WATERS DELINEATION REPORT

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DRAFT WETLANDS AND OTHER WATERS DELINEATION REPORT

8-Acre Proposed Regional Storm Water Detention Property in North Royalton, Cuyahoga County, Ohio

Project # 4229

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STATEMENT OF CERTIFICATION

The analyses, opinions and conclusions in this report are based entirely on EnviroScience's unbiased, professional judgment. EnviroScience's compensation is not in any way contingent on any action or event resulting from this study. Neither EnviroScience nor any EnviroScience employee has any vested interest in the property examined in this study.

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EXECUTIVE SUMMARY

EnviroScience, Inc. performed a wetland delineation in October of 2011 for the City of North Royalton on 8 acres of property in Cuyahoga County, Ohio. The property is bound on the east by York Road and is south of Sprague Road within the city of North Royalton. The site abuts residential housing to the north, east, and south. To the west of the property is vacant land.

The study site is relatively flat with a gentle slope towards the west. Upland habitat communities consist of second growth forest with a scrub-shrub understory and residential/mowed grass. Two wetland habitat complexes were also identified on the study area.

Four wetlands were delineated within the study area boundaries and total approximately 1.036 acres. Two unnamed streams, one intermittent and one ephemeral, were identified in the south-central portion of the study area. Stream 1a is approximately 516 linear feet, and Stream 1b is approximately 145 linear feet. These wetlands, deepwater aquatic habitats and other waters are under the jurisdiction of the Ohio EPA or Corps. No filling may occur within these areas without their written permission. Please contact the Ohio EPA Division of Surface Water at (614) 644-2001or the Buffalo District, U.S. Army Corps of Engineers, at (304) 399-5210 before working in these areas.

1.0 INTRODUCTION AND SITE DESCRIPTION

EnviroScience, Inc. performed a wetland delineation in October of 2011 for the City of North Royalton on 8 acres of property in Cuyahoga County, Ohio (Appendix A: Map 1). The property is bound on the east by York Road and is south of Sprague Road within the city of North Royalton. The site abuts residential housing to the north, east, and south. To the west of the property is vacant land (Appendix A: Map 2).

The study site is relatively flat with a gentle slope towards the west. Upland habitat communities consist of second growth forest with a scrub-shrub understory and residential/mowed grass. Two wetland habitat complexes were also identified on the study area.

The site is located within the Black-Rocky River Watershed (HUC 04110001). It is also within the Glaciated Allegheny Plateaus physiographic region (Schaffner 1932) and the Erie/Ontario Lake Hills and Plains ecoregion (Woods *et al.* 1998) of Ohio.

2.0 METHODS

Government agencies regulate coastal and inland waters for commerce, flood control and water quality. These water bodies provide numerous functions and values necessary to protect and sustain our quality of life. Wetlands comprise a significant portion of regulated waters. The U.S. Army Corps of Engineers (Corps) and U.S. Environmental Protection Agency (EPA) jointly define wetlands as:

> "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (Environmental Laboratory 1987).

The remaining deepwater aquatic habitats (open waters) are defined by the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) as:

> ". . . areas that are permanently inundated at mean annual water depths >6.6 ft or permanently inundated areas □6.6 ft in depth that do not support rooted emergent or woody plant species" (Environmental Laboratory 1987).

The methods used for determining and delineating wetlands and open waters strictly adhere to those found in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Interim Regional Supplemental to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regions* (Environmental Laboratory 2009). Wetlands and open water boundaries were determined by the disappearance of one or more of their diagnostic characteristics. Ordinary high water marks (OHWM) defined the outermost regulatory boundaries of ephemeral and open waters.

Each sample plot, and the perimeter of each wetland and others water was surveyed and marked in the field with plain pink flagging and pink “wetland delineation” flagging, respectively. A global positioning system (GPS) with submeter accuracy was used, in conjunction with aerial photography and topographic maps, for the survey. Computer Aided Design (CAD) software was used to determine wetland dimensions and produce a map of the site showing wetlands and other waters.

2.1 WETLANDS

2.1.1 Determination

A review of secondary literature sources was performed to find known wetlands and other significant ecological resources and areas with high potential for wetlands in or near the site. Resources included some or all of the following:

1. U.S. Geological Survey (USGS) topographic maps;
2. National Wetlands Inventory (NWI) maps;
3. U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey of Pike County, Ohio;
4. Floodplain Emergency Management Act (FEMA) mapping;
5. Ohio Department of Natural Resources (ODNR) Biodiversity data;
6. U.S. Fish and Wildlife Service (USFWS) data; and
7. Aerial Photographs.

A field inspection of the site was then completed to identify major plant communities and to visually locate potential wetlands. The routine, onsite (Level 2) wetland determination was used to perform the delineation. Wetland communities were classified according to the classification scheme of Cowardin *et al.* (1979) and are listed in Table 1. Mature nonwetland communities that had reached a stable equilibrium were classified according to Anderson (1982) and Gordon (1966, 1969). Disturbed and successional nonwetland communities were classified as one of the categories described in Table 2.

Table 1. Wetland Communities.

Community	Description
PEM	Palustrine Emergent Marsh
PSS	Palustrine Scrub-Shrub
PFO	Palustrine Forested
POW	Palustrine Open Water

Table 2. Nonwetland Communities.

Community		Description
Disturbed	Urban	regularly maintained land; residential; industrial
	Agricultural	land used for producing crops or raising livestock; cropland; pastureland
	Cleared	disturbed areas devoid of most vegetation from recent clearing, grading or filling
Successional	Open Field	herbaceous community without woody vegetation
	Old Field	herbaceous community having woody vegetation coverage of <50%
	Scrub Shrub	community dominated by woody vegetation <6 m (20 ft) tall
	Forest	community dominated by woody vegetation >6 m (20 ft) tall

Sample plots were established within each natural community and potential wetland within the site. Complete data for each sample plot were collected and recorded on the Corps' Routine Wetland Determination Data Forms. Vegetation, hydrology and soils were evaluated at each sample plot.

2.1.1.1 Vegetation

To detect the presence or absence of hydrophytic vegetation, four plant strata were evaluated within specific radii of the plot center. Each stratum was ranked by aerial cover in descending order of abundance. Table 3 provides information on each.

Table 3. Vegetative Strata.

Stratum	Definition	Survey Area
Canopy	woody plants >6 m (20 ft) tall	10-m (33-ft) radius
Shrubs/understory	woody plants 1-6 m (20 ft) tall	10-m (33-ft) radius
Groundcover	herbs and woody plants <1 m (3 ft)	3-m (10-ft) radius

Percent dominance was obtained for each species and within each stratum. Dominant species are those which cumulatively totaled in order of abundance immediately exceed 50% and also include any individual species with an abundance of 20% or more (Environmental Laboratory 2010). Dominant taxa were identified using recognized local guides: nomenclature follows the *National List of Scientific Plant Names* (USDA 1982). Following the identification of each plant species present within the plot, all dominant species within each stratum were assigned a wetland indicator status according to Reed (1988) and Tiner *et al.* (1995). Table 4 summarizes the indicators.

Table 4. Plant Indicators.

Indicator	Category	Definition
OBL	Obligate Wetland	almost exclusively found in wetlands
FACW	Facultative Wetland	most likely found in wetlands
FAC	Facultative	equally likely found in wetlands or nonwetlands
FACU	Facultative Upland	most likely found in nonwetlands
UPL	Obligate Upland	almost exclusively found in nonwetlands

Positive (+) and negative (-) symbols used with these indicators signify a higher or lower frequency of occurring in wetlands, respectively. An 'NI' (no indicator) designation represents species where not enough information is available to assign an indicator; an 'NL' (no listing) designation is given to species whose identification was not determined sufficiently enough to assign an indicator. Once the indicator status is assigned to each dominant species, the evaluator can perform the percent dominance test according to the protocol outlined within the *Regional Supplement* (Environmental Laboratory 2010) to determine if the plot meets the criterion for hydrophytic vegetation.

2.1.1.2 Hydrology

To detect the presence or absence of wetland hydrology, surface and subsurface hydrologic indicators were evaluated at the sample plot and throughout the adjacent community. Primary sources of wetland hydrology include direct precipitation, headwater flooding, backwater flooding, groundwater or any combination of these. When obtaining data at each sample plot, the evaluator observes evidence of hydrology. Primary indicators of hydrology (only one of these is necessary to indicate sufficient wetland hydrology) include the presence of surface water, water marks, sediment deposits, drift deposits, etc (Environmental Laboratory 2010). Secondary indicators of hydrology (which requires two or more at each sample plot) include surface soil cracks, drainage patterns, crayfish burrows, etc (Environmental Laboratory 2010).

2.1.1.3 Soils

The upper horizons of the soil at each sample plot were examined to detect the presence or absence of hydric soils indicators. The 1987 *Manual* and *Regional Supplement* require the evaluator to assess the upper 12 inches of soil for hydric soil characteristics. One indicator of hydric soils requires an assessment of soil matrix color and mottle characteristics (Environmental Laboratory 1987, 2010) for each horizon. These characteristics were determined by comparing a moist sample with *Munsell Soil Color Chart* (Kollmorgen Corporation 1994).

2.1.2 ORAM Categorization

Each wetland system was categorized in accordance with version 5.0 of the Ohio EPA's Ohio Rapid Assessment Method for Wetlands (ORAM) (Mack 2001). Biologists are Ohio EPA trained to assess wetlands using the ORAM. Each form consists of a narrative rating and a quantitative rating. The narrative rating requires ODNR Biodiversity data, and serves to alert the rater of certain qualities that may have an obvious effect on the wetland category. The quantitative rating is based on wetland characteristics such as size, buffers, hydrology, disturbance and habitat. Scores from the quantitative rating produce a wetland category of 1-3, based on Mack (2000).

Category 1 wetlands are considered very low quality and are generally considered not restorable. They represent small emergent wetlands, which often have a predominance of invasive/exotic species. Modified Category 2 wetlands are degraded systems that have potential to be restored, while Category 2 are medium quality systems which represent the majority of Ohio's wetlands. One (1) or 2 gray zone wetlands are wetlands whose scores fall between Category 1 and Category 2 scoring ranges. These wetlands will be considered a Category 2 wetland as they are always assigned to the higher of the two categories. Category 3 wetlands are exceptional quality systems, such as large, undisturbed, forested wetlands, regionally significant ecosystems, and wetlands with known occurrences of endangered or threatened species.

2.1.3 Cowardin Wetland Classification

The USFWS National Wetlands Inventory uses the *Classification of Wetlands and Deepwater Habitats of the United States* to classify wetland habitat types (Cowardin et al 1979). This classification system is hierarchical and defines five major systems – Marine, Estuarine, Riverine, Lacustrine, and Palustrine. The Palustrine system was the only type of wetland system identified within the study area and is defined as including all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean driven-derived salts is below 0.5 percent (Cowardin et al 1979).

2.2 OTHER WATERS

Other waters include open waters and riverine systems. These features are described in detail below.

2.2.1 Ponds and Lakes

Palustrine systems other than wetlands and lacustrine waters are addressed as ponds and lakes, respectively. These non-linear open waters may harbor important aquatic communities such as vegetated shallows (aquatic bed) and mud flats. They are classified according to Cowardin *et al.* (1979).

2.2.2 Streams and Rivers

Riverine systems are linear flowing waters bounded by a channel. Cowardin *et al.* (1979) divides these systems into four groups, however, for the purpose of this report streams are placed into three types, listed below.

Ephemeral: An ephemeral stream only conveys runoff precipitation and meltwater. It is permanently located above the water table and is most often dry.

Intermittent: An intermittent stream is located below the water table for parts of the year, but does have dry periods.

Perennial: A perennial stream typically has flowing water throughout the entire year.

In addition to flow characteristics, the Corps has defined other regulatory categories that apply to streams, listed below.

Traditional navigable waters (TNW): all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.

Relatively permanent waters (RPW): non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months).

3.0 LITERATURE REVIEW

A desktop review of publically available resources was performed to determine the potential presence of current and/or historic ecological resources on the property. These resources include a review of the USGS topographic maps, the USFWS NWI maps, Cuyahoga County, Ohio soil survey data from the NRCS, current and historical aerial photography, and FEMA floodplain maps. More detailed descriptions of these resources are provided below. Please note that features identified within these resources may or may not be current and are considered supplemental to field efforts provided in the results section below.

3.1 USGS TOPOGRAPHIC MAP

According to the Berea quadrangle of the USGS 7.5 minute topographic series (Appendix A: Map 2) the site appears to slope towards the west. The northern portion of the site appears to drain into an unnamed intermittent ditch located to the north off the site. The central and southern portions of the property appear to drain towards the south into the unnamed intermittent stream located in the southern portion of the site.

Elevations range from approximately 928 ft above mean sea level (AMSL) to approximately 955 ft AMSL. No wetlands are identified on the USGS topographic map for the site.

3.2 NWI MAP

The Berea quadrangle of the NWI map (Appendix A: Map 3) does not depict any wetlands, streams or open water areas on the site.

3.3 COUNTY SOIL SURVEY

The *Soil Survey of Cuyahoga County, Ohio* (USDA 2010) was also reviewed to identify areas delineated as hydric soils and aquatic resources. See Map 4 in Appendix A for a map that depicts the soil series boundaries at the site. Table 5 provides a list of the soils that are mapped within the study area.

Table 5. Soil Types Found in Study Area

Symbol	Soil Type	Status
MgB	Mahoning Silt Loam, 2-6% slopes	Nonhydric
MgA	Mahoning Silt Loam, 0-2% slopes	Hydric in Depressions
Ct	Condit	Hydric in Depressions
ElB	Ellsworth Silt Loam, 2-6% slopes	Nonhydric

Mahoning silt loam, 0 to 2 percent slopes (MgA) extends throughout a large portion of the study area. The MgA soil type is classified as hydric in depressions. The southern portion of the study area consists of four soil types: Condit (Ct), Mahoning silt loam, 0-2 percent slopes (MgA), Mahoning silt loam, 2-6 percent slopes (MgB) and Ellsworth silt loam, 2-6% slopes (ElB). The Ct soil type is hydric in depressions, the MgA soil type is classified as hydric in depressions, the MgB soil type is classified as nonhydric and the ElB soil type is classified as nonhydric. Mahoning silt loam, 2-6 percent slopes (MgB) is also present at the southeastern end of the site. An un-named stream is depicted flowing from east to west along in the southern portion of the site. This stream flows off the property and into Baldwin Creek. Baldwin Creek flows into Baldwin Lake which empties into the East Branch of the Rocky River.

3.4 BIODIVERSITY DATABASE

The ODNR Biodiversity Database lists four records of rare or endangered species within a 1-mile radius of the site (Appendix B: ODNR 2011). Three records of occurrence were identified approximately 1,800 feet north of the study area. These records are for the state potentially threatened purple sand grass (*Triplasis purpurea*), the state potentially threatened inland sea rocket (*Cakile edentula*) and the state threatened American beach grass (*Ammophila breviligulata*). One record of occurrence of the state threatened Canada hawkweed (*Hieracium umbellatum*) is known

approximately 3,800 feet southwest of the study area. No records of the federally endangered Indiana bat (*Myotis sodalis*) are known within five miles of the site. No other unique ecological areas, geologic features, breeding or non-breeding animal concentrations, champion trees, forests, or wildlife areas were noted.

3.5 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service states that there are four federally listed species whose known ranges include Cuyahoga County: the federally endangered Indiana bat (*Myotis sodalis*), the federally endangered Kirtland's warbler (*Dendroica kirtlandii*), the federally endangered piping plover (*Charadrius melodus*) and the federal species of concern bald eagle (*Haliaeetus leucocephalus*). The Kirtland's warbler habitat consists of young jack pine forest for nesting. No Kirtland's warbler habitat was identified in the study area. The piping plover habitat consists of beaches along shorelines of the Great Lakes. No piping plover habitat was identified in the study area. The Indiana bat hibernates in caves or abandoned mines during the winter, but in summer feeds along stream corridors and roost in living or dead trees with cavities or peeling bark. According to USFWS standards, several potential Indiana bat habitat trees and feeding corridors were identified on the study area. Section 7 consultation with the USFWS is recommended for the site before any clearing of trees occurs. The bald eagle habitat consists of areas with low human disturbance, suitable forest structure and abundant prey. No bald eagle habitat was identified in the study area.

3.6 Aerial Photography

A 2006 aerial photograph of the site is shown on Map 6 in Appendix A. The majority of the site is wooded vacant land. A portion of the southeastern site is residential and mowed grass. A stream is depicted flowing from east to west along in the southern portion of the site. This stream flows off the property and into Baldwin Creek. Baldwin Creek flows into Baldwin Lake which empties into the East Branch of the Rocky River.

3.7 FEMA Floodplain Map

Panel 282 of the Flood Insurance Rate Map of Cuyahoga County, Ohio and incorporated areas [FEMA 2010] identified a Zone X floodplain along the unnamed stream in the southern portion of the property (Appendix A: Map 7). The area mapped as Zone X has a 0.2% chance of annual flooding.

4.0 RESULTS

A total of eight sample plots were established throughout the site (Appendix A: Map 8). Four of these plots were established within upland communities and four of these plots were established within wetland communities. Table 6 summarizes the sample plot data. Photographs are located in Appendix C.

Table 6. Sample Plot Results.

Sample Plot	Photo(s)	Community	Hydrophytic Vegetation	Wetlands Hydrology	Hydric Soil	Status
1	1	Forest/Scrub-Shrub	X		X	Non-Wetland
2	2	PEM/PSS/PFO	X	X	X	Wetland
3	3	PEM/PSS/PFO	X	X	X	Wetland
4	4	Forest			X	Non-Wetland
5	5	Forest	X			Non-Wetland
6	6	Forest	X			Non-Wetland
7	7	PEM/PSS/PFO	X	X	X	Wetland
8	8	PEM/PSS	X	X	X	Wetland

Each sample plot and the delineated wetlands and other waters are illustrated on Map 8 (Appendix A) and sample plot forms can be found in Appendix D. The following section briefly describes each upland community type. Wetland and stream habitat types are discussed in detail in the following sections.

4.1 NONWETLANDS

Four upland communities exist on the study area, ranging from residential/mowed grass to forested habitat. Sample Plots 1, 4, 5, and 6 represent the upland communities. One of these new field sample plots (SP 5) was taken to document upland area around the unnamed stream. Dominant vegetation in this sample plot includes *Fraxinus pennsylvanica* (green ash, FACW), *Picea abies* (Norway spruce, UPL), *Phragmites australis* (common reed, FACW), and *Lysimachia nummularia* (moneywort loosestrife, OBL). This sample plot had hydrophytic vegetation, but did not have hydric soils or wetland hydrology.

Sample Plot 4 represents the second growth forest found throughout the property. Dominant vegetation in this sample plot consists of *Ulmus americana* (American elm, FACW-), *Fraxinus pennsylvanica* (green ash, FACW), *Ligustrum vulgare* (privet, FACU), *Hypericum prolificum* (shrubby st. johns wort, FACU), *Cornus racemosa* (gray dogwood, FACU), *Rosa multiflora* (multiflora rose, FACU), *Rhamnus frangula* (glossy buckthorn, FAC), *Glyceria striata* (fowl meadow grass, OBL), *Aster ericoides* (heath aster, FACU), and *Rumex crispus* (curly dock, FAC).

Sample Plots 1 and 6 represent the forested area located throughout the study area. Dominant vegetation in this sample plot consists of *Acer rubrum* (red maple, FAC), *Acer saccharinum* (silver maple, FACW), *Fraxinus pennsylvanica* (green ash, FACW), *Ulmus americana* (American elm, FACW), *Hypericum prolificum* (shrubby st. johns wort, FACU), *Rhamnus frangula* (glossy buckthorn, FAC), and *Leersia virginica* (whitegrass, FACW).

4.2 WETLANDS

Four wetlands were identified and delineated within the study area. These were composed of PEM/PSS/PFO and PEM/PSS vegetative communities. Each wetland system has been categorized using ORAM v. 5.0; scoring forms are included in Appendix E. Wetland results are given in Table 7 and depicted on Map 8.

Table 7. Wetland Results.

Wetland	Photo(s)*	Classification (Cowardin *et al*. 1979)	ORAM Score	ORAM Category	Onsite Area, acres
1	9	PEM/PSS/PFO	41.5	Modified 2	1.0
2	10	PEM/PSS/PFO	36	Modified 2	0.006
3	11	PEM/PSS/PFO	17	Category 1	0.02
4	12	PEM/PSS	19	Category 1	0.01
Total Wetlands					1.036

* photos are located in Appendix C

<u>Wetland 1</u>
Wetland 1is a PEM/PSS/PFO wetland and is represented by Sample Plot 2. Typical vegetation in this wetland includes *Glyceria striata* (fowl meadow grass, OBL), *Rhamnus frangula* (glossy buckthorn, FAC), *Lysimachia nummularia* (moneywort, OBL), *Viburnum recognitum* (Northern arrowwood, FACW), *Ulmus americana* (American elm, FACW), and *Fraxinus pensylvanica* (green ash, FACW). Wetland 1 is considered jurisdictional due to its hydrological connection to stream 1. This wetland is classified as a Modified Category 2 wetland according to the OEPA ORAM field scoring forms.

<u>Wetland 2</u>
Wetland 2 is a small PEM/PSS/PFO wetland located to the south and east of wetland 1 and is represented by Sample Plot 3. Dominant vegetation includes *Ulmus americana* (American elm, FACW), *Glyceria striata* (fowl meadow grass, OBL), *Ligustrum vulgare* (privet, FACU), *Juncus tenuis* (path rush, FAC), and *Juncus effusus* (soft rush, FACW). This wetland is considered jurisdictional due to its hydrological connection to wetland 1. Wetland 2 is classified as a Modified Category 2 wetland according the OEPA ORAM field scoring form.

<u>Wetland 3</u>
Wetland 3 is a PEM/PSS wetland located in the northwestern portion of the study area and represented by sample plot 7. This wetland is dominated by *Glyceria striata* (fowl meadow grass, OBL). Other species found within this wetland include *Rhamnus frangula* (glossy buckthorn, FAC) and *Fraxinus pennsylvanica* (green ash, FACW). This wetland is considered jurisdictional due to its hydrological connection with an offsite stream to the north. Wetland 3 is classified as a Category 1 wetland according to the OEPA ORAM field scoring forms.

Wetland 4

Wetland 4 is a PEM/PSS/PFO wetland located in the northeastern portion of the study area and is represented by sample plot 8. This wetland is dominated by *Glyceria striata* (fowl meadow grass, OBL). Other species found within this wetland include *Rhamnus frangula* (glossy buckthorn, FAC) and *Hypericum prolificum* (shrubby st. johns wort, FACU). This wetland is considered jurisdictional due to its hydrological connection with an offsite stream to the northwest. Wetland 4 is classified as a Category 1 wetland according to the OEPA ORAM field scoring forms.

4.3 PONDS AND LAKES

No ponds or lakes were found within the study area.

4.4 STREAMS AND RIVERS

One unnamed intermittent stream and one unnamed ephemeral stream were identified and delineated within the study area. Stream results are depicted in Table 8 and shown on Map 8.

Stream 1a is the main intermittent stream channel that flows from east to west through the southern portion of the site. Stream 1b is an ephemeral branch of Stream 1a that splits off in the middle of the stream and then merges back together. This stream flows off the property and into Baldwin Creek. Baldwin Creek flows into Baldwin Lake which empties into the East Branch of the Rocky River. Rocky River flows north into Lake Erie.

Table 8. Stream and River Results.

Stream	Photo(s)*	Average OHWM Width (ft)	Stream Type	Onsite Length (l.f.)	Onsite Acreage
Unnamed Stream 1a	13,14	3	Intermittent	516	0.04
Unnamed Stream 1b	15,16	1	Ephemeral	145	0.003
Total Stream				661	0.043

* photos are located in Appendix C

5.0 REGULATORY JURISDICTION

These wetlands, deepwater aquatic habitats and other waters are under the jurisdiction of the Ohio EPA or Corps. No filling may occur within these areas without their written permission. Please contact the Ohio EPA Division of Surface Water at (614) 644-2001 or the Buffalo District, U.S. Army Corps of Engineers, at (716) 879-4329 before working in these areas.

The following information is excepted and summarized from the 2007 *U.S. Army Corps Of Engineers Jurisdictional Determination Form Instructional Guidebook.*

> "In 2001, the … U.S. Supreme Court's decision in the *Solid Waste Agency of Northern Cook County (SWANCC) v. Corps*…held that isolated, intrastate, non-navigable waters could not be regulated under the CWA based solely on the presence of migratory birds. Following the SWANCC decision … it generally was believed that a water body (including a wetland) was subject to CWA jurisdiction if the water body was part of the U.S. territorial seas, or traditional navigable water, or any tributary to a traditional navigable water, or a wetland adjacent to any one of the above. In addition, isolated wetlands and other waters might be considered jurisdictional where they had the necessary link to either navigable waters or interstate commerce."

In the state of Ohio, the Ohio EPA isolated wetland permitting program was legislatively created in response to the 2001 SWANC decision. On July 17, 2001, House Bill 231 was signed into law, establishing a permanent permitting process for isolated wetlands. The provisions of House Bill 231 were incorporated in Sections 6111.021 through 6111.029 of the Ohio Revised Code.

> "In 2006, the Supreme Court once again addressed the jurisdictional scope of Section 404 of the CWA, specifically the term "the waters of the U.S.," in *Rapanos v. U.S*. and in *Carabell v. U.S*. (hereafter referred to as Rapanos).
>
> The decision provides two new analytical standards for determining whether water bodies that are not traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction: (1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or (2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs. CWA jurisdiction over TNWs and their adjacent wetlands was not in question in this case, and, therefore, was not affected by the Rapanos decision. In addition, at least five of the Justices in Rapanos agreed that CWA jurisdiction exists over all TNWs and over all wetlands adjacent to TNWs.
>
> The Memo states that the [Corps and USEPA] will assert jurisdiction over the following categories of water bodies: TNWs; all wetlands adjacent to TNWs; non-navigable tributaries of TNWs that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally); and wetlands that directly abut such tributaries. In addition, the agencies will assert jurisdiction over every water body that is not an RPW if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water body that are

subject to CWA jurisdiction only if such a significant nexus is demonstrated are: non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands."

6.0 ASSUMPTIONS AND DISCLAIMERS

The constant influence of man on the study area can result in a rapid change of ecological boundaries. Over time, natural succession and changes in hydrology can also affect their boundaries. Precision of GPS collected data is subject to variation caused by canopy cover, atmospheric interference and satellite configuration. Because slight inaccuracies are possible, all acreages and derived boundaries presented in this report are approximate.

The results and conclusions contained in this report apply to the year and date in which the data were collected. This report is not considered officially valid until it is approved by the Corps. The report is then valid for a period of five years. Refer to the Corps' Regulatory Guidance Letter # 94-1 (23 May 1994).

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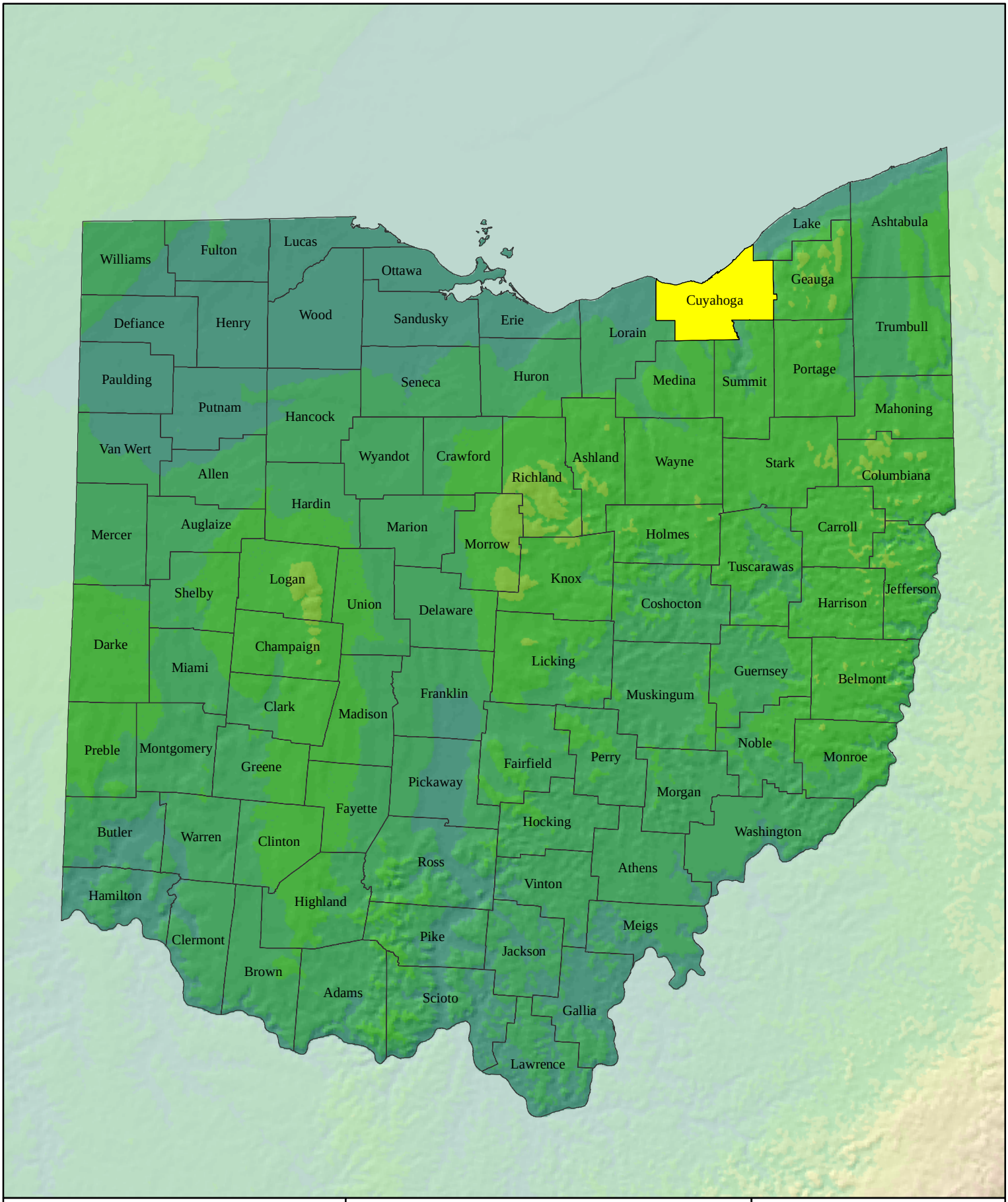
Appendix A:

Maps



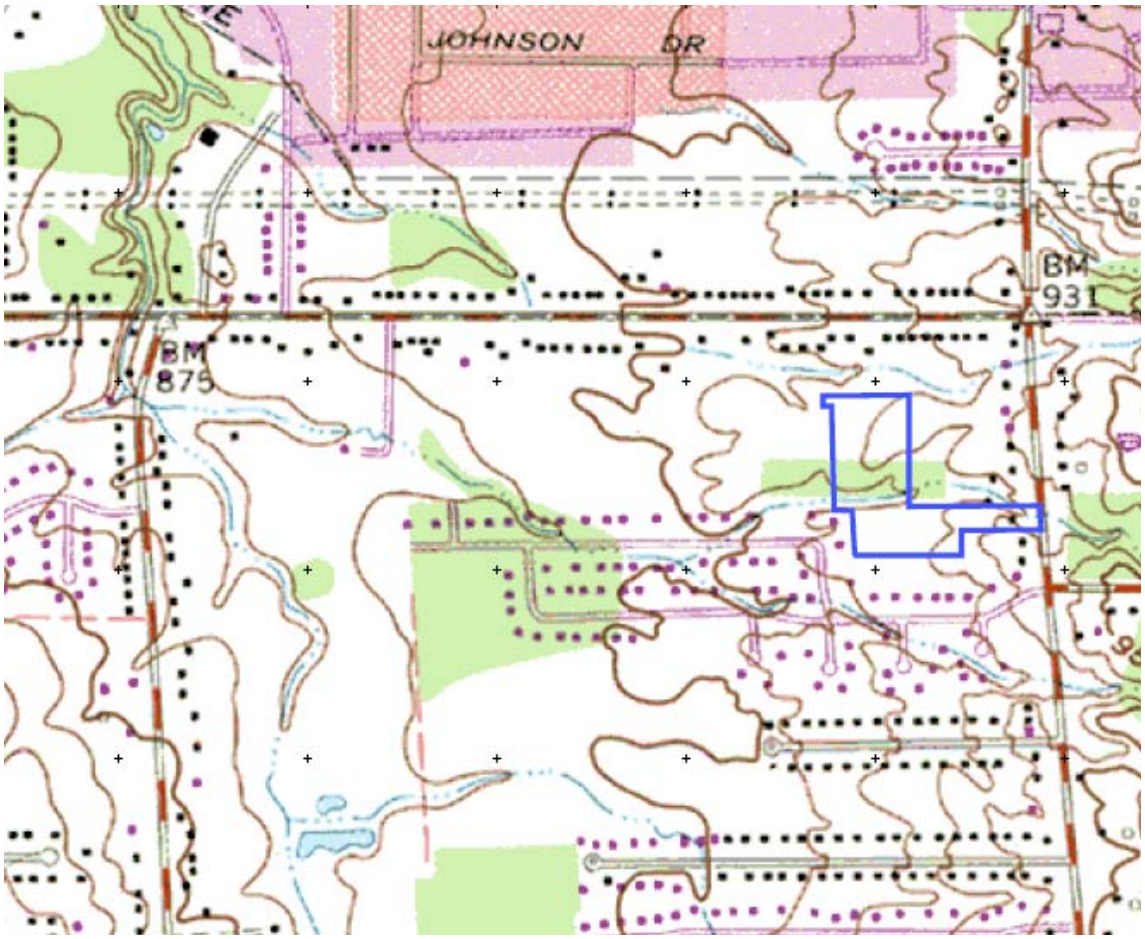
Map 1. Location of Cuyahoga County, Ohio

EnviroScience, Inc.

"Excellence in Ecological Monitoring"

Map 2. Location of Site in North Royalton, Cuyahoga County, Ohio.

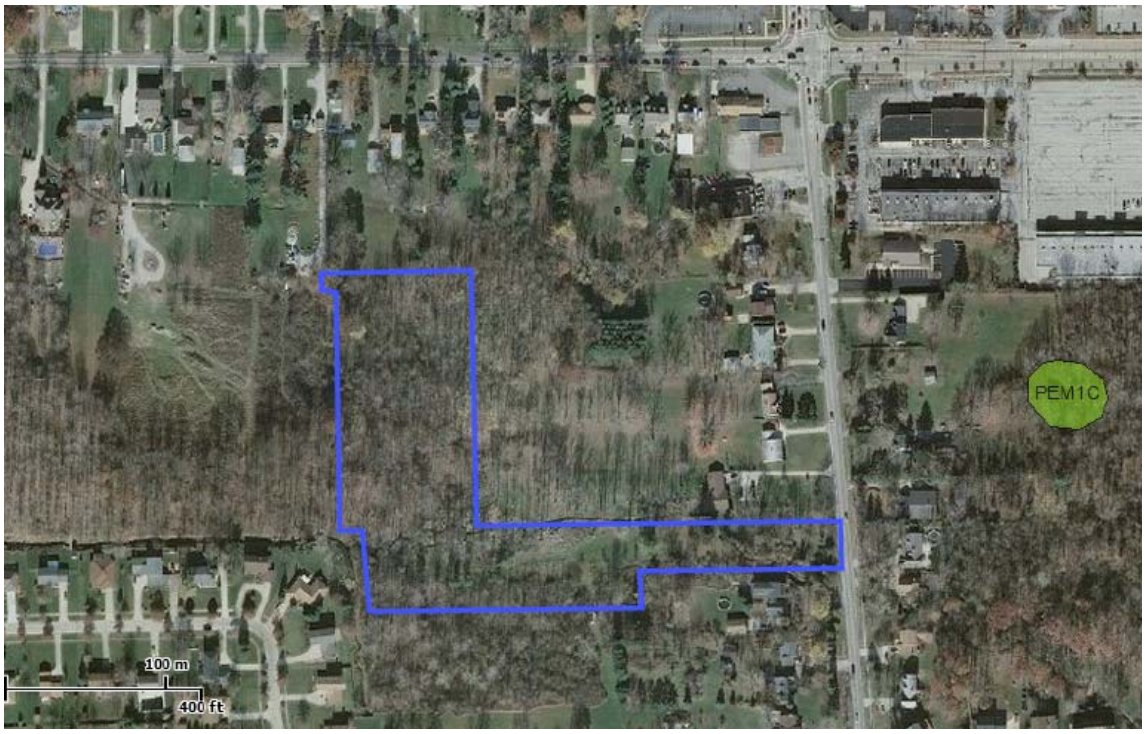
Excellence in Ecological Monitoring



Map 3. USGS 7.5-minute Topographic Map of Site (Berea Quadrangle).

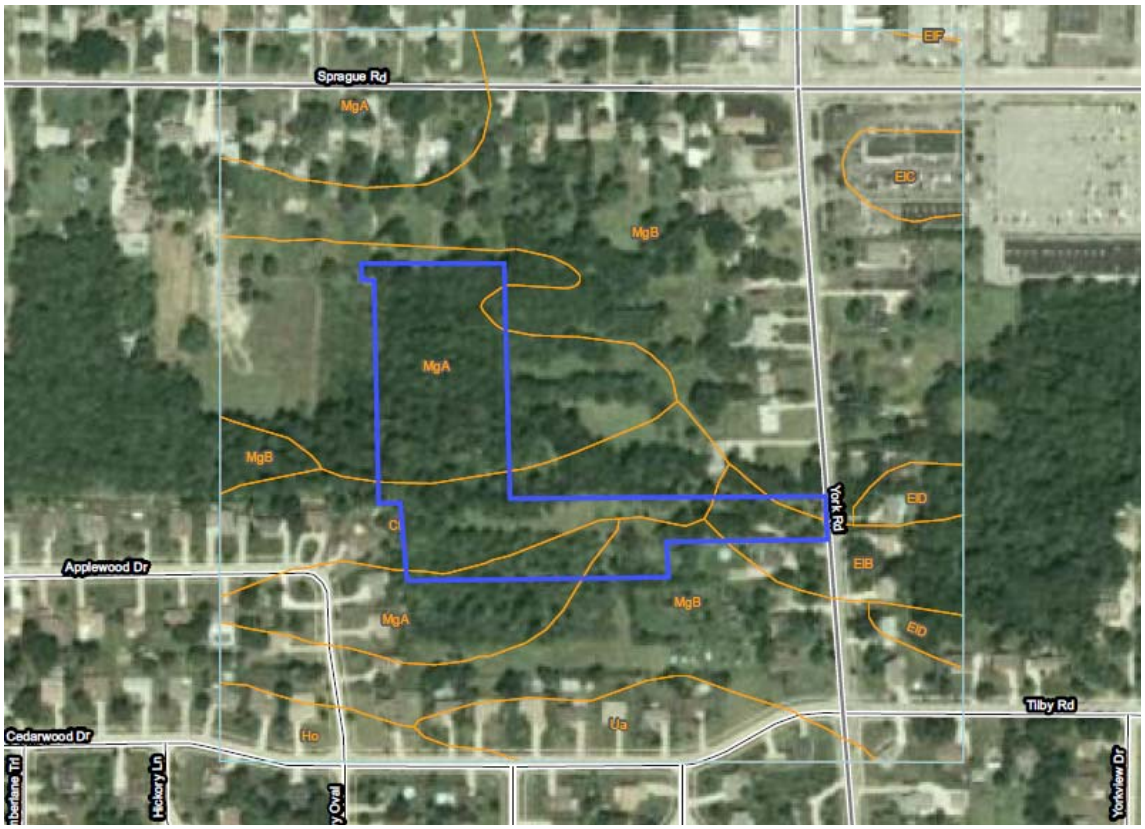
ES ENVIRO SCIENCE INCORPORATED

Excellence in Ecological Monitoring



Map 4. NWI Map of Site (Berea Quadrangle).

Excellence in Ecological Monitoring

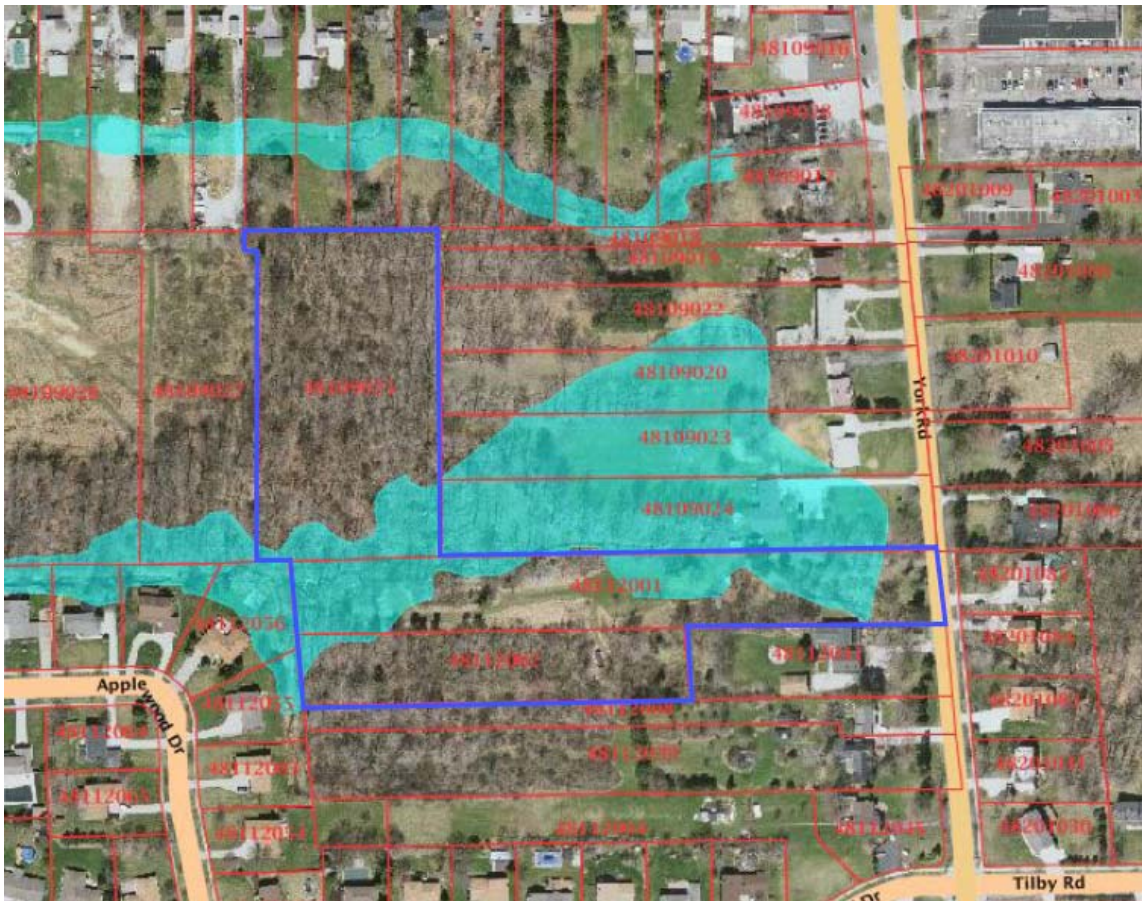


Map 5. Soil Map of Site.

Excellence in Ecological Monitoring

Map 6. 2006 Aerial Photograph of Site.

Excellence in Ecological Monitoring



Map 7. FEMA Floodplain Map, Showing Site.

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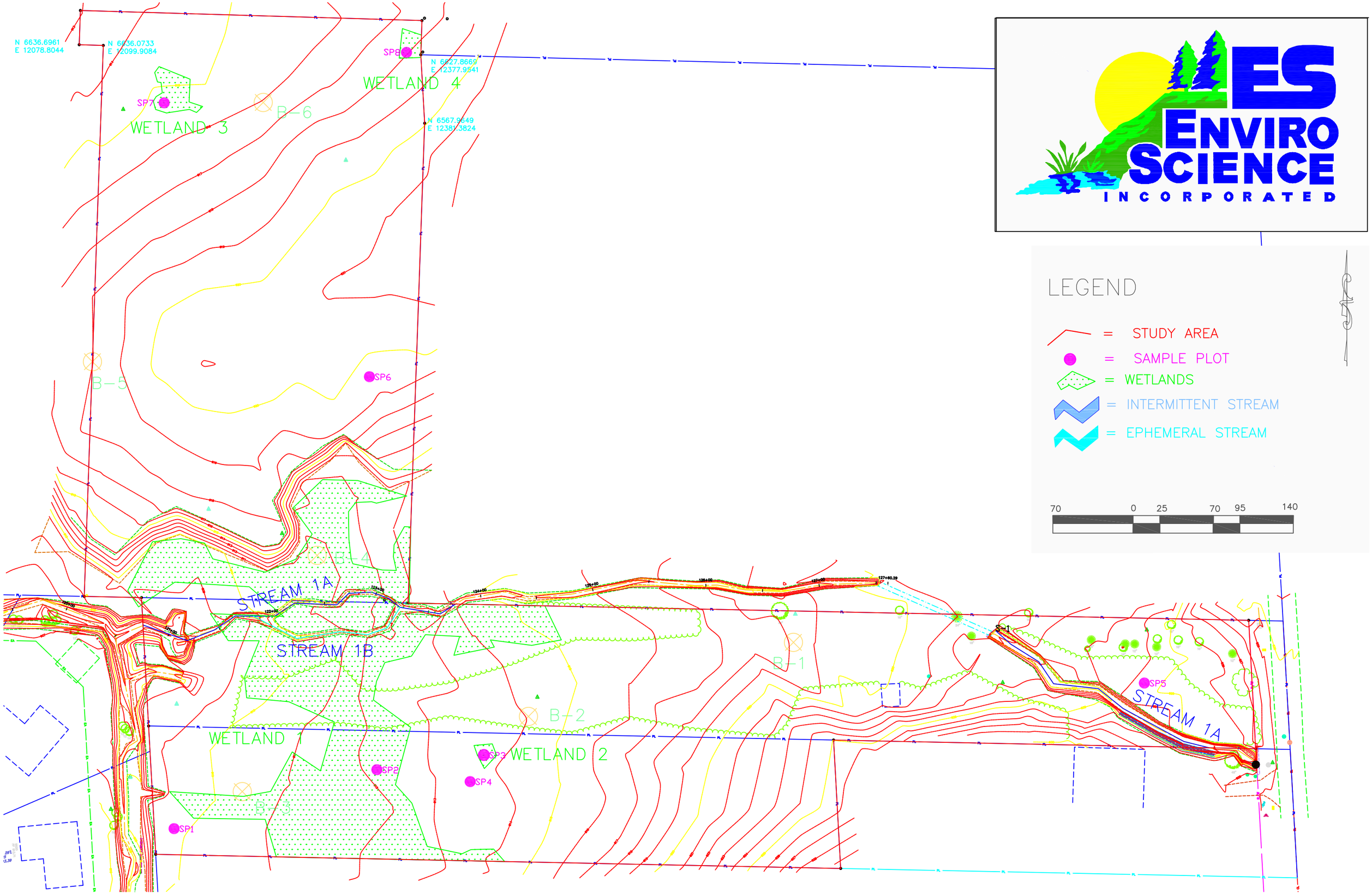
N 6636.6961
E 12078.8044
N 6636.0733
E 12099.9084
SP8
N 6527.8669
E 12377.9541
WETLAND 4
SP7
WETLAND 3
B-6
N 6567.9649
E 12381.3824
B-5
SP6
B-4
STREAM 1A
STREAM 1B
B-1
SP1
SP5
STREAM 1A
B-2
WETLAND 1
SP3
WETLAND 2
SP2
SP4
B-3
SP1
ES
ENVIRO
SCIENCE
INCORPORATED
LEGEND
= STUDY AREA
= SAMPLE PLOT
= WETLANDS
= INTERMITTENT STREAM
= EPHEMERAL STREAM
70
0
25
70
95
140

Appendix B:

ODNR Biodiversity Database Information

Appendix C:

Photographs

Photo 1. Sample Plot 1 in forest habitat.

Photo 2. Sample Plot 2 in Wetland 1.

Photo 3. Sample Plot 3 in Wetland 2.

Photo 4. Sample Plot 4 in forest habitat.

Photo 5. Sample Plot 5 in scrub/shrub forest riparian habitat.

Photo 6. Sample Plot 6 in forest habitat.

Photo 7. Sample Plot 7 in Wetland 3.

Photo 8. Sample Plot 8 in Wetland 4.

Photo 9. Wetland 1.

Photo 11. Wetland 3.

Photo 10. Wetland 2.

Photo 12. Wetland 4.

Photo 13. Stream 1a, upstream.

Photo 14. Stream 2a, downstream.

Photo 15. Stream 1b, upstream.

Photo 16. Stream 1b, downstream.

Appendix D:

Routine Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Regional Storm Water Detention Property City/County: North Royalton/Cuyahoga Sampling Date: 9/28/2011

Applicant/Owner: City of North Royalton State: OH Sampling Point: 1

Investigator(s): Brooke Harrison Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Mahoning silt loam, 2-6% slopes (MgA) NWI classification: _____

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

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

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)
Forest/Scrub-Shrub

HYDROLOGY

Wetland Hydrology Indicators:

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

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	40	Yes	FAC
2. *Acer saccharinum*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	60	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Hypericum spathulatum*	40	Yes	FACU
2. *Rosa multiflora*	5	No	FACU
3. *Fraxinus pennsylvanica*	5	No	FACW
4. *Rhamnus frangula*	10	No	FAC
5. *Crataegus sp.*			
6.			
7.			
	60	=Total Cover	

Herb Stratum (Plot size: 5')			
1. *Toxicodendron radicans*	30	Yes	FAC
2. *Aster pilosus*	10	Yes	UPL
3. *Lysimachia nummularia*	5	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	=Total Cover	

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	25	x 2 =	50
FAC species	80	x 3 =	240
FACU species	45	x 4 =	180
UPL species	10	x 5 =	50
Column Totals:	165 (A)		525 (B)

Prevalence Index = B/A = 3.18

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X 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.

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** X **No** ___

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

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	75	10YR 4/1	25	C	M		Distinct redox concentrations
4-8	10YR 4/2	30	10YR 3/2	70	C	M		Faint redox concentrations
8-12	10YR 5/2	30	10YR 4/6	70	C	M		Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Regional Storm Water Detention Property City/County: North Royalton/Cuyahoga Sampling Date: 9/28/2011

Applicant/Owner: City of North Royalton State: OH Sampling Point: 2

Investigator(s): Brooke Harrison Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Condit (Ct) NWI classification: _____

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

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

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	If yes, optional Wetland Site ID: Wet 1
Wetland Hydrology Present?	Yes X	No ___	

Remarks: (Explain alternative procedures here or in a separate report.)
PEM/PSS/PFO Jurisdictional

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0-2"

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 2

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	20	Yes	FACW
2. *Fraxinus pennsylvanica*	40	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	60	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Rhamnus frangula*	15	Yes	FAC
2. *Viburnum recognitum*	30	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	45	=Total Cover	

Herb Stratum (Plot size: 5')			
1. *Glyceria striata*	40	Yes	OBL
2. *Aster ericoides*	5	No	FACU
3. *Lysimachia nummularia*	20	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	=Total Cover	

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	90	x 2 =	180
FAC species	15	x 3 =	45
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	170 (A)		305 (B)

Prevalence Index = B/A = 1.79

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X 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** X **No** ___

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

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/1	90	10YR 4/3	10	C	M	Loamy/Clayey	
3-6	2.5Y 5/2	70	10YR 5/6	30	C	M	Loamy/Clayey	
6-12	5Y 6/1	40	10YR 5/8	40	C	M	Loamy/Clayey	
			7.5YR 5/8	20	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Regional Storm Water Detention Property City/County: North Royalton/Cuyahoga Sampling Date: 9/28/2011

Applicant/Owner: City of North Royalton State: OH Sampling Point: 3

Investigator(s): Brooke Harrison Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Mahoning silt loam, 0-2% slopes (MgA) NWI classification: _____

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

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

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: Wet 2
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)
PEM/PSS/PFO Jurisdictional

HYDROLOGY

Wetland Hydrology Indicators:

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

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0-2"

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 3

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	30	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	30	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Ligustrum vulgare*	5	Yes	FACU
2. *Ulmus americana*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	25	=Total Cover	

Herb Stratum (Plot size: 5')			
1. *Glyceria striata*	75	Yes	OBL
2. *Rubus idaeus*	5	No	FAC
3. *Aster ericoides*	5	No	FACU
4. *Toxicodendron radicans*	5	No	FAC
5. *Juncus tenuis*	5	No	FAC
6. *Juncus effusus*	5	No	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	75	x 1 =	75
FACW species	55	x 2 =	110
FAC species	15	x 3 =	45
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	155 (A)		270 (B)

Prevalence Index = B/A = 1.74

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X 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** X **No** ___

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

SOIL

Sampling Point: 3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	85	10YR 3/2	15	C	M	Loamy/Clayey	Faint Redox Concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Regional Storm Water Detention Property City/County: North Royalton/Cuyahoga Sampling Date: 9/28/2011

Applicant/Owner: City of North Royalton State: OH Sampling Point: 4

Investigator(s): Brooke Harrison Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Mahoning silt loam, 0-2% slopes (MgA) NWI classification: _____

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

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

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes X	No ___	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ___	No X	

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 4

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	30	Yes	FACW
2. *Ulmus americana*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora*	5	Yes	FACU
2. *Ligustrum vulgare*	5	Yes	FACU
3. *Hypericum prolificum*	5	Yes	FACU
4. *Cornus racemosa*	5	Yes	UPL
5. *Rhamnus frangula*	15	Yes	FAC
6.			
7.			
	35	=Total Cover	

Herb Stratum (Plot size: 5')			
1. *Rumex crispus*	15	Yes	FACU
2. *Aster ericoides*	35	Yes	FACU
3. *Rubus idaeus*	10	No	FAC
4. *Toxicodendron radicans*	10	No	FAC
5. *Glyceria striata*	15	Yes	OBL
6. *Agrimonia parviflora*	10	No	FAC
7. *Lysimachia nummularia*	5	No	OBL
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	

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

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	50	x 2 =	100
FAC species	45	x 3 =	135
FACU species	65	x 4 =	260
UPL species	5	x 5 =	25
Column Totals:	185 (A)		540 (B)

Prevalence Index = B/A = 2.92

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.

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** ___ **No** X

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

SOIL

Sampling Point: 4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Loamy/Clayey	
10-12	10YR 3/2	95	7.5YR 4/6	5	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Regional Storm Water Detention Property City/County: North Royalton/Cuyahoga Sampling Date: 9/28/2011

Applicant/Owner: City of North Royalton State: OH Sampling Point: 5

Investigator(s): Brooke Harrison Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Condit Silt Loam (Ct) NWI classification: _____

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

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

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ____	No X	

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 5

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	1	No	FACW
2. *Populus deltoides*	40	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	41	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Fraxinus pennsylvanica*	20	Yes	FACW
2. *Picea abies*	5	Yes	UPL
3.			
4.			
5.			
6.			
7.			
	25	=Total Cover	

Herb Stratum (Plot size: 5')			
1. *Phragmites australis*	40	Yes	FACW
2. *Aster ericoides*	5	No	FACU
3. *Rumex crispus*	15	No	FACU
4. *Lysimachia nummularia*	20	Yes	OBL
5. *Toxicodendron radicans*	5	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85	=Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. *Parthenocissus quinquefolia*	15	Yes	FACU
2.			
3.			
4.			
	15	=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	61	x 2 =	122
FAC species	45	x 3 =	135
FACU species	35	x 4 =	140
UPL species	5	x 5 =	25
Column Totals:	166 (A)		442 (B)

Prevalence Index = B/A = 2.66

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X 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.

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** X **No** ___

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

SOIL

Sampling Point: 5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	85	10YR 4/6	10	C	M	Loamy/Clayey	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: compact rocky fill

Depth (inches): 4+

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Regional Storm Water Detention Property City/County: North Royalton/Cuyahoga Sampling Date: 9/28/2011

Applicant/Owner: City of North Royalton State: OH Sampling Point: 6

Investigator(s): Brooke Harrison Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Mahoning silt loam, 0-2% slopes (MgA) NWI classification: _____

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

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

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ___	No X	

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

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 6

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	25	Yes	FACW
2. *Fraxinus pennsylvanica*	30	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	55	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Rhamnus frangula*	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	

Herb Stratum (Plot size: 5')			
1. *Leersia virginica*	65	Yes	FACW
2. *Potentilla simplex*	15	No	FACU
3. *Aster ericoides*	15	No	FACU
4. *Allium tricoccum*	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	5	x 3 =	15
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	160 (A)		395 (B)

Prevalence Index = B/A = 2.47

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X 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.

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** X **No** ___

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

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100			C	M	Loamy/Clayey	
6-12	10YR 5/3	60	10YR 4/6	40	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Regional Storm Water Detention Property City/County: North Royalton/Cuyahoga Sampling Date: 9/28/2011

Applicant/Owner: City of North Royalton State: OH Sampling Point: 7

Investigator(s): Brooke Harrison Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Mahoning silt loam, 0-2% slopes (MgA) NWI classification: _____

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

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

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: Wet 3
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)
PEM/PSS/PFO Jurisdictional

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 2"
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0"

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 7

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	30	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	30	=Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. *Rhamnus frangula*	25	Yes	FAC
2. *Fraxinus pennsylvanica*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	45	=Total Cover	

Herb Stratum (Plot size: 5')			
1. *Glyceria striata*	100	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	

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

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	50	x 2 =	100
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	175 (A)		275 (B)

Prevalence Index = B/A = 1.57

Hydrophytic Vegetation Indicators:

X Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X 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** X **No** ___

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

SOIL

Sampling Point: 7

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Loamy/Clayey	
2-8	10YR 4/2	60	5YR 4/6	35	C	M	Loamy/Clayey	Prominent redox concentrations
			7.5YR 6/8	5	C	M		Prominent redox concentrations
8-12	2.5Y 5/1	50	5YR 5/8	50	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Regional Storm Water Detention Property City/County: North Royalton/Cuyahoga Sampling Date: 9/28/2011

Applicant/Owner: City of North Royalton State: OH Sampling Point: 8

Investigator(s): Brooke Harrison Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Mahoning silt loam, 0-2% slopes (MgA) NWI classification: _____

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

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

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	If yes, optional Wetland Site ID: Wet 4

Remarks: (Explain alternative procedures here or in a separate report.)
PEM/PSS Jurisdictional

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1"
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0"

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 8

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

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Hypericum prolificum*	40	Yes	FACU
2. *Rhamnus frangula*	25	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	65	=Total Cover	

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Glyceria striata*	90	Yes	OBL
2. *Aster ericoides*	5	No	FACU
3. *Potentilla simplex*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	165 (A)		365 (B)

Prevalence Index = B/A = 2.21

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

X Dominance Test is >50%

X 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** X **No** ___

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

SOIL

Sampling Point: 8

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	70	10YR 4/6	30	C	M	Loamy/Clayey	Prominent redox concentrations
3-6	10YR 5/2	80	10YR 4/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks: