. <u><i>Toxicodendron radicans</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
4. <u><i>Acer rubrum</i></u>	<u>1</u>	<u>No</u>	<u>FAC</u>	
5. <u><i>Glyceria striata</i></u>	<u>2</u>	<u>No</u>	<u>OBL</u>	
6. <u><i>Circaea lutetiana</i></u>	<u>1</u>	<u>No</u>	<u>FACU</u>	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>54</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u><i>Vitis riparia</i></u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>	Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
	<u>5</u>	= Total Cover		
				Hydrophytic Vegetation Present ? Yes <u>x</u> No _____
Remarks: (Include photo numbers here or on a separate sheet.)				

VEGETATION - Use scientific names of plants.

Sampling Point: WC-081-DP2

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft.</u>)				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>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)	
1. <u><i>Acer saccharum</i></u>	<u>15</u>	Yes	FACU		
2. <u><i>Prunus serotina</i></u>	<u>15</u>	Yes	FACU		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
	<u>30</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>40</u> x 2 = <u>80</u> FAC species <u>53</u> x 3 = <u>159</u> FACU species <u>90</u> x 4 = <u>360</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>183</u> (A) <u>599</u> (B) Prevalence Index = B/A = <u>3.27</u>
1. <u><i>Ilex verticillata</i></u>	<u>5</u>	Yes	FACW		
2. <u><i>Fraxinus pennsylvanica</i></u>	<u>15</u>	Yes	FACW		
3. <u><i>Rhamnus cathartica</i></u>	<u>5</u>	Yes	FACU		
4. <u><i>Lonicera tatarica</i></u>	<u>5</u>	Yes	FACU		
5. <u><i>Rubus allegheniensis</i></u>	<u>5</u>	Yes	FACU		
6. _____					
7. _____					
	<u>35</u>	= Total Cover			
Herb Stratum (Plot size: <u>5 ft.</u>)				Hydrophytic Vegetation Indicators: _____ Rapid Test for Hydrophytic Vegetation _____ Dominance Test is >50% _____ Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. <u><i>Parthenocissus quinquefolia</i></u>	<u>50</u>	Yes	FAC		
2. <u><i>Circaea lutetiana</i></u>	<u>45</u>	Yes	FACU		
3. <u><i>Solidago gigantea</i></u>	<u>5</u>	No	FACW		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	<u>100</u>	= Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.	
1. <u><i>Vitis riparia</i></u>	<u>15</u>	Yes	FACW		
2. <u><i>Parthenocissus quinquefolia</i></u>	<u>3</u>	No	FAC		
3. _____					
4. _____					
	<u>18</u>	= Total Cover			
Hydrophytic Vegetation Present ? Yes <u> </u> No <u> </u>x					
Remarks: (Include photo numbers here or on a separate sheet.) 					

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Canton / Wayne County Sampling Date: 7.16.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-087-DP1
 Investigator(s): R. Roos, A. Reinhardt Section, Township, Range: T8E, S12, R2S
 Landform (hillslope, terrace, etc.): bowl shape depression in old field Local relief (concave, convex, none): concave
 Slope (%): 0% Lat: 42 20'6.00" Long: 83 26'45.59" Datum: UTM 16N
 Soil Map Unit Name: Shoals silt loam NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil y, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation n, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u>x</u> No <u> </u> Wetland Hydrology Present? Yes <u>x</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>x</u> No <u> </u> If yes, optional Wetland Site ID: <u>WC-087</u>
Remarks: (Explain alternative procedures here or in a separate report.) Emergent, old field. Disturbed soil profile - old area of development. Unseasonably low rainfall, droughty conditions.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>x</u> No <u> </u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION - Use scientific names of plants.

Sampling Point: WC-087-DP1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				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%</u> (A/B)
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u>None observed</u>				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
			= Total Cover	
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u>Carex bebbii</u>	1	No	OBL	
2. <u>Phalaris arundinacea</u>	70	Yes	FACW	
3. <u>Agrostis gigantea</u>	10	No	FACW	
4. <u>Asclepias incarnata</u>	5	No	OBL	
5. <u>Lythrum salicaria</u>	10	No	OBL	
6. <u>Carex vulpinoidea</u>	2	No	OBL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
			98 = Total Cover	
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u>Vitis riparia</u>	5	Yes	FACW	
2. _____				
3. _____				
4. _____				
			5 = Total Cover	
Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>18</u> x 1 = <u>18</u> FACW species <u>85</u> x 2 = <u>170</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>103</u> (A) <u>188</u> (B) Prevalence Index = B/A = <u>1.83</u>				
Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.				
Hydrophytic Vegetation Present ? Yes <u>x</u> No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

VEGETATION - Use scientific names of plants.

Sampling Point: WC-087-DP2

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft.</u>)					
1. <u>None observed</u>				Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</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>25%</u> (A/B)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
			= Total Cover	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>1</u> x 1 = <u>1</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>29</u> x 3 = <u>87</u> FACU species <u>51</u> x 4 = <u>204</u> UPL species <u>20</u> x 5 = <u>100</u> Column Totals: <u>106</u> (A) <u>402</u> (B) Prevalence Index = B/A = <u>3.79</u>	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u>None observed</u>					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
			= Total Cover		
Herb Stratum (Plot size: <u>5 ft.</u>)					
1. <u>Apocynum cannabinum</u>	15	No	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Bromus inermis</u>	20	Yes	UPL		
3. <u>Agropyron repens</u>	20	Yes	FACU		
4. <u>Rumex crispus</u>	2	No	FAC		
5. <u>Carex vulpinoidea</u>	1	No	OBL		
6. <u>Cirsium arvense</u>	20	Yes	FACU		
7. <u>Achillea millefolium</u>	10	No	FACU		
8. <u>Plantago lanceolata</u>	2	No	FAC		
9. <u>Taraxacum officinale</u>	1	No	FACU		
10. <u>Poa pratensis</u>	10	No	FAC		
11. _____					
12. _____					
			101 = Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft.</u>)					
1. <u>Vitis riparia</u>	5	Yes	FACW	Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.	
2. _____					
3. _____					
4. _____					
			5 = Total Cover		
Hydrophytic Vegetation Present ? Yes _____ No <u>x</u>					
Remarks: (Include photo numbers here or on a separate sheet.) 					

VEGETATION - Use scientific names of plants.

Sampling Point: WC-104-DP1

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft.</u>)					
1. <u><i>Acer saccharinum</i></u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>89%</u> (A/B)	
2. <u><i>Ulmus americana</i></u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>		
3. <u><i>Carya ovata</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>		
4. <u><i>Tilia americana</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>		
5. <u><i>Acer rubrum</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>		
6. _____					
7. _____					
	<u>50</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>20</u> x 1 = <u>20</u> FACW species <u>67</u> x 2 = <u>134</u> FAC species <u>27</u> x 3 = <u>81</u> FACU species <u>26</u> x 4 = <u>104</u> UPL species <u>2</u> x 5 = <u>10</u> Column Totals: <u>142</u> (A) <u>349</u> (B) Prevalence Index = B/A = <u>2.46</u>	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)					
1. <u><i>Ilex verticillata</i></u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>		
2. <u><i>Rhamnus cathartica</i></u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>		
3. <u><i>Rhamnus frangula</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>		
4. <u><i>Fraxinus pennsylvanica</i></u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>		
5. <u><i>Lindera benzoin</i></u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>		
6. <u><i>Carya ovata</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>		
7. _____					
	<u>50</u>	= Total Cover			
Herb Stratum (Plot size: <u>5 ft.</u>)					
1. <u><i>Glyceria striata</i></u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u><i>Boehmeria cylindrica</i></u>	<u>10</u>	<u>Yes</u>	<u>OBL</u>		
3. <u><i>Parthenocissus quinquefolia</i></u>	<u>2</u>	<u>No</u>	<u>FAC</u>		
4. <u><i>Rhamnus frangula</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>		
5. <u><i>Acer rubrum</i></u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>		
6. <u><i>Fraxinus pennsylvanica</i></u>	<u>2</u>	<u>No</u>	<u>FACW</u>		
7. <u><i>Geum canadense</i></u>	<u>2</u>	<u>No</u>	<u>UPL</u>		
8. <u><i>Dryopteris marginalis</i></u>	<u>1</u>	<u>No</u>	<u>FACU</u>		
9. _____					
10. _____					
11. _____					
12. _____					
	<u>42</u>	= Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft.</u>)					
1. <u><i>None observed</i></u>				Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.	
2. _____					
3. _____					
4. _____					
				Hydrophytic Vegetation Present ? Yes <u>x</u> No _____	

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

WETLAND DETERMINATION DATA FORM -- Northcentral and Northeast Region

Project/Site: I-275 City/County: Canton / Wayne County Sampling Date: 7.23.2012
 Applicant/Owner: Michigan Department of Transportation State: MI Sampling Point: WC-104-DP2
 Investigator(s): R. Roos, S. Kogge Section, Township, Range: T8E, R2S, S12
 Landform (hillslope, terrace, etc.): rise in woodland Local relief (concave, convex, none): concave
 Slope (%): 1% Lat: 42 19'50.38" Long: 83 26'26.56" Datum: UTM 16N
 Soil Map Unit Name: Pella silt loam NWI classification: PFO1C
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No x (If no, explain in Remarks.)
 Are Vegetation n, Soil n, or Hydrology n significantly disturbed? Are "Normal Circumstances" present? Yes No x
 Are Vegetation n, Soil n, or Hydrology n naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS -- Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>x</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>x</u> Wetland Hydrology Present? Yes <u> </u> No <u>x</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>x</u> If yes, optional Wetland Site ID: <u> </u>
Remarks: (Explain alternative procedures here or in a separate report.) We are currently experiencing a severe drought for this area according to NOAA - July 17, 2012. Meets dominance test for hydrophytic vegetation, but there is little/no evidence of hydrology or hydric soils.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Water Table Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> Saturation Present? Yes <u> </u> No <u>x</u> Depth (inches): <u> </u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u>x</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: 	

VEGETATION - Use scientific names of plants.

Sampling Point: WC-104-DP2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft.</u>)				
1. <u><i>Tilia americana</i></u>	60	Yes	FACU	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>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>57%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	60	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u>)				
1. <u><i>Ilex verticillata</i></u>	10	Yes	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>23</u> x 2 = <u>46</u> FAC species <u>50</u> x 3 = <u>150</u> FACU species <u>95</u> x 4 = <u>380</u> UPL species <u>1</u> x 5 = <u>5</u> Column Totals: <u>169</u> (A) <u>581</u> (B) Prevalence Index = B/A = <u>3.44</u>
2. <u><i>Prunus serotina</i></u>	15	Yes	FACU	
3. <u><i>Ostrya virginiana</i></u>	5	No	FACU	
4. <u><i>Fraxinus pennsylvanica</i></u>	10	Yes	FACW	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	40	= Total Cover		
Herb Stratum (Plot size: <u>5 ft.</u>)				
1. <u><i>Toxicodendron radicans</i></u>	10	Yes	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Agrimonia gryposepala</i></u>	10	Yes	FACU	
3. <u><i>Parthenocissus quinquefolia</i></u>	25	Yes	FAC	
4. <u><i>Carex blanda</i></u>	5	No	FAC	
5. <u><i>Smilacina stellata</i></u>	3	No	FAC	
6. <u><i>Geum canadense</i></u>	5	No	FAC	
7. <u><i>Hystrix patula</i></u>	1	No	UPL	
8. <u><i>Ilex verticillata</i></u>	3	No	FACW	
9. <u><i>Circaea lutetiana</i></u>	5	No	FACU	
10. <u><i>Rhamnus frangula</i></u>	2	No	FAC	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	69	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft.</u>)				
1. <u><i>None observed</i></u>	_____	_____	_____	Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	_____	= Total Cover		
Hydrophytic Vegetation Present ? Yes <u>x</u> No _____				
Remarks: (Include photo numbers here or on a separate sheet.) 				

