

Wetland and Waterbody Delineation: Former Lockbourne AFB Landfill, FUDS Property: G05 OH0007

PREPARED BY: CH2MHILL on behalf of U.S. Army Corps of Engineers
DATE: August 19, 2011
CONTRACT NO. GS-10F-0132K
DELIVERY ORDER NO. W912QR-11-0203

1. Introduction

This memorandum documents the wetland delineation conducted as part of the supplemental investigation of the former Lockbourne Air Force Base (AFB) Landfill, in Columbus, Ohio (Figure 1). Investigation activities were completed on behalf of the U.S. Army Corps of Engineers (USACE) under GSA contract GS-10F-0132K, delivery order W912QR-11-0203.

The site comprises two investigation areas: Area of Concern (AOC) 1 and AOC 2 (Figure 2). AOC 1 covers roughly 105 acres and occupies the western half of the parcel where waste disposal occurred. AOC 2 covers roughly 40 acres and is located on the eastern side of the site. Additional background information is provided in the *Former Lockbourne Air Force Base Landfill Remedial Investigation Report* (CH2M HILL 2010).

The proposed remedy for AOC 1 consists of consolidating waste to a smaller area, installing a soil cover over the waste, long-term management activities, and institutional controls. The remedy for AOC 2 consists of applying institutional controls through environmental covenants. The USACE will prepare a remedial design to implement the remedies. The remedies will be implemented under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended in 1986 by the Superfund Amendments and Reauthorization Act and the National Oil and Hazardous Substances Pollution Contingency Plan.

The U.S. Fish and Wildlife Service's National Wetland Inventory map identifies eight potential wetlands onsite. A wetland delineation was performed to determine if jurisdictional wetlands that may be affected by future remedial construction are present.

2. Wetland and Waterbody Delineations

This section describes the site and methodology used during the wetland delineation.

2.1 Site Location

The site is located in Columbus, Ohio, in Franklin County, east of the village of Lockbourne and west of the Rickenbacker International Airport and Rickenbacker Air National Guard Base. It encompasses roughly 145 acres. The approximate center of the site is at latitude 39.809 and longitude 82.957.

2.1.1 Relationship to Traditional Navigable Waters.

The site is located within the Scioto River Drainage Basin (HUC 05060001; Ohio Department of Natural Resources 2009a). The Scioto River is designated as a traditional navigable water (TNW) by the USACE from the mouth to river mile 175 (Marion County). The site is within the Big Walnut Creek Watershed (HUC 05060001-16).

TABLE 1
Watershed and Streams in the Investigation Area
Former Lockbourne AFB Landfill

HUC	Description
05060001	Scioto River
05060001-16	Alum Creek–Big Walnut Creek
05060001-1603	Town of Lockbourne–Alum Creek

The reach of the Big Walnut Creek receiving flow from the site (around river mile 2.5) is designated as an exceptional warmwater habitat per the Ohio Administrative Code, Chapter 3745-1-09 *Water Quality Standards* (OAC 2011). The reach of the Scioto River receiving the Big Walnut Creek is designated a warmwater habitat.

2.1.2 Background Information. Topography within the site is level to rolling, partly because the site had been used as a landfill from 1951 until 1979. Elevations range from about 700 feet above sea level in the northwest corner to about 735 feet in the southeast corner.

The site is undeveloped, but one vacant building associated with the former radio transmitter station stands near the center. The vegetation onsite is predominantly deciduous woodland. Maintained grassland is present around the former transmitter station, along overhead utility lines through the center of the site, and along roadways. Scrub and old-field vegetation occurs in the northwest corner and in small areas in the southern half of the site.

Before conducting the field investigation, CH2M HILL reviewed the following resources to identify the potential locations and extent of onsite wetlands and waterbodies:

- U.S. Geological Survey topographic maps
- Aerial photo-based maps
- National Wetlands Inventory
- Ohio Wetlands Inventory
- Federal Emergency Management Agency 100-year floodplains
- Natural Resource Conservation Service soil surveys

The topographic map (Lockbourne quadrangle) shows intermittent, linear streams along the southeastern and southwestern borders of the site (Figures 1 and 2). The streams correspond to the East Ditch and West Ditch on the site mapping. The map does not identify wetlands near the site. Recent (2004) aerial photography of the site shows the predominant forest cover of the investigation area (Figure 4). Historical aerial photographs (1994 to 2006), available on-line through Google Earth, show some areas of possible standing water.

The National Wetlands Inventory identify eight wetlands in the investigation area (Figure 2), including a palustrine emergent marsh and seasonally flooded (PEMC), palustrine deciduous forested, seasonally flooded (PF01C), and palustrine deciduous forested, temporarily flooded (PF01A) wetlands. The U.S. Fish and Wildlife Service identified the wetlands by analyzing high altitude imagery in conjunction with collateral data sources and limited ground truthing. The mapping of the site is based on aerial

photographs taken in 1988.¹ The purpose of the map was to identify wetlands and deepwater habitats for management, research, policy development, and education and planning activities, not to provide limits of wetlands subject to jurisdiction under the Clean Water Act.

The Ohio Wetlands Inventory for Franklin County (1991) was produced from April 1987 Landsat Thematic mapper data (cell size 30 meters by 30 meters) using ERDAS Image processing software. The satellite data reflect conditions during the specific year and season they were acquired and may not accurately reflect actual site conditions. The inventory is an indicator of wetland sites for which field review should be conducted. At the project site, the inventory shows areas of scrub-shrub and emergent marsh that differ from in the National Wetlands Inventory (Figure 3).

The soil survey of Franklin County shows six soil unit types (Table 2; Figure 4). Hydric soils comprise roughly 40 percent of the site.

TABLE 2
Soils in the Investigation Area
Former Lockbourne AFB Landfill

Symbol	Soil Description	Drainage Class	Hydric/ Inclusion	Proportion of Investigation Area
CsA	Crosby-Urban land complex, 0–2% slopes	N/A	Inclusion	44.7%
Ku	Kokomo-Urban land complex	Very poorly drained	Hydric	31.0%
ThB	Thackery silt loam, 2–6% slopes	Moderately well drained	Inclusion	4.3%
Ut	Udorthents-Urban land complex, gently rolling	N/A	—	2.2%
WdB	Warsaw silt loam, 2–6% slopes	Well drained	—	11.7%
Wt	Westland silty clay loam	Very poorly drained	Hydric	6.2%

Source: Natural Resource Conservation Service. 2011.

Federal Emergency Management Agency has mapped the 100-year floodplain along nearby Big Walnut Creek. The mapped 100-year floodplain does not extend onto the site.

2.2 Methodology

CH2M HILL conducted wetland delineation surveys on May 16 through 19, 2011, in accordance with applicable federal and state regulations and guidance. Wetland boundaries were field delineated according to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (USACE 2010).

Field data were collected using handheld global positioning system (GPS) units to map wetlands and waterbody boundaries and to collect information (vegetation, hydrology, soils, adjacent land issues, and general observations) about the features. Shapefiles of the site boundary were loaded onto Trimble Pathfinder ProXT GPS units to facilitate navigation

¹ <http://www.fws.gov/wetlands/Data/Mapper.html>.

within the site. Two two-person field crews used two data dictionary files loaded on the GPS units to record information. The outer boundaries of each wetland were recorded using the GPS unit to submeter accuracy.

Wetland delineation data are reported on wetland determination data forms consistent with the Midwest Regional manual. Each identified wetlands was evaluated in accordance with ORAM (Ohio Rapid Assessment Method for Wetlands, v. 5.0), developed by the Ohio EPA. Categorization was conducted in accordance with the latest quantitative score calibration (Ohio EPA 2000).

According to recent guidance from the U.S. Environmental Protection Agency (USEPA) and the USACE, wetlands adjacent to or with a significant nexus to TNWs are regulated under Sections 401 and 404 of the Clean Water Act (USACE and USEPA 2007). A significant nexus must meet several criteria that indicate the wetland provides biological, physical, or chemical benefits to the TNW. A significant nexus typically requires a surface water connection to the TNW or a relatively permanent water tributary to the TNW. Each wetland was evaluated for a significant nexus to relatively permanent waters.

Wetlands with no apparent surface nexus to a relatively permanent water or a TNW were considered “isolated.”

The West Ditch was evaluated using the Ohio EPA’s Qualitative Habitat Evaluation Index (QHEI). The assessment examines a number of stream characteristics and yields a score ranging from 0 to 100. Based on the QHEI score, an aquatic use designation was assigned in accordance with Ohio EPA (1989). A score of 60 typically indicates a stream has the physical characteristics needed to support diverse macroinvertebrate and fish populations and attain the warmwater habitat designation. Scores of 32 to 60 may indicate a modified warmwater habitat, meaning a warmwater habitat that has been disturbed but that could recover. Scores less than 32 typically indicate a limited resource water. Scores greater than 75 may indicate an exceptional warmwater habitat.

The recorded rainfall was considerably higher than normal in April and May preceding the field investigation (Table 3).

TABLE 3
Precipitation in the Investigation Area: 2011
Former Lockbourne AFB Landfill

	Avg. 1970–2000	2011
January	2.53	1.47
February	2.2	4.25
March	2.89	4.58
April	3.25	7.14
May	3.88	5.9
June	4.07	—
July	4.61	—
August	3.72	—
September	2.92	—
October	2.31	—
November	3.18	—
December	2.93	—

Source: National Oceanic and Atmospheric Administration. 2011.

3. Survey Results

The site is vegetated by dense, early successional woodland, with a canopy largely dominated by rapid growing species, such as cottonwood (*Populus deltoides*), box elder (*Acer negundo*), black locust (*Robinia pseudoacacia*), and silver maple (*Acer saccharinum*). Better-drained areas have a thick understory of amur honeysuckle (*Lonicera maackii*). Much of the site appears to be open or scrub land on a 1994 aerial photo, so most of the woodland vegetation developed over the last 20 years.

Five wetlands were delineated in depressions in the woodlands. Table 4 summarizes the characteristics for each wetland delineated. Figure 5 provides an overview map of the delineated wetlands. Individual site details are provided in the field datasheets, ORAM forms and detail maps and photos in Appendix A.

TABLE 4
Wetland Resources Delineated within the Investigation Area
Former Lockbourne AFB Landfill

Wetland	Feature ID	Latitude/ Longitude	Cowardin Classification ^a	Wetland Area (Acres)	ORAM Score	Ohio EPA Wetland Category ^b	General Condition	Hydrological Connection
1	A	39.8113/ 82.959	PF01	7.86	48.5	2	Successional woodland	Connected to Big Walnut Creek by a roadside ditch
2	C	39.80962/ 82.9557	PF01	3.36	50.5	2	Successional woodland	Isolated
3	D	39.81043/ 82.95421	PF01	0.22	41	2	Successional woodland	Isolated
4	E	39.81062/ 82.95725	PF01/PSS1	0.79	41.5	2	Successional woodland, scrub	Connected to Wetland A by culvert, then to Big Walnut Creek by a roadside ditch
5	F	39.81128/ 82.9554	PF01	0.38	42	2	Successional woodland	Isolated

^aPF01 = palustrine forested, deciduous; PSS = palustrine scrub-shrub.

^bDetermined based on ORAM score, in accordance with Ohio Environmental Protection Agency (2000).

Waterbodies are limited to the large, deep East and West Ditches along the borders of the site. The ditches are well defined topographically, so that the boundaries were not located using GPS. There is a reinforced concrete structure within the West Ditch.

3.1 Wetland Descriptions

The delineated wetlands have similar vegetation (Figure 5). Cottonwood, silver maple, and box elder are common overstory species. In most of the wetlands, the understory is open and the ground layer sparsely vegetated. Where present, the understory frequently consists of box elder. Other species, including silky dogwood (*Cornus amomum*) and swamp rose (*Rosas palustris*), are dense at some sites. All delineated wetlands are considered Category 2 wetlands, based upon their ORAM scores.

Wetland A occupies a large flat area that appears to be at least partially manmade, likely as a result of use of the site for a landfill. Silver maple is a prominent component. The wetland is somewhat scrubbiest at the east end. The wetland had deep surface ponding (more than 12 inches) in many parts, partially because of the excessive rainfall. The wetland appears to be connected by at least one constructed ditch to the roadside drainage ditch along Vause Road. From there, flow enters the Big Walnut Creek through the West Ditch and the Ohio

Erie canal, and ultimately the Scioto River. Flow appears to escape, at least under high water conditions, by sheetflow to the west.

Wetlands C, D, and F are a complex of wetlands in a large basin near the center of the site. Wetland C contained water at depths of 24 inches or greater. Also primarily dominated by silver maple, box elder and cottonwood, some part of the eastern end of Wetland C contained species such as pin oak (*Quercus palustris*). The understory was largely open with very little ground layer vegetation. Wetlands D and F were considerably more shallow, although also largely flooded, and contained somewhat more dense understory (but with amur honeysuckle invading along the edges). The wetlands appear to have no connection to surface waters and are considered isolated.

Wetland E is also in the central part of the site, along the south side of the access road. The wetland is largely wooded, but it contains a dense understory of dogwoods in some parts. It is connected by a culvert beneath the road (largely filled with sediment) to Wetland A, and thence to Big Walnut Creek.

Other areas where standing water was present were investigated (Figure 5). Photos and data forms can be found in Appendix A. Area B is within a mapped National Wetlands Inventory wetland along the overhead power line easement in the northwest corner. Areas H and I are in early successional woodlands. Area G is in a depression that appears to have been excavated in an open area that is otherwise dominated by planted grasses (largely fescue). Area J was selected as typical of several depressions with pools in the old landfill area. Some hydrophytes were found at some of the sites, but none were found to meet all the wetland criteria.

3.2 Waterbody Descriptions

The West Ditch collects flow from the East Ditch and from another ditch south of the site. Water flows through a large culvert under the railroad and then west through the old Ohio Erie canal to Big Walnut Creek. The ditch appears to contain perennial flow and is therefore considered a relatively permanent waterbody. CH2M HILL's previous ecological reconnaissance survey (March 2009) included an evaluation of the East and West Ditches, which found a lack of suitable habitat in which to sustain a viable, diverse fish population. QHEI scores were 25 for the East Ditch and 46 for the West Ditch.

The proposed remedy will include removal of the reinforced concrete structure from the West Ditch and a 10 to 12-foot area of waste that forms the upper half of the east bank of the West Ditch. Also, surficial debris from the lower half of the east bank of the West Ditch will be removed. Such action will require permits under the Clean Water Act. To support the permit documentation, a QHEI was conducted both upstream and downstream of the structure.

The West Ditch was observed to be of low to medium quality with a straight, wide, and deep trapezoidal channel. Water depth ranged from 6 to 30 inches, and stream was generally 10 to 15 feet wide. The stream was typified by glide habitat upstream of the reinforced concrete structure, which acts as a dam. Riffle/runs and pools and faster water velocities occurred downstream of the reinforced concrete structure. Upstream of the reinforced concrete structure, substrates were embedded with fine sand and silt. Downstream, the substrate was somewhat less embedded, with some cobbles and gravel.

The QHEI scores upstream and downstream of the dam were consistent with a modified warmwater habitat designation (score = 28 upstream, 50 downstream). Appendix A contains the QHEI forms for the sites.

4. Conclusions

The site is vegetated by dense, early successional woodland, with a canopy largely dominated by rapid growing species such as cottonwood, box elder, black locust, and silver maple. Better-drained areas have a thick understory of amur honeysuckle. Much of the site appears to be open or scrub land on a 1994 aerial photo, so most of the woodland vegetation developed within the last 20 years.

Five Category 2 wetlands were delineated onsite. Deep ditches with perennial flow border the site on the southeast and southwest. The only wetlands or waterbodies near the proposed waste excavation and borrow areas or within the limits of the cover area are Wetlands A, C, and E and the West Ditch. Wetland A appears to be connected to the West Ditch by roadside drainage ditch along Vause Road. From there, flow enters the Big Walnut Creek through the West Ditch. Wetland E is connected to Wetland A by a culvert under the access road. Wetland C appears to have no connection to surface waters and thus is considered isolated. The West Ditch is a perennial stream of low quality, consistent with a modified warmwater habitat designation.

Before the remedial action can be implemented, coordination with USACE and Ohio EPA will be required if the proposed remediation will affect wetlands or waterbodies. The coordination will include verification of wetlands in the action area by the USACE's Huntington Regulatory Branch, and a determination of which wetlands are regulated under federal and/or state laws. The USACE-Huntington Regulatory Branch will conduct a site visit to review the wetland boundaries in accordance with the wetland criteria (vegetation, soils, and hydrology) and the connectivity of the wetlands to relatively permanent waters as part of their jurisdictional determination.

The remedial activities will need to meet substantive provisions of applicable or relevant and appropriate water quality requirements such as those in Sections 401 and 404 of the Clean Water Act. While the substantive requirements of these regulations must be met, CERCLA response actions are exempted by law from the requirement to obtain Federal, State, or local permits related to any activities conducted completely onsite.

5. References

CH2M HILL. 2011. *Final Work Plan Addendum, Former Lockbourne AFB Landfill Site Investigation*. May.

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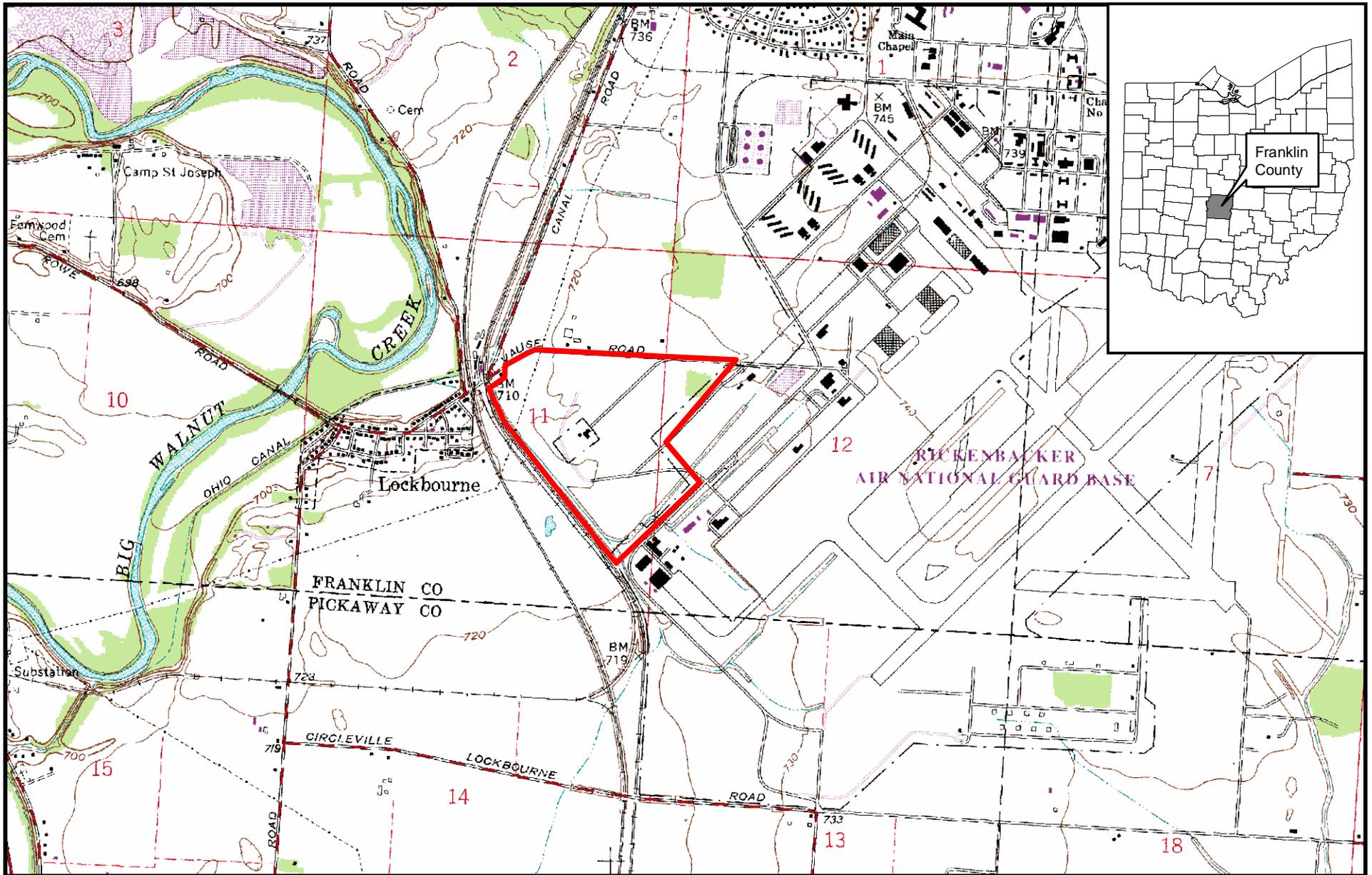
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United States Geological Survey. 1992. *Lockbourne Quadrangle, Ohio, 7.5 Minute Series (Topographic)*. U.S. Department of the Interior, Washington DC.

Figures

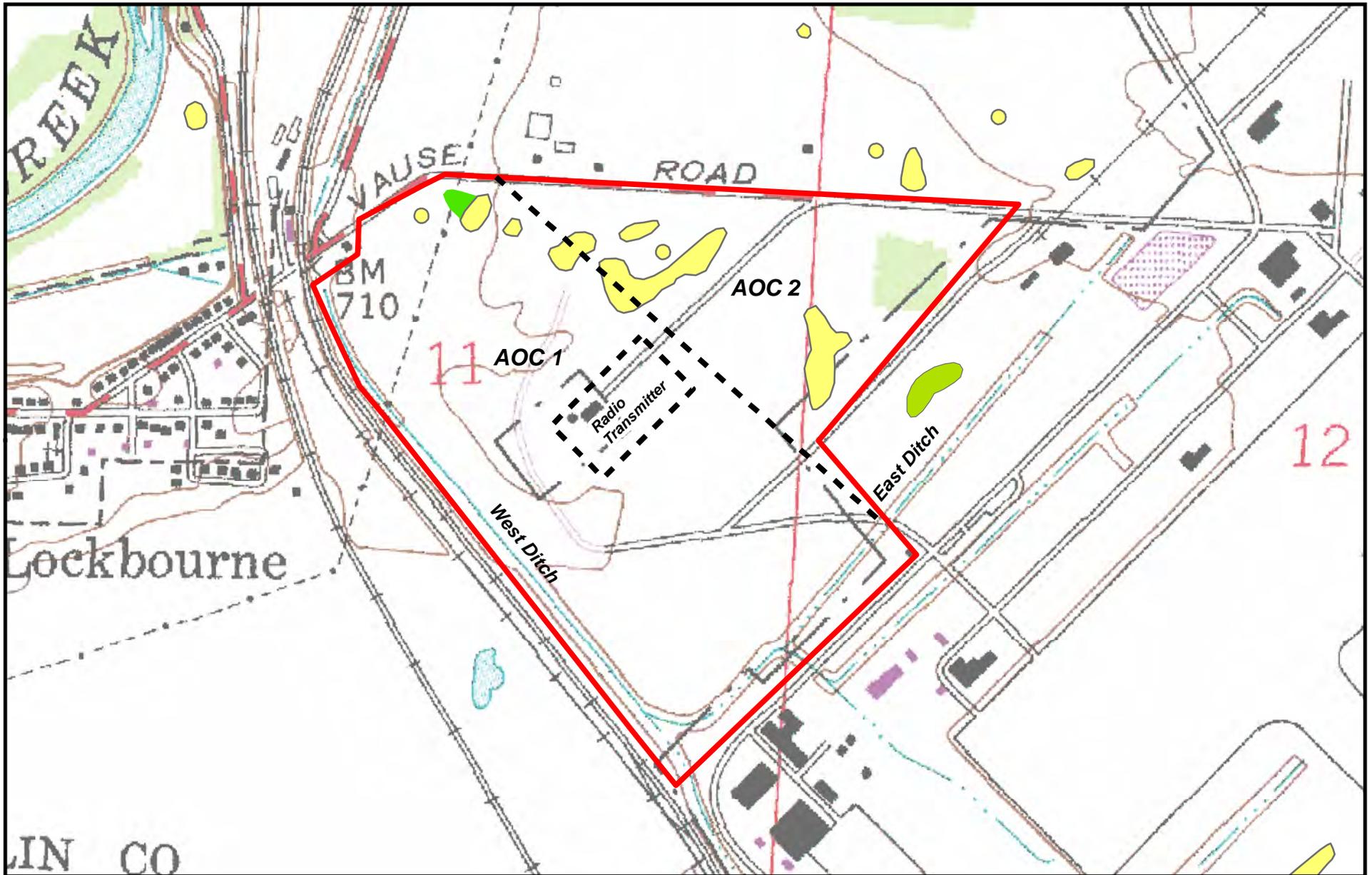


0 500 1,000 2,000 Feet



 Site

Figure 1
USGS Lockbourne
Quadrangle Map
 Former Lockbourne Landfill Site
 Franklin County, OH



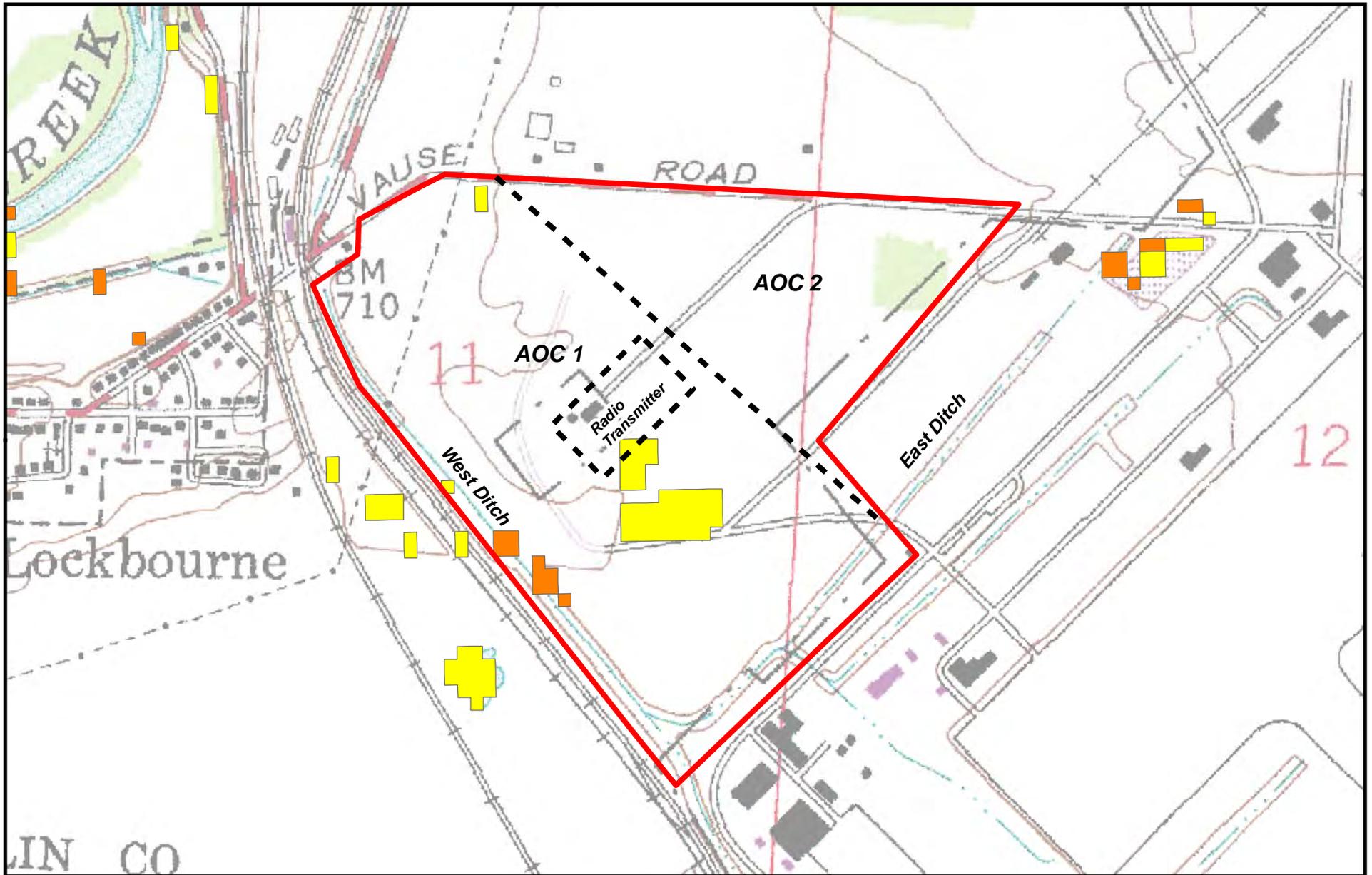
0 350 700 Feet



- Site
- AOC Boundary Line
- PEMC - Palustrine Emergent
- PFO1A - Palustrine Forested, temporarily flooded
- PFO1C - Palustrine Forested, seasonally flooded

Figure 2
National Wetland
Inventory Map

Former Lockbourne Landfill Site
 Franklin County, OH



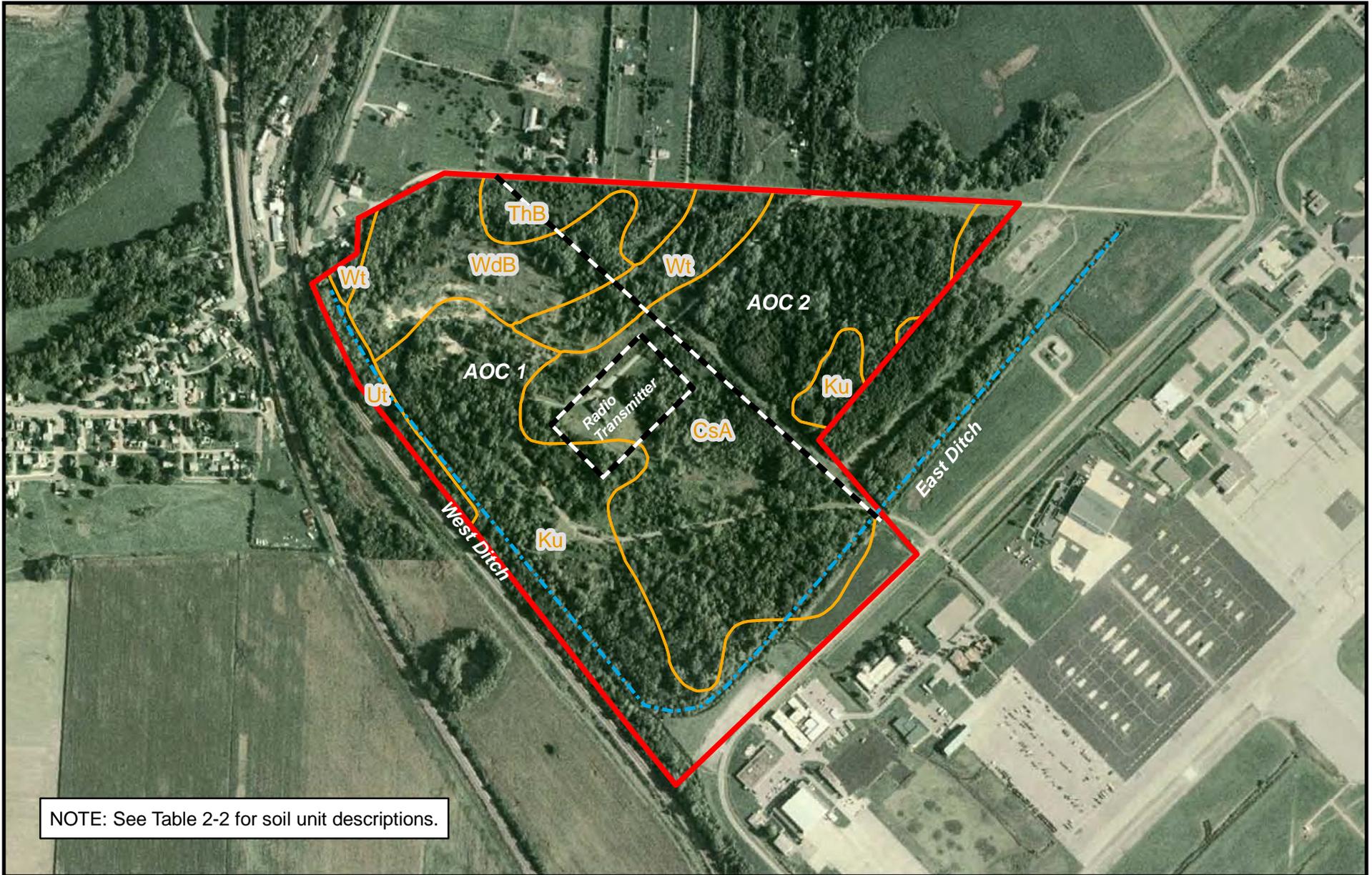
0 350 700 Feet



- Site
- AOC Boundary Line
- Shallow marsh
- Shrub/scrub wetland

Figure 3
Ohio Wetland
Inventory Map

Former Lockbourne Landfill Site
 Franklin County, OH



NOTE: See Table 2-2 for soil unit descriptions.

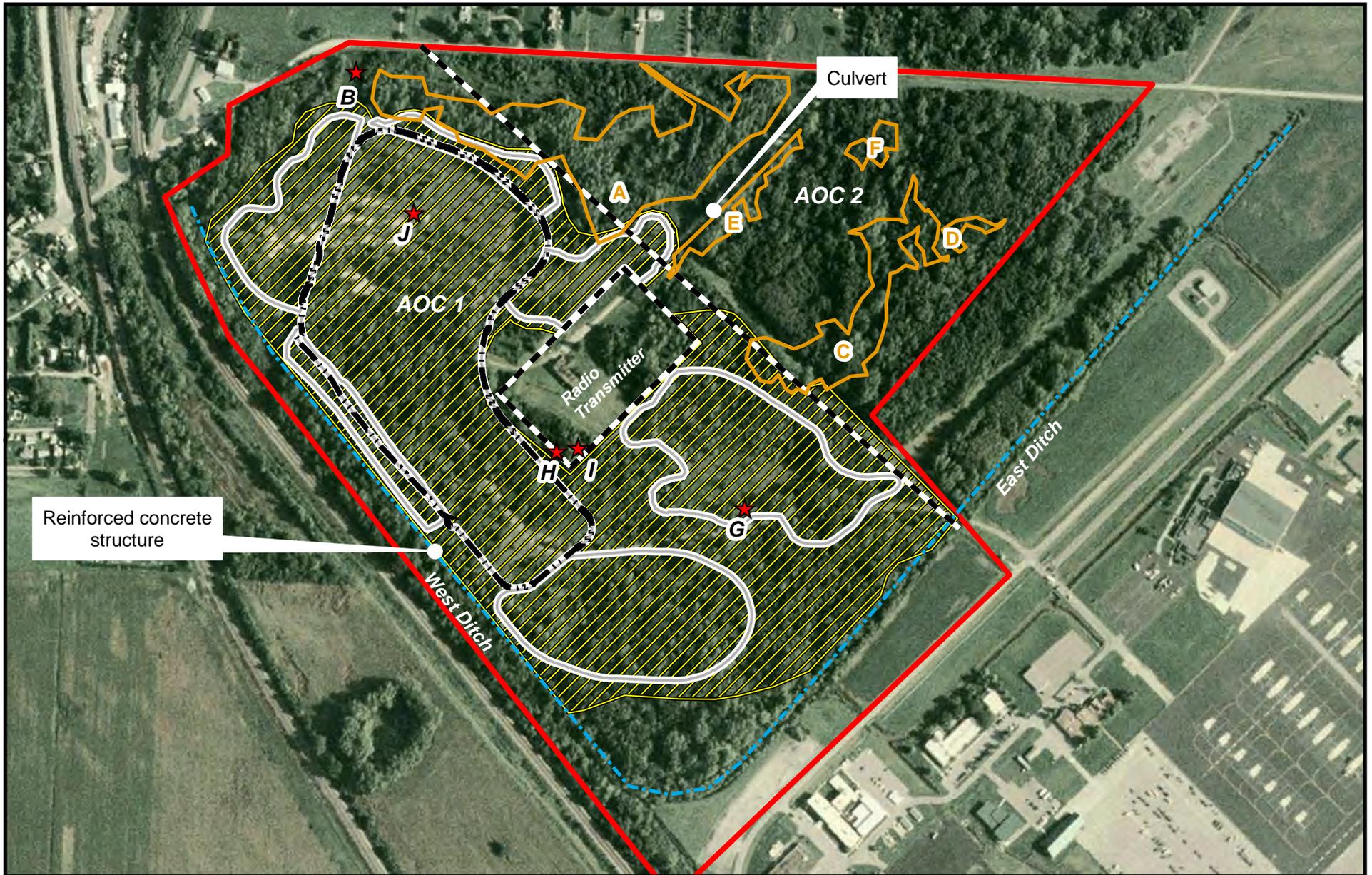
0 350 700 Feet



- Site
- Soil Units
- AOC Boundary Line
- Ditch

Figure 4
NRCS Mapped
Soils

Former Lockbourne Landfill Site
 Franklin County, OH



Reinforced concrete structure

Culvert

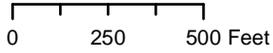
AOC 1

AOC 2

Radio Transmitter

East Ditch

West Ditch



- Site
- AOC Boundary Line
- Area of Clearing and Grubbing
- Delineated Wetlands
- Proposed Cover Area
- Ditch
- Waste Limits
- ★ Additional Documentation Point

Figure 5
Delineated Wetlands
 Former Lockbourne Landfill Site
 Franklin County, OH

Appendix A

Datasheets and Photographic Documentation



0 100 200 Feet



○➤ Photo Point/Direction
● Documentation Point

Wetland A



Wetland A Photo 1



Wetland A Photo 2



Wetland A Photo 3 - outfall channel from Wetland A to roadside ditch at Vause Road.



Wetland A Photo 4

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/17/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: A-1
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.95904 Long: 39.81071 Datum: WGS 1984
 Soil Map Unit Name: Westland silty clay loam NWI classification: PF01

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Above average rainfall preceding and during field investigation.					

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Acer saccharinum</u>	<u>40</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Acer negundo</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>90</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	_____	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Acer saccharinum</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Campsis radicans</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Carex amphibola</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>25</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>15</u>)				
1. <u>Campsis radicans</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
	<u>10</u>	= Total Cover		
% Bare ground in herb stratum <u>75</u>				
Remarks: (include photo numbers here or on a separate sheet)				
			Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
			Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/18/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: A-2
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.95665 Long: 39.81181 Datum: WGS 1984
 Soil Map Unit Name: Westland silty clay loam NWI classification: PF01

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Above average rainfall preceding and during field investigation.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)
1. <u>Populus deltoides</u>	<u>90</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Ulmus americana</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>90</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Fraxinus pennsylvanica</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
2. <u>Salix fragilis</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
3. <u>Rosa palustris</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Toxicodendron radicans</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>	
5. _____	_____	_____	_____	
	<u>70</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Poa palustris</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
2. <u>Aster sp.</u>	<u>20</u>	<u>Y</u>	<u>??</u>	
3. <u>Toxicodendron radicans</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>60</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>15</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare ground in herb stratum <u>40</u>				
Remarks: (include photo numbers here or on a separate sheet)				

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/17/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: A-UPLAND
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.95904 Long: 39.81071 Datum: WGS 1984
 Soil Map Unit Name: Westland silty clay loam NWI classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Remarks: Area may have been filled when the site was used as a landfill. Above average rainfall preceding and during field investigation..					

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)
1. <u>Prunus serotina</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
2. <u>Acer negundo</u>	<u>70</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Populus deltoides</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
4. _____				
	<u>100</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Lonicera maackii</u>	<u>70</u>	<u>Y</u>	<u>UPL</u>	
2. <u>Acer negundo</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
	<u>80</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				
1. <u>Toxicodendron radicans</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Geum macrophyllum</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Sanicula gregaria</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	<u>60</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>15</u>)				
1. <u>Vitis aestivalis</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
2. _____				
	<u>10</u>	= Total Cover		
% Bare ground in herb stratum <u>40</u>				
Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>20</u> x 2 = <u>40</u> FAC species <u>130</u> x 3 = <u>390</u> FACU species <u>20</u> x 4 = <u>80</u> UPL species <u>80</u> x 5 = <u>400</u> Column Totals: <u>250</u> (A) <u>910</u> (B) Prevalence Index = B/A = <u>2.75</u>				
Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

Remarks: (include photo numbers here or on a separate sheet)
 The predominant wetland indicators are FAC. The abundance of FACU and UPL species is much greater than FACW, which is indicative of well drained soils.

SOIL

Sampling Point A -UPLAND

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/2	100					silt loam	
6-16	10YR 5/4	90	10 YR 4/6	10	C	M	Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Coast Prairie Redox (A16) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Iron-Manganese Masses (F12) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | |
| <input type="checkbox"/> 2 cm Muck (A10) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) | | |

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

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 No indicators.

HYDROLOGY

Wetland Hydrology Indicators:

- | | | |
|---------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------|
| <u>Primary Indicators (minimum of one required; check all that apply)</u> | | <u>Secondary Indicators (2 or more required)</u> |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Fauna (B13) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> True Aquatic Plants (B14) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Saturation Visible on Aerial Imagery |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Gauge or Well Data (D9) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Other (Explain in Remarks) | |

Field Observations:

Surface Water Present? Yes No Depth (inches): N/A
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

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

Remarks:
 No indicators.

Site: Wetland A	Rater(s): R. Hook	Date: 5/17/2011
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3	3
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Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

10.5	13.5
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Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

13	26.5
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Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

11	37.5
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Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

37.5

subtotal this page

Site: Wetland A	Rater(s): R. Hook	Date: 5/17/2011
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37.5

subtotal first page

0	37.5
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max 10 pts. subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

11	48.5
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max 20 pts. subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- 1 Shrub
- 2 Forest
- Mudflats
- Open water
- Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- 2 Vegetated hummocks/tussucks
- 1 Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- 1 Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

48.5 GRAND TOTAL (max 100 pts)

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/17/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: B - UPLAND
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.96223 Long: 39.81199 Datum: WGS 1984
 Soil Map Unit Name: Westland silty clay loam NWI classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Area has been modified with installation of overhead utility line. Above average rainfall preceding and during field investigation..					

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30</u>)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. <u>Prunus serotina</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Populus deltoides</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>30</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Cornus racemosa</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Eleagnus umbellata</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
3. <u>Rosa multiflora</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
4. <u>Viburnum lentago</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
5. _____	_____	_____	_____	
	<u>80</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Solidago canadensis</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Poa pratensis</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Acer saccharinum</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
4. <u>Carex cephalophora</u>	<u><10</u>	<u>N</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>75</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare ground in herb stratum <u>25</u>				
Remarks: (include photo numbers here or on a separate sheet)				

SOIL

Sampling Point B- UPLAND

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Texture	Remarks	
	Color (moist)	%	Color (moist)	%	Type ¹			Loc ²
0-14	10YR 3/1	100					silt loam	
14-16	10YR 4/4	90	10 YR 4/6	10	C	M	Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

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

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

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)		

Field Observations:	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u>	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u>	
Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Above average rainfall preceding field event, runoff from wetlands to the east.	



Wetland C Photo 1



Wetland C Photo 2

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/18/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: C
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.95694 Long: 39.80929 Datum: WGS 1984
 Soil Map Unit Name: Crosby-Urban land complex, 0-2% slopes NWI classification: PF01

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Above average rainfall preceding and during field investigation.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Acer negundo</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Acer saccharinum</u>	<u>50</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>100</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Acer negundo</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Cornus amomum</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>30</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				
1. <u>Acer negundo</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>10</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>15</u>)				
1. <u>Lonicera japonica</u>	<u><10</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
	<u>5</u>	= Total Cover		
% Bare ground in herb stratum <u>90</u>				
Remarks: (include photo numbers here or on a separate sheet)				

Prevalence Index worksheet:	
Total % Cover of: _____	Multiply by: _____
OBL species _____ x 1 = _____	
FACW species _____ x 2 = _____	
FAC species _____ x 3 = _____	
FACU species _____ x 4 = _____	
UPL species _____ x 5 = _____	
Column Totals: _____ (A)	_____ (B)
Prevalence Index = B/A = _____	

Hydrophytic Vegetation Indicators:

Dominance Test is >50%

Prevalence Index is ≤3.0¹

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

Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes No

SOIL

Sampling Point C

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-8	10YR 3/2	95	10YR 3/4	5	C	M	silt loam	
8-12	10YR 4/1	50	10YR 2/2	30	C	M	Clay loam	
			10YR 3/4	20	C	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes No Depth (inches): 12

Water Table Present? Yes No Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/18/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: C-UPLAND
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): gentle slope Local relief (concave, convex, none): convex
 Slope (%): 5 Lat: -82.95694 Long: 39.80929 Datum: WGS 1984
 Soil Map Unit Name: Crosby-Urban land complex, 0-2% slopes NWI classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Above average rainfall preceding and during field investigation.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B)
1. <u>Prunus serotina</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Robinia pseudoacacia</u>	<u>70</u>	<u>Y</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>100</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				
1. <u>Lonicera maackii</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	
2. <u>Acer negundo</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Prunus serotina</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>50</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				
1. <u>Glechoma hederacea</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Geum macrophyllum</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
3. <u>Carex amphibola</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
4. <u>Pilea pumila</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>70</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>15</u>)				
1. <u>Lonicera japonica</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
	<u>10</u>	= Total Cover		
% Bare ground in herb stratum <u>30</u>				
Remarks: (include photo numbers here or on a separate sheet)				

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:
 Dominance Test is >50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

Hydrophytic Vegetation Present? Yes No

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

SOIL

Sampling Point C -UPLAND

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-10	10YR 4/2	95	10YR 3/4	5	C	M	silt loam	
10-14	10YR 4/4	90	10YR 3/4	10	C	M	Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Remarks:
No indicators

Hydric Soil Present? Yes No

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Field Observations:

Surface Water Present? Yes No Depth (inches): N/A

Water Table Present? Yes No Depth (inches): 9

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 8

Wetland Hydrology Present? Yes No

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

Remarks:
Above average rainfall preceding field survey date.

Site: Wetland C	Rater(s): R. Hook	Date: 5/18/2011
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3	3
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Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

12	15
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Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE.** Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM.** Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW.** Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW.** Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW.** 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW.** Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH.** Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH.** Urban, industrial, open pasture, row cropping, mining, construction. (1)

13	28
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Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

11.5	39.5
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Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

39.5

subtotal this page

Site: Wetland C	Rater(s): R. Hook	Date: 5/18/2011
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39.5

subtotal first page

0	39.5
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max 10 pts. subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

11	50.5
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max 20 pts. subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- Emergent
- Shrub
- Forest
- Mudflats
- Open water
- Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

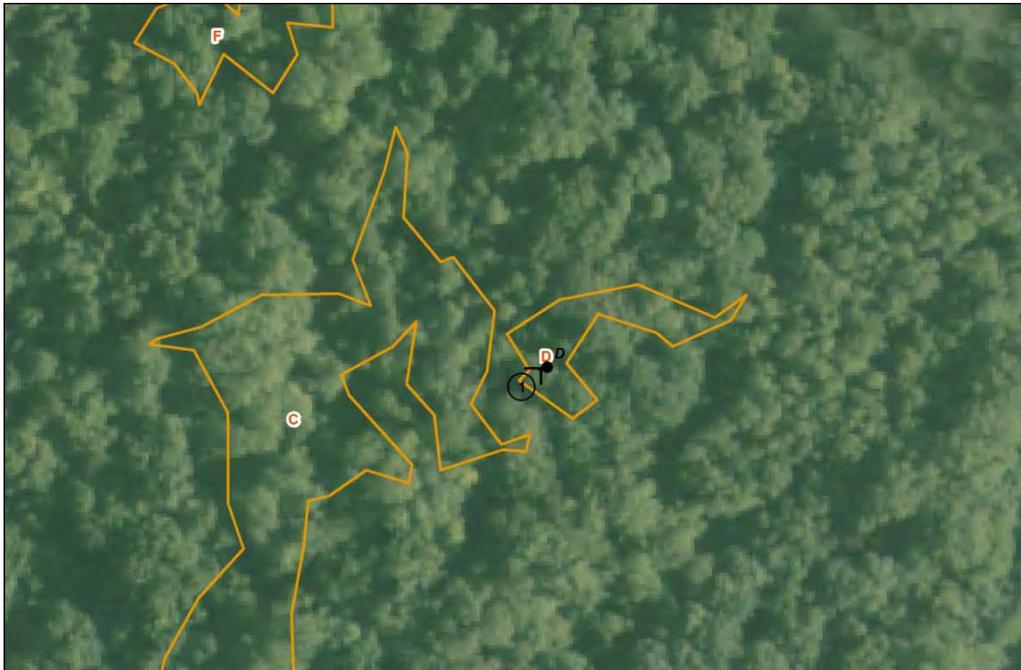
Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

50.5 **GRAND TOTAL (max 100 pts)**



0 50 100 Feet



○➔ Photo Point/Direction
● Documentation Point

Wetland D



Wetland D Photo 1

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/18/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: D
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.95438 Long: 39.81037 Datum: WGS 1984
 Soil Map Unit Name: Crosby-Urban land complex, 0-2% slopes NWI classification: PF01

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Above average rainfall preceding and during field investigation.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>88</u> (A/B)
1. <u>Ulmus rubra</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Fraxinus pennsylvanica</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Acer negundo</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
4. _____				
	<u>100</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Acer negundo</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Lonicera maackii</u>	<u>10</u>	<u>Y</u>	<u>UPL</u>	
3. <u>Ulmus rubra</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
4. _____				
5. _____				
	<u>30</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Polygonum virginianum</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Carex amphibola</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Geum macrophyllum</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
4. <u>Impatiens capensis</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	<u>35</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>15</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>Lonicera japonica</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. _____				
	<u>10</u>	= Total Cover		
% Bare ground in herb stratum <u>90</u>				
Remarks: (include photo numbers here or on a separate sheet)				

SOIL

Sampling Point D

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-12	10YR 3/1	95	10YR 3/4	5	C	M	silt loam	
12-18	10YR 4/1	90	10YR 3/4	10	C	M	Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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)

Secondary Indicators (2 or more required)

- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): 3

Water Table Present? Yes No Depth (inches): 3

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 2

Wetland Hydrology Present? Yes No

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

Remarks:

Site: Wetland D	Rater(s): R. Hook	Date: 5/18/2011
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1	1
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Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

12	13
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Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE.** Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM.** Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW.** Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW.** Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW.** 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW.** Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH.** Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH.** Urban, industrial, open pasture, row cropping, mining, construction. (1)

12	25
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Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

10	35
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Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

35

subtotal this page

Site: Wetland D	Rater(s): R. Hook	Date: 5/18/2011
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35

subtotal first page

0	35
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max 10 pts. subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

6	41
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max 20 pts. subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- 1 Shrub
- 1 Forest
- Mudflats
- Open water
- Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- 1 Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

41	GRAND TOTAL (max 100 pts)
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○➔ Photo Point/Direction
● Documentation Point

Wetland E



Wetland E Photo 1



Wetland E Photo 2

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/18/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: E
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.95808 Long: 39.80994 Datum: WGS 1984
 Soil Map Unit Name: Crosby Urban land complex, 0-2% slopes NWI classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Above average rainfall preceding and during field investigation.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>9</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>90</u> (A/B)
1. <u>Populus deltoides</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Acer saccharinum</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>40</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Acer negundo</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Lonicera maackii</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>	
3. <u>Fraxinus pennsylvanica</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>80</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Agrimoia parviflora</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Carex amphibola</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Geum macrophyllum</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
4. <u>Fraxinus pennsylvanica</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
5. <u>Glyceria striata</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>50</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare ground in herb stratum <u>50</u>				
Remarks: (include photo numbers here or on a separate sheet)				

Site: Wetland E	Rater(s): R. Hook	Date: 5/18/2011
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2	2
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Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

10.5	12.5
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Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

12	24.5
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Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

10	34.5
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Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

34.5

subtotal this page

Site: Wetland E	Rater(s): R. Hook	Date: 5/18/2011
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34.5

subtotal first page

0	34.5
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max 10 pts. subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

7	41.5
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max 20 pts. subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- 2 Shrub
- 1 Forest
- Mudflats
- Open water
- Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- 1 Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

41.5

GRAND TOTAL (max 100 pts)



Wetland F Photo 1

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/18/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: F
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.9553 Long: 39.81114 Datum: WGS 1984
 Soil Map Unit Name: Crosby Urban land complex, 0-2% slopes NWI classification: PF01

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Above average rainfall preceding and during field investigation.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Acer negundo</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Quercus palustris</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
3. <u>Populus deltoides</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
4. <u>Ulmus rubra</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
	<u>70</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Acer negundo</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>40</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Senecio glabellus</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
2. <u>Carex amphibola</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Geum macrophyllum</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
4. <u>Poa palustris</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>40</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare ground in herb stratum <u>60</u>				
Remarks: (include photo numbers here or on a separate sheet)				

SOIL

Sampling Point F

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 3/1	100					silt loam	
8+	10YR 5/1	95	10YR 4/6	5	C	M	Silt loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes No Depth (inches): 4 _____

Water Table Present? Yes No Depth (inches): 0 _____

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0 _____

Wetland Hydrology Present? Yes No

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

Remarks:

Site: Wetland F	Rater(s): R. Hook	Date: 5/18/2011
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2	2
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Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

- >50 acres (>20.2ha) (6 pts)
- 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- 10 to <25 acres (4 to <10.1ha) (4 pts)
- 3 to <10 acres (1.2 to <4ha) (3 pts)
- 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- <0.1 acres (0.04ha) (0 pts)

12	14
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Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- WIDE.** Buffers average 50m (164ft) or more around wetland perimeter (7)
- MEDIUM.** Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- NARROW.** Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- VERY NARROW.** Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- VERY LOW.** 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- LOW.** Old field (>10 years), shrubland, young second growth forest. (5)
- MODERATELY HIGH.** Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- HIGH.** Urban, industrial, open pasture, row cropping, mining, construction. (1)

12	26
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Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- High pH groundwater (5)
- Other groundwater (3)
- Precipitation (1)
- Seasonal/Intermittent surface water (3)
- Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- >0.7 (27.6in) (3)
- 0.4 to 0.7m (15.7 to 27.6in) (2)
- <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- None or none apparent (12)
- Recovered (7)
- Recovering (3)
- Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- 100 year floodplain (1)
- Between stream/lake and other human use (1)
- Part of wetland/upland (e.g. forest), complex (1)
- Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- Semi- to permanently inundated/saturated (4)
- Regularly inundated/saturated (3)
- Seasonally inundated (2)
- Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input checked="" type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other _____

10	36
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Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- None or none apparent (4)
- Recovered (3)
- Recovering (2)
- Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- Excellent (7)
- Very good (6)
- Good (5)
- Moderately good (4)
- Fair (3)
- Poor to fair (2)
- Poor (1)

4c. Habitat alteration. Score one or double check and average.

- None or none apparent (9)
- Recovered (6)
- Recovering (3)
- Recent or no recovery (1)

Check all disturbances observed	
<input type="checkbox"/> mowing	<input type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input checked="" type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

36

subtotal this page

Site: Wetland F	Rater(s): R. Hook	Date: 5/18/2011
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36

subtotal first page

0	36
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max 10 pts. subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- Bog (10)
- Fen (10)
- Old growth forest (10)
- Mature forested wetland (5)
- Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- Lake Erie coastal/tributary wetland-restricted hydrology (5)
- Lake Plain Sand Prairies (Oak Openings) (10)
- Relict Wet Prairies (10)
- Known occurrence state/federal threatened or endangered species (10)
- Significant migratory songbird/water fowl habitat or usage (10)
- Category 1 Wetland. See Question 1 Qualitative Rating (-10)

6	42
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max 20 pts. subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- Aquatic bed
- 1 Emergent
- 1 Shrub
- 1 Forest
- Mudflats
- Open water
- Other _____

6b. horizontal (plan view) Interspersion.

Select only one.

- High (5)
- Moderately high(4)
- Moderate (3)
- Moderately low (2)
- Low (1)
- None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- Extensive >75% cover (-5)
- Moderate 25-75% cover (-3)
- Sparse 5-25% cover (-1)
- Nearly absent <5% cover (0)
- Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- 1 Vegetated hummocks/tussucks
- Coarse woody debris >15cm (6in)
- Standing dead >25cm (10in) dbh
- Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

42	GRAND TOTAL (max 100 pts)
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Photo at Point G

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/19/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: G
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 5 Lat: -82.95708 Long: 39.80762 Datum: WGS 1984
 Soil Map Unit Name: Crosby Urban land complex, 0-2% slopes NWI classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Excavated area. Above average rainfall preceding and during field investigation.					

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)
4. _____	_____	_____	_____	
	_____	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				Prevalence Index worksheet:
1. <u>Salix exigua</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
	<u>20</u>	= Total Cover		UPL species _____ x 5 = _____
Herb Stratum (Plot size: <u>5</u>)				Column Totals: _____ (A) _____ (B)
1. <u>Juncus torreyi</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	Prevalence Index = B/A = <u>2.75</u>
2. <u>Scirpus cyperinus</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
3. <u>Festuca rubra</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
4. <u>Eleocharis obtusa</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>50</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare ground in herb stratum <u>50</u>				
Remarks: (include photo numbers here or on a separate sheet)				

SOIL

Sampling Point G

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 4/3	100					silt loam	
6-8	10YR 4/4	100					Gravelly clay	refusal at 8 inches

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Soil criterion not met.

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|--------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Fauna (B13) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> True Aquatic Plants (B14) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Saturation Visible on Aerial Imagery |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Gauge or Well Data (D9) | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <input type="checkbox"/> Other (Explain in Remarks) | |

Field Observations:

Surface Water Present? Yes No Depth (inches): 6

Water Table Present? Yes No Depth (inches): 0

Saturation Present? Yes No Depth (inches): 0
(includes capillary fringe)

Wetland Hydrology Present? Yes No

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

Remarks:

Pooling in excavated depression.



Photo at Point H



Photo at Point I

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/19/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: H / I - UPLAND
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none
 Slope (%): 0 Lat: -82.95954 Long: 39.80819 Datum: WGS 1984
 Soil Map Unit Name: Kokomo Urban land complex NWI classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks:					

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)
1. <u>Acer negundo</u>	<u>70</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>70</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15</u>)				
1. <u>Acer negundo</u>	<u>70</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Morus rubra</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
3. <u>Celtis occidentalis</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>80</u>	= Total Cover		
Herb Stratum (Plot size: <u>5</u>)				
1. <u>Carex blanda</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Toxicodendron radicans</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Geum macrophyllum</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>	
4. <u>Solidago sp.</u>	<u>5</u>	<u>Y</u>	<u>??</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>25</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare ground in herb stratum <u>75</u>				
Remarks: (include photo numbers here or on a separate sheet) Vegetation dominated by FAC species.				

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)

 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 Dominance Test is >50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

Hydrophytic Vegetation Present? Yes No

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

SOIL

Sampling Point H / I- UPLAND

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/2	100					silt loam	
5-14	10YR 4/2	100					Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 Soil criterion not met

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes No Depth (inches): 8 _____
 Water Table Present? Yes No Depth (inches): 0 _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0 _____

Wetland Hydrology Present? Yes No

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

Remarks:
 Water collecting in depression. Above average rainfall preceeding field date.



Photo at Point J

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Lockbourne Former Landfill Site City/County: Franklin Sampling Date: 5/17/2011
 Applicant/Owner: US Army Corps of Engineers State: OH Sampling Point: J - UPLAND
 Investigator(s): Hook/Johnson Section, Township, Range: 3N 22W Section 11
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): convex
 Slope (%): 5 Lat: -82.96143 Long: 39.81058 Datum: WGS 1984
 Soil Map Unit Name: Warsaw silt loam, 2-6 % slopes NWI classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Yes No Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? Yes No (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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Above average rainfall preceding and during field investigation.					

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: _____)				Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
1. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u> (B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	_____	= Total Cover		Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:
1. _____	_____	_____	_____	Total % Cover of: _____ Multiply by: _____
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
	_____	= Total Cover		UPL species _____ x 5 = _____
Herb Stratum (Plot size: <u>5</u>)				Column Totals: _____ (A) _____ (B)
1. <u>Festuca rubra</u>	<u>80</u>	<u>Y</u>	<u>FACU</u>	Prevalence Index = B/A = _____
2. <u>Daucus carota</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
3. <u>Trifolium hybridum</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>100</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>15</u>)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
	_____	= Total Cover		
% Bare ground in herb stratum <u>0</u>				
Remarks: (include photo numbers here or on a separate sheet)				

SOIL

Sampling Point J- UPLAND

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR 7/2	100					silt	lime material
14-18	10YR 4/4	90	10YR 4/6	10	C	M	Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Remarks:
Area was historically used for a landfill.

Hydric Soil Present? Yes No

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

Field Observations:

Surface Water Present? Yes No Depth (inches): 1 _____

Water Table Present? Yes No Depth (inches): 0 _____

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0 _____

Wetland Hydrology Present? Yes No

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

Remarks:
Above average rainfall preceding field survey date. Water pooled in depressions on old landfill site.



Reinforced concrete structure along West Ditch.



Ditch above concrete structure.



Ditch below concrete structure.

Stream & Location: West Ditch Lockbourne AFB-UPRIVER DAM **Date:** 5/9/11

Scorers Full Name & Affiliation: Jeffrey Johnson / CH2M HILL

River Code: 056-000-11603 **STORET #:** _____ **Lat./Long.:** 39.807 182.961 (NAD 83 - decimal) **Office verified location**

1) SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL RIFFLE	OTHER TYPES	POOL RIFFLE	ORIGIN	QUALITY
<input type="checkbox"/> BLDR /SLABS [10]	_____	<input type="checkbox"/> HARDPAN [4]	_____	<input type="checkbox"/> LIMESTONE [1]	<input checked="" type="checkbox"/> HEAVY [-2]
<input type="checkbox"/> BOULDER [9]	_____	<input type="checkbox"/> DETRITUS [3]	_____	<input checked="" type="checkbox"/> TILLS [1]	<input type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> COBBLE [8]	_____	<input type="checkbox"/> MUCK [2]	_____	<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/> NORMAL [0]
<input type="checkbox"/> GRAVEL [7]	_____	<input checked="" type="checkbox"/> SILT [2]	<u>50</u>	<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/> FREE [1]
<input checked="" type="checkbox"/> SAND [6]	<u>50</u>	<input type="checkbox"/> ARTIFICIAL [0]	_____	<input type="checkbox"/> SANDSTONE [0]	<input checked="" type="checkbox"/> EXTENSIVE [-2]
<input type="checkbox"/> BEDROCK [5]	_____	<small>(Score natural substrates; ignore sludge from point-sources)</small>		<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/> MODERATE [-1]

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0]

Comments _____

EMBEDDEDNESS SILT COAL FINES [-2]

Substrate 7 Maximum 20

2) INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

<input checked="" type="checkbox"/> UNDERCUT BANKS [1]	<input type="checkbox"/> POOLS > 70cm [2]	<input type="checkbox"/> OXBOWS, BACKWATERS [1]	AMOUNT
<input checked="" type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> AQUATIC MACROPHYTES [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
<input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> MODERATE 25-75% [7]
<input type="checkbox"/> ROOTMATS [1]			<input checked="" type="checkbox"/> SPARSE 5-<25% [3]
			<input type="checkbox"/> NEARLY ABSENT <5% [1]

Comments _____

Cover 4 Maximum 20

3) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input checked="" type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input checked="" type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments _____

Channel 4 Maximum 20

4) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY
<input type="checkbox"/> NONE / LITTLE [3]	<input checked="" type="checkbox"/> WIDE > 50m [4]	<input checked="" type="checkbox"/> FOREST, SWAMP [3]
<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input checked="" type="checkbox"/> SHRUB OR OLD FIELD [2]
<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]
	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]

Comments _____

CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian. **Riparian** 9 Maximum 10

5) POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential Primary Contact Secondary Contact <small>(circle one and comment on back)</small>
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	
<input type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	Pool / Current 4 <small>Maximum 12</small>
<input checked="" type="checkbox"/> 0.7-<1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input checked="" type="checkbox"/> SLOW [1]	
<input type="checkbox"/> 0.4-<0.7m [2]	<input checked="" type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> VERY FAST [1]	
<input type="checkbox"/> 0.2-<0.4m [1]		<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> MODERATE [1]	

Comments No Riffles, Glides Predominant

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments _____

Riffle / Run 0 Maximum 8

6) GRADIENT (1.0 ft/mi) VERY LOW - LOW [2-4] **%POOL:** 10 **%GLIDE:** 90

DRAINAGE AREA (1.55 mi²) MODERATE [6-10] **%RUN:** 0 **%RIFFLE:** 0

Comments _____

Gradient 2 Maximum 10

AJ SAMPLED REACH

Check ALL that apply

METHOD

- BOAT
- WADE
- L. LINE
- OTHER

DISTANCE

- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

STAGE

1st -sample pass- 2nd

- HIGH
- UP
- NORMAL
- LOW
- DRY

CLARITY

1st --sample pass-- 2nd

- < 20 cm
- 20-40 cm
- 40-70 cm
- > 70 cm/ CTB
- SECCHI DEPTH

meters

CANOPY

- > 85% - OPEN
- 55% - <85%
- 30% - <55%
- 10% - <30%
- <10% - CLOSED

CJ RECREATION

AREA DEPTH
POOL: >100ft² >3ft

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMoured / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT & GRIME
- CONTAMINATED ~~CANDELL~~
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

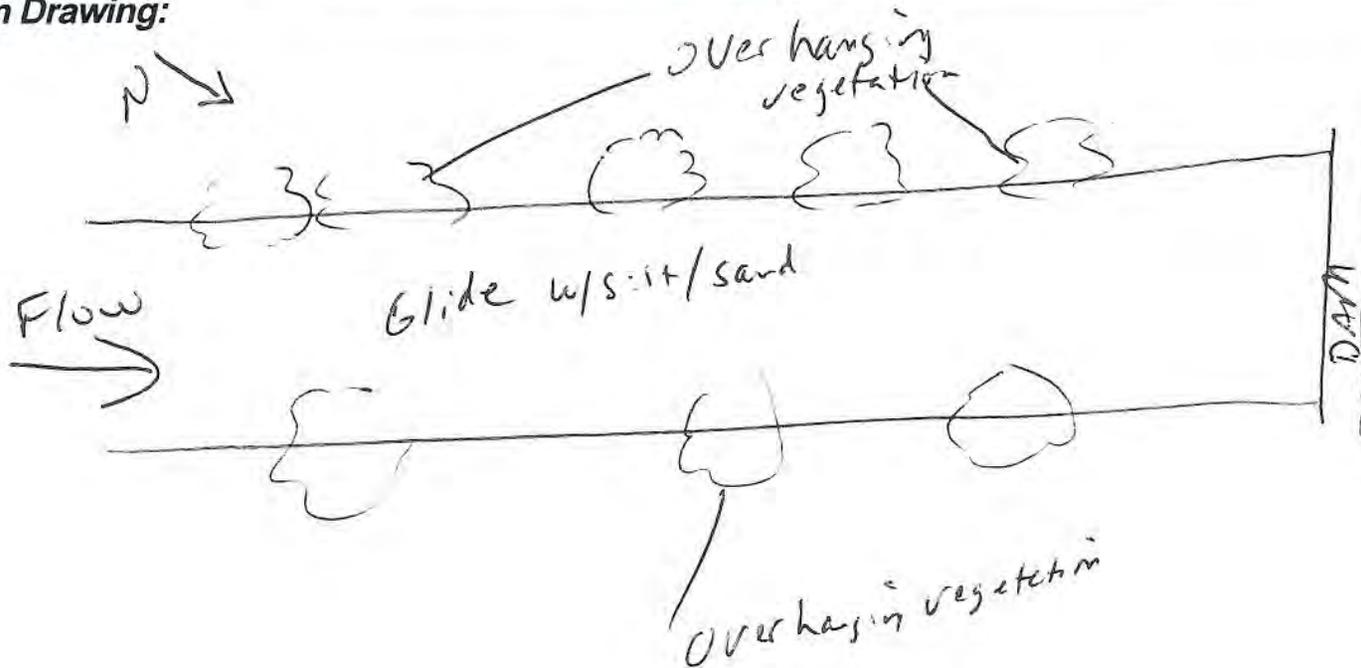
- \bar{x} width 15'
- \bar{x} depth 20"
- max. depth 30"
- \bar{x} bankfull width 20'
- bankfull \bar{x} depth 4'
- W/D ratio 2758
- bankfull max. depth 4'
- floodprone x^2 width NA
- entrench. ratio
- Legacy Tree:

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

West Ditch adjacent to Lobboune AFB landfill. QHEI

performed upriver from dam structure.

Stream Drawing:



Stream & Location: West Ditch Lockbourne AFB (Downstream of Dam) RM: Date: 5/9/11

Scorers Full Name & Affiliation: Jeffrey Johnson / Citizen 15LL

River Code: 056-000-11603 STORET #: Lat./Long.: 39.808 182.962 Office verified location

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present. Includes categories: BEST TYPES, OTHER TYPES, POOL RIFFLE, ORIGIN, and QUALITY. Includes a score box for Substrate with value 15.

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts... Includes categories: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS. Includes a score box for Cover with value 6.

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average). Includes categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY. Includes a score box for Channel with value 9.

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average). Includes categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY. Includes a score box for Riparian with value 9.

5] POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY. Includes a score box for Pool / Current with value 6 and a Recreation Potential box with Primary Contact selected.

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Includes categories: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS. Includes a score box for Riffle / Run with value 3.

6] GRADIENT (/ ft/mi) DRAINAGE AREA (1.56 mi^2). Includes categories: VERY LOW - LOW, MODERATE, HIGH - VERY HIGH. Includes a score box for Gradient with value 3.

A) SAMPLED REACH

Check ALL that apply

METHOD

- BOAT
- WADE
- L. LINE
- OTHER

STAGE

1st-sample pass- 2nd

- HIGH
- UP
- NORMAL
- LOW
- DRY

DISTANCE

- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

CLARITY

1st --sample pass-- 2nd

- < 20 cm
- 20-40 cm
- 40-70 cm
- > 70 cm/ CTB
- SECCHI DEPTH

CANOPY

- > 85%- OPEN
- 55%-<85%
- 30%-<55%
- 10%-<30%
- <10%- CLOSED

CJ RECREATION

AREA DEPTH
POOL: >100ft² >3ft

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

West Ditch adjacent to Lockbourne AFB Landfill

Performed QHEI Downriver from Dam

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMoured / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

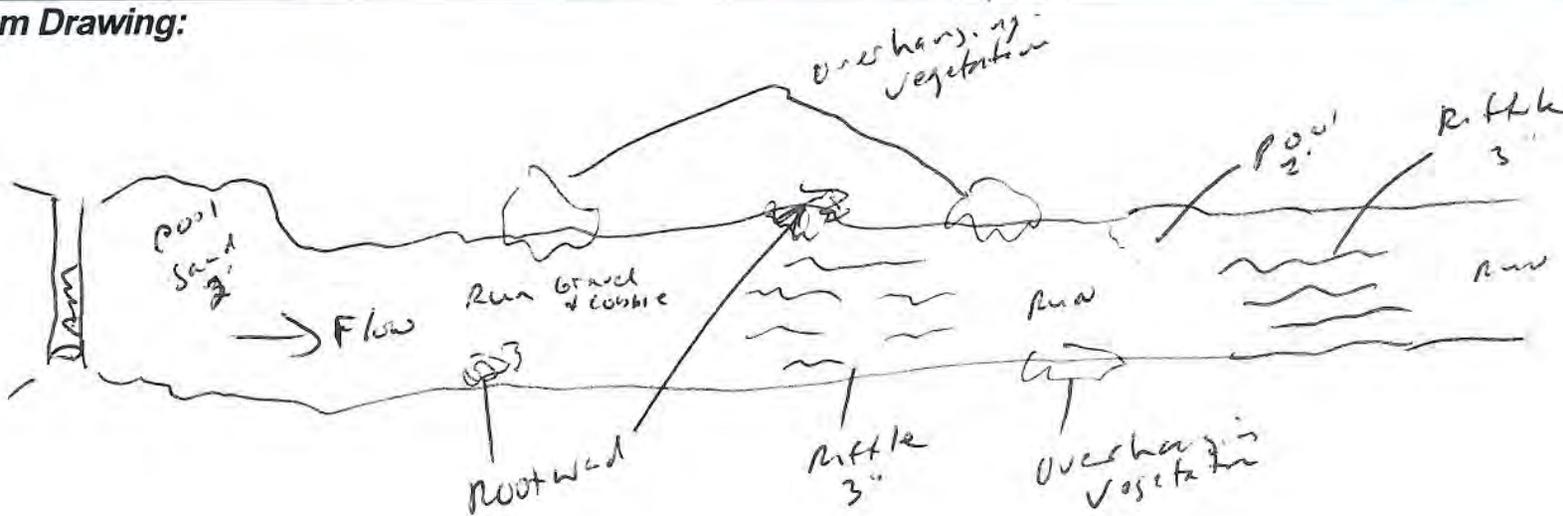
EJ ISSUES

- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- \bar{x} width 10'
- \bar{x} depth 2" 6"
- max. depth 2"
- \bar{x} bankfull width 7.5'
- bankfull \bar{x} depth 2'
- W/D ratio 8
- bankfull max. depth 2'
- floodprone x² width
- entrench. ratio
- Legacy Tree:

Stream Drawing:



Response to Ohio Environmental Protection Agency's Comments on the Wetland and Waterbody Delineation Technical Memorandum for the Former Lockbourne Air Force Base Landfill

TO: Ohio Environmental Protection Agency
FROM: CH2MHILL on behalf of U.S. Army Corps of Engineers, Louisville District
DATE: August 2, 2011

Responses to Ohio Environmental Protection Agency's (Ohio EPA) written comments dated July 15, 2011, regarding the Wetland and Waterbody Delineation Technical Memorandum for the Former Lockbourne Air Force Base Landfill are as follows:

Comment 1. In the next step, USACE needs to evaluate the delineation report and determine whether it agrees with the boundaries of the streams and wetlands located on the property. If USACE decides to conduct a site visit as part of that boundary verification process, Ohio EPA would like to participate in the site visit. USACE should also state whether the streams and wetlands are jurisdictional (regulated under the Clean Water Act) or "isolated" and only regulated under state law. Per a formal Local Procedures Agreement between USACE and Ohio EPA, USACE then requests Ohio EPA's input on the wetlands delineation. At that point, Ohio EPA confirms the Ohio Rapid Assessment Method for Wetlands, v. 5.0 (ORAM) scores provided for each wetland and the Qualitative Habitat Evaluation Index (QHEI) scores for the streams.

Response: Concur. USACE, Huntington District plans to conduct a site visit to make a final jurisdictional determination. We will coordinate with Ohio EPA so that Ohio EPA has the opportunity to attend the site visit. USACE will request Ohio EPA's input following USACE, Huntington District's jurisdictional determination.

Comment 2. Will USACE be cleaning up the site under a nationwide permit 38 (Cleanup of Hazardous and Toxic Waste)?

Response: Following USACE, Huntington District's jurisdictional determination, the remedial action contractor will be required to determine the applicable requirements as part of work planning. Remedial actions performed under CERCLA will meet the substantive requirements of applicable permits, but a permit(s) will not be required.

Comment 3. Table 4, page 5 - The "Wetland Area" column needs to note the units.

Response: Concur. The table will be changed to reflect that the wetland areas are presented in acres.

Comment 4. Section 3.2 Waterbody Descriptions, page 6, second paragraph - Clarification is needed. It is my understanding that the emergency interceptor (reinforced concrete structure)

will be removed during the remedial action and that the removal of waste from the bank of the west ditch will also occur during the remedial action.

Response: Concur. The sentence will be revised as follows. "The proposed remedy will include removal of the reinforced concrete structure from the West Ditch and a 10 to 12-foot area of waste that forms the upper half of the east bank of the West Ditch. Also, surficial debris from the lower half of the east bank of the West Ditch will be removed."

Note: In this regard, please note that the USACE remedial action contract will include a caveat that the interceptor removal will be performed by others, with the intent that the CRAA will set up a procurement for interceptor removal. In the event that the CRAA is unable to set up a separate procurement for the interceptor removal, the interceptor will be removed as part of the FUDS remedial action. However, the CRAA will then need to apply for a modification to its wetlands permit.

Comment 5. Figure 5 Delineated Wetlands - The symbol for the area of clearing and grubbing in the legend is very distinct in the figure when viewed electronically. When printed, the hash marks are barely seen and need to be enhanced.

Response: Concur. The figure will be revised for better clarity when printed.

From: [Bynum, Diana](#)
To: [Ries, Cynthia A LRL](#)
Cc: [Heck, Carla M LRL](#); [Strayton, Debbie](#)
Subject: Wetlands Delineation Report
Date: Wednesday, November 09, 2011 2:27:15 PM
Attachments: [image001.png](#)

Cindy,

The Technical Memorandum, Wetland and Waterbody Delineation, Former Lockbourne AFB Landfill, was received on August 23, 2011. The report has been reviewed and all comments have been addressed.

Diana

Diana L. Bynum
Site Coordinator

Division of Environmental Response and Revitalization

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