

Fowler Woods In-Lieu Fee Mitigation Plan

**In partnership with
Ohio Department of
Natural Resources**

Huron-Vermilion Watershed (HUC 04100012)
Richland County, Ohio



Wetland Restoration Overview, Shiloh, Ohio © Brian Gara



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February 2019

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INTRODUCTION

This mitigation plan provides an overview of proposed compensatory mitigation activities for the Fowler Woods In-Lieu Fee Mitigation Project within the Huron- Vermilion Watershed (Hydrologic Unit Code (HUC) 04100012) located in Richland County, Ohio (Appendix A, Figure 1). The 23.1 acre site is located southeast of the Olivesburg-Fitchville Road and Noble Road intersection, just east of Shiloh, Ohio. This site is part of the Fowler Woods State Nature Preserve, owned and operated by the Ohio Department of Natural Resources (ODNR) Division of Natural Area and Preserves (DNP) (see adjacent map).

Fowler Woods is one of the best examples in the state of a beech-maple community that grades into vernal pools that are buttonbush dominated. These vernal pool wetlands support a wide diversity of breeding amphibians including many sensitive species.



MITIGATION OBJECTIVES

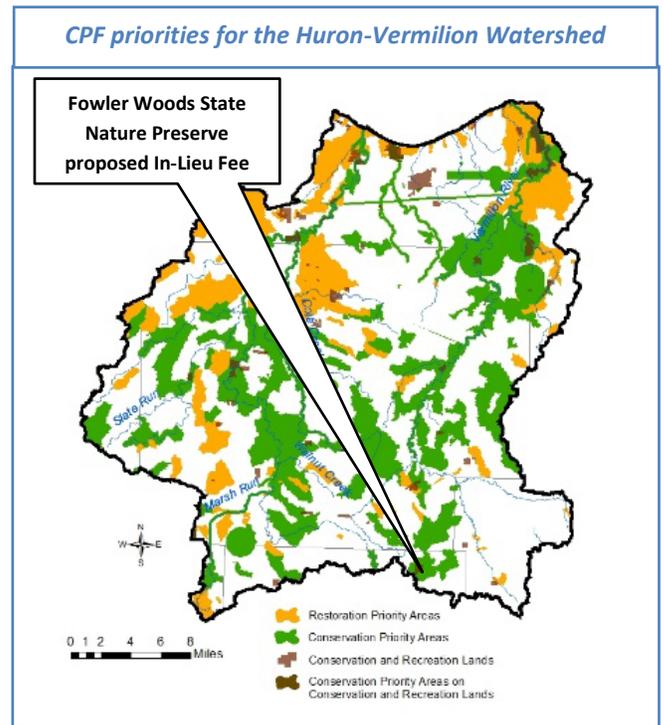
The primary objectives of the Fowler Woods In-Lieu Fee Mitigation Project involves restoration of a highly degraded portion of Clear Creek (tributary to the Vermilion River) along with an associated 50-foot riparian buffer. Additionally, re-establishment of vernal pool wetlands and upland buffer will occur in an abandoned agricultural field, which still has an active subsurface tile system. Our goal is to institute an ecologically sound, well-developed and feasible restoration plan. The plan will generate in-kind mitigation credits to replace advanced mitigation credits that have been sold in the Huron-Vermilion (HUC 04100012), Sandusky (04100012), and Blanchard (04100008) watersheds. All these watersheds occur within the HUC 6 (041000) Lake Erie Western Basin watershed. These mitigation credits will serve as compensation for activities authorized by the United States Army Corps of Engineers (USACE) and the Ohio Environmental Protection Agency (Ohio EPA) through the issuance of permits.

The proposed mitigation project will provide an ecological lift through re-establishment and rehabilitation of wetlands and stream on the site to compensate for impacts to wetlands and streams within the 8-digit HUC watersheds. Additionally, the

site will provide sustainable compensatory mitigation with minimal long-term maintenance and active management needs, as per 33 CFR 332.7(b).

When approved, the Fowler Woods In-Lieu Fee Mitigation Project will be designed, implemented, and managed to attain the following basic objectives:

- Produce high-quality wetlands and wetland buffer habitat that will result in a gain in aquatic resource functions that are currently not present on the site.
- Restore and enhance Clear Creek to provide high quality aquatic habitat, improve water quality, regulate watershed hydrology, and attenuate runoff.
- Provide a diverse interspersion of restored habitat features and buffers.
- Establish connectivity and habitat corridors within an existing natural area.
- Provide an endowment for the long-term maintenance of the mitigation site.



SITE SELECTION

The objective of the watershed approach as described in the 2008 Compensatory Mitigation Rule “is to maintain and improve the quantity and quality of wetlands and other aquatic resources in watersheds through strategic selection of compensatory mitigation project sites.” A Compensation Planning Framework (CPF) is to be used by ILF programs to “select, secure, and implement aquatic resource restoration, establishment, enhancement, and/or preservation activities”. Described further in the Preamble to the Compensatory Mitigation for Losses of Aquatic Resources Rule (73 Fed. Reg. 19598 (Apr. 10, 2008)).

The CPF developed by TNC’s Ohio Mitigation Program (OMP) aligns with the provisions in the rule and is used to establish a science-based conservation approach

for setting goals and priorities within each HUC 8 watershed of Ohio. Element 6 of the OMP's CPF outlines the program's watershed approach. The map above shows the project location in relation to the CPF conservation priorities in the watershed.

While the CPF mapping provides a large-scale overview of the watershed and its conservation priorities, it is very important to also assess a potential project based on its specific, on-site characteristics. In order to better apply the CPF to a site-specific location, the OMP Site Evaluation Checklist was developed. Criteria that are assessed and scored through use of the checklist include: watershed-based priorities, surrounding land use, special ecosystems present, and nearby conservation priorities. Appendix B contains the Site Evaluation and Selection Checklist for the Mitigation Project site.

The proposed Fowler Woods In-Lieu Fee Mitigation Project met all the mandatory conditions including permanent protection, in kind mitigation, it is in the primary service area where credits have been sold and it is located within a CPF priority area. The Site Metric Score for the proposed mitigation site was a score of 75 out of a possible 100 points.

The Stream Metric Score for the proposed mitigation site was high with a score of 70 out of a possible 100 points. The score for the Stream Metric received high marks because it offers a mix of stream restoration opportunities, the causes of impairment to the streams are correctable within the project area, and the biological restoration potential of the streams is high.

The Wetland Score Metric for the proposed mitigation site was 70 out of a possible 100 points. The score for the Wetland Metric received high marks because it offers a large amount of wetland restoration opportunities, the causes of impairment to the wetland, namely hydrologic modification due to drainage tiles, are correctable within the project area, and the biological restoration potential is high based on intact wetlands in the vicinity.

Based on the above qualifications this project presents an ecologically sound option for compensating for aquatic resource losses and improving the watershed.

SITE PROTECTION INSTRUMENT

The mitigation project area, will be permanently protected using an environmental covenant pursuant to Ohio Revised Code (“R.C.”) Sections 5301.80 to 5301.92. The permanently protected area is depicted in Figure 1 in Appendix A. TNC is working with the ODNR Division of Natural Areas and Preserves to draft the environmental covenant. It will also be shared with the IRT for review.

BASELINE INFORMATION

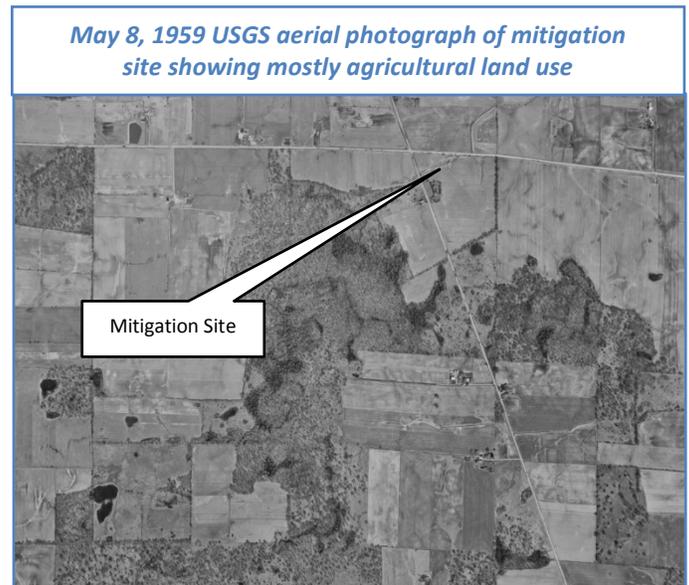
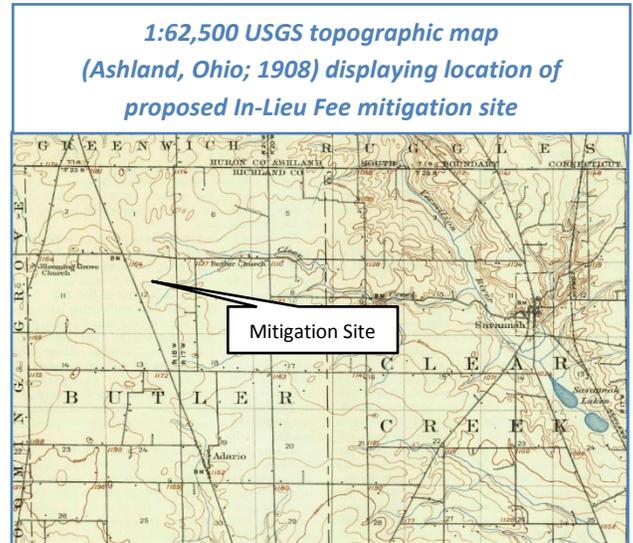
HISTORIC LAND USE AND IMPACTS

The project area was significantly altered historically to allow for grazing and row crop farming practices. The time frame for land alteration started in the early 1800’s to current day. Through the activities of row crop production and grazing, the land has been tilled and the top soils have been greatly impacted through the many years of this process. Furthermore, to increase the land availability for crop production the stream on-site was captured with the use of tiles.

PHYSIOGRAPHY

The mitigation site is located in northern Richland County (Appendix A, Figure 1). The site lies within the Low Lime Drift Plain (61c) Level IV Ecoregion. *“The Low Lime Drift Plain ecoregion has a rolling landscape composed of low rounded hills with scattered end moraines and kettles...”* (Woods, et.al., 2012).

The site is located within the headwaters of the Vermilion River, on *“Clayey till (Hiram till); occurs as hummocky ridges higher than adjacent terrain”* (Ohio Department of Natural Resources-Division of Geological Survey, 2018). The pre-settlement vegetation



of the area surrounding the In-Lieu Fee site was primarily beech forest with smaller areas of scattered elm-ash swamp forest (Gordon, 1966).

Based on information derived from the USGS 2006 National Land Cover Dataset (Homer, et.al., 2015), current land use within 3 miles of the proposed In-Lieu Fee site (Appendix A, Figure 2) is dominated by agricultural activities (74.3%), and to a much lesser extent second growth deciduous forest (19.7%).

TOPOGRAPHY

The mitigation site topography is relatively flat and drains towards Clear Creek. The highest point in the mitigation site is in the southern boundary of the site. Figure 1 in Appendix A provides a topographic overview of the site.

SOILS

There are six soil types mapped by the United States Department of Agriculture (USDA) as being present within the study area (Soil Survey Staff, NRCS, accessed 2018). The acreage of each of the mapped soil types and their associated percentage makeup of the site can be found in Appendix A, Figure 3. Two of the soil types present are classified as being predominantly hydric: Condit silt loam [Cr] and Pewamo silty clay loam [Pm]. Additionally, three soil types are partially hydric (non-hydric with hydric inclusions): Alexandria silt loam, 6 to 12 percent slopes, moderately eroded [AdC2], Bennington silt loam, 0 to 2 percent slopes [BnA], and Bennington silt loam, 2 to 6 percent slopes [BnB]. The final mapped soil type, Cardington silt loam, 2 to 6 percent slopes, moderately eroded [CgB2], is classified as being non-hydric.

TERRESTRIAL RESOURCES

Multiple site visits were conducted in the summer and fall of 2018 to observe and collect information for a baseline assessment. The identified terrestrial habitats of the study area are solely old field (Appendix A, Figure 5).

AQUATIC RESOURCES

Watershed

One stream, Clear Creek, flows from southwest to the northeast within the northwest portion of the mitigation project area. The confluence of Clear Creek with the Vermilion River is approximately 6.3 miles downstream of the project site. The Vermilion River and Clear Creek were last assessed by the Ohio EPA in the 2005 Biological and Water Quality Study of the Vermilion River, Old Woman Creek, Chappel Creek, Sugar Creek, and Select Lake Erie Tributaries, 2002. Ashland, Huron, Erie, Richland and Lorain Counties, Ohio. The 2004 evaluation of Clear Creek was found to be in compliance with the warmwater habitat life use designation.

The mitigation site has a watershed of approximately 0.29 mi² in size and is 68.2% forested, 0.52% impervious surface, and has 3.21% of the land developed in an urban capacity (Appendix A, Figure 4). Hydrologic inputs to the site are: precipitation; seasonal or temporal flooding from intermittent; and groundwater seeps located adjacent to Clear Creek. The mitigation site contains the following aquatic resources: one intermittent stream and five wetlands. The riverine resources and wetland resources sections below provide more details.

Riverine Resources

Mad Scientist Associates, LLC delineated the waters of the US and evaluated functional assessments for the streams on-site with Ohio EPA’s Headwater Habitat Evaluation Index (HHEI) (field forms are in Appendix C). The one stream on the site, Clear Creek, an intermittent stream was observed within the site totaling approximately 764 linear feet (LF) (Appendix A, Figure 5). The summation of the riverine resource and its respective habitat quality evaluation scores can be found in Table 1.

Table 1. Riverine Resources within the Mitigation Site.

Name	Type	Length (feet)	HHEI Score	Aquatic Life Use/ PHWH Stream Class
Clear Creek	Intermittent	846	52	Modified Class II
Total		846		

Clear Creek (Stream 1) is an intermittent flow stream with a substrate bottom primarily comprised of silt, clay/hardpan, gravel and sand. The stream has been modified in association with past land uses including capturing the stream with tiles for agricultural productions of row crops. Clear Creek has an average bankfull width of 1.4 meters and received a HHEI score of 52 classifying the stream as a modified Class II PHWH stream (Table 1, Appendix A, Figure 5). Current photographs of the Stream 1 are in Appendix F.

Wetland Resources

MAD Scientist Associates conducted a field visit on November 19th of 2018 to collect wetland determination data. Table 2 provides a summary of the wetland data collected by MAD Scientist Associates and their associated ORAM data sheets are provided in Appendix D. A total of five wetlands identified during field investigations (Appendix A, Figure 7). Three wetlands were identified as palustrine emergent wetlands (PEM) comprising a total of 0.068 acre. Two wetlands were identified as palustrine scrub-shrub wetland (PSS) comprised a total of 0.089 acre. The total acreage of all wetlands within the mitigation site is 0.158 acre. Photographs of the stream and wetland resources and the location of where they were taken can be found in Appendix F.

Table 2. Wetland Data for the Mitigation Site.

Name	Wetland Plant Community Cowardian Class	Acres	HGM Class	ORAM Score	VIBI Antidegradation Category
Wetland A	Palustrine Scrub Shrub (PSS)	0.015	Depression	29	1
Wetland B	Palustrine Emergent (PEM)	0.004	Depression	29	1
Wetland C	Palustrine Emergent (PEM)	0.006	Depression	29	1
Wetland D	Palustrine Scrub Shrub (PSS)	0.074	Riverine	22	1
Wetland E	Palustrine Emergent (PEM)	0.059	Depression	26	1

Wetland A (0.015 acres) is a depressional wetland and composed of a palustrine scrub-shrub (PSS) plant community. Wetland A is associated with sample plot A-Wet (Figure 6, Appendix A and Appendix E). The herbaceous layer for the PSS wetland is dominated by reed canary grass (*Phalaris arundinacea*) and Canada goldenrod (*Solidago altissima*). The shrub stratum of the wetland is dominated by red osier dogwood (*Cornus sericea*) and pin oak (*Quercus palustris*), and the tree stratum of the wetland is dominated by pin oak (Appendix E). Wetland A scored 29 on ORAM placing it in category 1, Table 2 (Appendix D).

Wetland B (0.004 acres) is a small depressional PEM wetland. Wetland B is associated with sample plot B-Wet (Figure 6, Appendix A and Appendix E). The herbaceous layer for Wetland B is dominated by reed canary grass with Canada goldenrod, Indian hemp (*Apocynum cannabinum*) and black raspberry (*Rubus occidentalis*) also occurring. Most of the shrub stratum contains pussy willow (*Salix discolor*) with red osier dogwood, red maple (*Acer rubrum*), and callery pear (*Pyrus calleryana*) also occurring. Wetland B scored 29 on ORAM placing it in category 1, Table 2 (Appendix D).

Wetland C (0.006 acres) is a small depressional PEM wetland. Wetland C is associated with sample plot C-Wet (Figure 6, Appendix A and Appendix E). The herbaceous layer for Wetland C is dominated by woolgrass (*Scirpus cyperinus*), tall fescue (*Festuca*

arundinacea), and soft rush (*Juncus effusus*) with Canada goldenrod, grass-leaved goldenrod (*Euthamia graminifolia*), and wild carrot (*Daucus carota*) also occurring. Most of the shrub stratum contains red osier dogwood. Wetland C scored 29 on ORAM placing it in category 1, Table 2 (Appendix D).

Wetland D (0.074 acres) is a depressional wetland and composed of a palustrine scrub-shrub (PSS) plant community. Wetland D is associated with sample plot D-Wet (Figure 6, Appendix A and Appendix E). The herbaceous layer for the PSS wetland was dominated Canada goldenrod and tall fescue with the shrub strata dominated by sandbar willow (*Salix interior*) (Appendix E). Wetland D scored 22 on ORAM placing it in category 1, Table 2 (Appendix D).

Wetland E (0.059 acres) is a small depressional PEM wetland. Wetland E is associated with sample plot E-Wet (Figure 6, Appendix A and Appendix E). The herbaceous layer for the PSS wetland was dominated by reed canary grass and with Indian hemp also occurring. The shrub stratum of the wetland is dominated by pussy willow and red osier dogwood, and the tree stratum for the wetland is dominated by quaking aspen (*Populus tremuloides*) (Appendix E). Wetland E scored 26 on ORAM placing it in category 1, Table 2 (Appendix D).

PROPOSED MITIGATION WORK PLAN

*Note – the distances, acreages, and credits are for planning purposes only. They are expected to change based on IRT comments and the final design.

This project proposes to:

- Re-establish and restore 846 linear feet (LF) of an intermittent stream, Clear Creek, through full-extent channel restoration involving dimension, pattern, profile, and re-establishment of a new floodplain to improve water quality and stream ecology (Mitigation Type 1 – Activity Level 2);
- Re-establish 2.1 acres/522 LF of extra riparian buffer (Mitigation Type 4 – Re-establishment);
- Re-establish 4.2 acres of forested (PFO) and shrub (PSS) vernal pool wetlands in areas of existing hydric soils.
- Re-establish 8.6 acres of vital forest buffer for wetlands.
- Re-establish 5.4 acres of extra upland forest buffer for wetlands.

Streams

The Ohio EPA report “Biological and Water Quality Study of the Vermilion River, Old Woman Creek, Chappel Creek, Sugar Creek, and Select Lake Erie Tributaries, 2002. Ashland, Huron, Erie, Richland and Lorain Counties, Ohio” identified sources of water quality threats and impacts including: direct habitat alterations due to agricultural practices such as stream channelization, riparian removal, organic enrichment, fecal coliform, siltation, and sedimentation. These sources of impairment have been associated with high intensity agricultural activities, failing septic systems, and suburban development. Sedimentation due to altered stream channels will be alleviated through this restoration.

Clear Creek will be daylighted by reestablishing its channel above ground and reconnecting it to its floodplain. Daylighting this stream will provide additional benefits to aquatic life and will have instream habitat features constructed that are consistent with those in appropriately sized reference stream reaches within the watershed. The Mitigation Type and Activity levels of restoration as described in the “Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio 1.1” (2014) are displayed in Figure 7, Fowler Woods State Nature Preserve In-Lieu Fee Project Site, in Appendix A.

Wetlands

From a wetland conservation standpoint, restoration of the Fowler Woods mitigation site wetlands is highly desirable given its proximity to the Category 3 vernal pool wetlands located within Fowler Woods Natural Preserve. Degraded conditions of the mitigation site wetlands, and the need to offset the loss of wetlands within the watershed will allow expansion of a very high quality and complex wetland system. The Category 3 wetlands can serve as a template for wetland restoration in the area and facilitate the spread of species, most specifically amphibians, from them to the wetlands that will be re-established and rehabilitated.

Existing Wetlands

The existing wetlands on-site are being incorporated into the project through expansion for Wetlands B and C. All the aforementioned wetlands are very low quality herbaceous or scrub-shrub wetlands. These wetlands will be rehabilitated through minor soil grading to restore pre-settlement vernal pool topography, control of invasive plant species, planting of high quality native species, improvements to the hydrological regime, and the establishment of forested upland buffers.

As described in the “Environmental Assessment for Control of Invasive Non-native Plants in Wetlands in the Lake Erie Watershed in Ohio” (2011), wetlands, particularly

throughout the Great Lakes region, have been overwhelmed by invasive plants, creating drastic threats to the species richness and diversity of native plants and animals, including migratory bird assemblages. In addition, these highly invasive plants disrupt food webs and alter the water regimes of marshes and other wetlands by increasing evaporation and trapping sediments.

Control efforts in degraded wetlands may take multiple cycles of treatment to eradicate and/or significantly reduce the invasive species. Invasive plants within the mitigation site will be treated using a wetland-approved glyphosate herbicide such as Rodeo. Herbicide treatments could require up to two or three consecutive years of repetitive applications, to eradicate/significantly reduce the invasive species and their established seed bed. Additionally, the PEM wetland areas would then need to be seeded and/or planted with native trees and shrubs and plugs of other desirable wetland plants specific to the area.

Re-established Wetland Areas

Re-establishment of wetlands on-site will focus on the former row crop agricultural areas where the topography is flat, or seeps are present on slight slopes, and there is the presence of hydric soils. Figure 7 indicates our planned re-establishment of five forested wetlands totaling 4.2 acres. The supporting hydrology for the re-established wetlands will come from precipitation and groundwater. Because of the topography and soils, wetland conditions should be easily developed, with minimal grading and the disruption of any existing field tiles. Any required excavation will likely be shallow (0.25-0.5ft in depth). Where grading is needed the topsoil will be removed, stockpiled for a short time, and reapplied. During the design phase of the project, additional wetland areas on-site will be analyzed and proposed when appropriate.

The re-established wetland areas will be planted according to the finished grading/topography of the wetland and hydrologic regime appropriate for the proposed species. For emergent areas, a native seed mix will be applied based on the anticipated hydrologic regime. For the wetter conditions of more permanently inundated areas, herbaceous plugs adapted to deeper and longer hydrologic regimes will be installed. In addition, high quality, native woody species will be selected for both the wetlands and their buffers. The revegetation will focus on creating vegetative interspersions and diversity typical of the existing high quality vernal pools within the Preserve.

For these wetland areas, annual maintenance will be essential to the success of the control efforts and will focus on selectively removing invasive pioneers. A comprehensive and accurately funded long-term management plan will be developed for the mitigation site.

DETERMINATION OF CREDITS

The “Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio 1.1” (2014) and “Guidelines for Wetland Mitigation Banking in Ohio” (2011) were utilized to estimate and determine credits for the proposed Strait Creek mitigation project. Although the actual credits generated will be based on the as-built, and IRT approval, the Guidelines provide general ratios. It is understood that:

Streams

- Mitigation Type 1, Activity Level 2 can generate ratios up to 1.75:1
- Mitigation Type 4 (Extra Buffer), Re-establishment can generate ratios up to 1:4

Wetlands

- Wetland re-establishment can generate ratios up to 1:1
- Wetland buffer re-establishment can generate ratios up to 1:4
- Wetland extra buffer re-establishment or rehabilitation can generate ratios up to 1:10

Table 3 provides the credit estimates for each of the streams and wetland areas based upon the proposed Mitigation Work Plan.

Table 3: Stream and Wetland Credit Estimates for the Mitigation Work Plan

Stream or Wetland (Type)	Method of Compensation	Acres /LF	Estimated Credit Ratio	Estimated Stream Credits	Estimated Wetland Credits
Clear Creek (Perennial)	Type 1: Level 2	846	1.75:1	1,481	--
	Type 4: Re-establishment	522	1:4	131	--
Forested Wetland (PFO)	Re-establishment	4.2	1:1	--	4.2
Wetland Buffer (50 Meter)	Re-establishment	6.7	1:5*	--	1.3*
	Re-establishment (Within the 100ft property buffer)	1.9	1:10	--	0.2
Extra Wetland Buffer	Re-establishment	3.2	1:10	--	0.3
	Re-establishment (Within the 100ft property buffer)	2.2	1:15	--	0.1
TOTAL:				1,612	6.1

* Buffer credit proportion of total wetland credit would yield more than 30% therefore the ratio is reduced to 1:5 to reduce the amount of credit given for wetland buffer.

CREDIT LEDGER

The Huron-Vermilion Watershed (HUC 04110012) currently has 380 stream credits sold with no additional stream credits on reserve and no wetland credits sold. The Huron-Vermilion Watershed is located in the Western Lake Erie Basin (HUC 041000). The activity of credits sold within the Western Lake Erie Basin is low for stream credits with 708 stream credits sold and 8.2 wetland credits sold for the HUC 6 (Table 4). Due to the small quantity of stream credits sold it may be best to aggregate the stream credits to reduce temporal loss within the HUC 6.

Table 4: Active Watersheds in the Western Lake Erie Basin (HUC 041000)

Watershed Name	HUC 8	Stream Credits Sold	Wetland Credits Sold	Date of First Activity in Watershed
Huron-Vermilion	04100012	380	0	3/30/2015
Sandusky	04100011	0	1.6	3/15/2017
St. Mary's River	04100004	0	0.4	8/15/2016
Auglaize	04100007	0	0.5	1/18/2017
Blanchard	04100008	0	0.4	10/4/2017
Lower Maumee	04100009	328	1	12/9/2016
Tiffin	04100006	0	3.9	3/15/2017
Ottawa-Stony	04100001	0	0.4	4/4/2017
Total		708	8.2	

PERFORMANCE STANDARDS

The long-term goals of this project are to develop and manage a site that contains high quality aquatic and wetland resources and buffers. As the Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio states, performance standards should be based on specific measurable metrics using standards in current use in Ohio at the time the site is approved.

Streams:

1. Restored stream channels are vertically stable and connected to their floodplains
2. Stream banks are laterally stable showing only insignificant change from the as-built dimensions and the relocated stream channel will be stable, and the stream meets the criteria for a Class II primary headwater stream by the end of the monitoring period.
3. Pebble counts demonstrate appropriate substrate composition
4. Appropriate pool/riffle spacing
5. Biological and habitat standards such as QHEI, IBI, and EPT Taxa may also be appropriate, but can only be developed and proposed once more assessments are performed at the site and the engineering design plans are developed.

Re-established Wetlands:

1. Released credits must meet wetland criteria {Corps of Engineers Wetland Delineation Manual (1987) and any subsequent versions/updates and all relevant regional supplements}.
2. The wetlands must be inundated (flooded or ponded) or the water table is ≤ 12 inches below the soil surface for ≥ 14 consecutive days during the growing season at a minimum frequency of 5 years in 10 ($\geq 50\%$ probability). Any combination of inundation or shallow water table is acceptable in meeting the 14-day minimum requirement. Short-term monitoring data may be used to address the frequency requirement if the normality of rainfall occurring prior to and during the monitoring period each year is considered.
3. The wetlands will contain a minimum of 75% relative coverage by facultative (FAC), facultative wetland (FACW) and obligate wetland (OBL) native perennial plant species.
4. The wetlands will contain a minimum of 90% relative coverage of native plant species.
5. The wetlands will achieve either a minimum VIBI-FQ score of 40 or a minimum AmphIBI score of 20.

Riparian and Wetland Buffer:

1. A minimum of 400 native, live and healthy (disease and pest free) woody plants per acre (of which at least 200 are tree species) must be present at the end of the monitoring period. The reestablished buffer will contain a minimum of 90% relative coverage of native plant species.
2. A minimum of 200 native trees per acre that are ≥ 3 " DBH are expected. If all trees are not at ≥ 3 " DBH, other evidence may be presented that proves the trees are on a trajectory to meeting this standard.
3. The re-established buffer will achieve a minimum VIBI-FQ score of 40.

MONITORING REQUIREMENTS

Monitoring is required to determine if the project is meeting its performance standards and if additional measures are necessary to ensure that the compensatory mitigation project is accomplishing its goals (33 CFR §332.6; RGL 08-03). The monitoring will evaluate wetlands, streams, and associated buffers. Monitoring will take place for a period of ten years following construction of the mitigation project, and reports will be submitted annually.

As stated in 33 CFR §332.6(b), the District Engineer in consultation with the IRT may reduce or waive the remaining monitoring requirements upon a determination that the compensatory mitigation project has met its performance standards, or extend the monitoring period upon a determination that performance standards have not been met, are not on track to be met, or remediation or adaptive management measures are required.

After construction, an as-built report will be submitted to members of the IRT by December 31st of the year of construction and seeding/planting. Thereafter, monitoring reports will be submitted by December 31st of each monitoring year. The schedule for submitting monitoring reports may be adjusted based on-site conditions or to facilitate credit releases. Schedule adjustment requests will be coordinated through the District Engineer in consultation with the IRT and do not require modification of the Plan or ILF Instrument.

A minimum of 11 photograph monitoring stakes will be installed at appropriate locations within the mitigation area following construction. The actual location and number of stakes will be dependent on the as-built conditions. The stakes will be of an ultraviolet (UV), light-resistant polyvinyl chloride (PVC) material and will be identified with unique numbers. Photo documentation of site conditions will be taken at these locations and will include the stake and stake number. Subsequent photographs will be taken in the same area and with the same directions of view.

Wetlands delineations will be conducted in Years 2, 5, 7, and 10 using the protocols in the 1987 *Corps of Engineers Wetlands Delineation Manual* and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version @)* (U.S. Army Corps of Engineers 2010), including the use of field forms.

Vegetation monitoring protocols will follow the Integrated Wetlands Assessment Program: Part 9: Field Manual for the Vegetation Index of Biotic Integrity for Wetlands v. 1.5 (Mack and Gara, 2015). The Vegetation Index of Biotic Integrity – Floristic Quality (VIBI-FQ) is an intensive assessment methodology developed by Ohio EPA, which is used to monitor the ecological condition of mitigation sites. Focus plots will be in the re-established wetlands and riparian buffer areas. VIBI-FQ scores will be calculated using the data gathered from the focus plots. The focus plot(s) will be monitored in Years 4, 6, 8, and 10. In addition to generating VIBI-FQ scores, data collected will be used to calculate percent relative cover of native plants and native perennial hydrophytes, as well as stem counts of woody vegetation.

Amphibian monitoring protocols will follow those protocols described in the Field Manual for the Amphibian Index of Biotic Integrity (Micacchion 2011). Amphibian monitoring will occur in years 4,6, and 8. Three sampling passes during the breeding season are required during each year of monitoring.

Monitoring reports will include a narrative that summarizes project conditions; supporting data such as plans, maps and photographs to illustrate project conditions; monitoring results from functional, condition or other assessments that compare the status of the developing project to performance standards; and any recommendations for adaptive management or remedial measures at the project. A summary of the parameters to be monitored is provided in Table 4 below.

Table 5: Monitoring Plan and Schedule

Streams

Monitoring Parameter	Monitoring Methodology	Year											
		0	1	2	3	4	5	6	7	8	9	10	
As-Built		X											
Photography	Fixed photo monitoring points	X	X	X	X	X	X	X	X	X	X	X	X
Cross sections - Depths and flows	Representative elevations	X		X		X							X
Longitudinal profiles	Baseline Elevation Survey	X		X		X							X
Streambank stability	Pfankuch Elevations			X		X		X		X		X	X
Habitat Assessment	QHEI, HHEI			X		X		X		X		X	X
Substrate Sampling	Pebble Counts			X		X		X		X		X	X
Fish Sampling	IBI			X				X					X
Macroinvertebrate sampling	EPT			X				X					X
Water Chemistry	Select Parameters			X		X		X		X		X	X
Report		X	X	X	X	X	X	X	X	X	X	X	X

Table 5: Monitoring Plan and Schedule (Continued)

Riparian Buffers, Wetland Buffers, and Wetlands

Monitoring Parameter	Monitoring Methodology	Year										
		0	1	2	3	4	5	6	7	8	9	10
Vegetation	VIBI-FQ					X		X		X		X
Photography	Fixed photo monitoring points	X	X	X	X	X	X	X	X	X	X	X
Habitat Assessments	Woody stem counts, native species % relative cover, native perennial hydrophytes relative cover					X		X		X		X
Wetland acreage	Delineation			X			X		X			X
Soils	Vertical Profiles			X		X		X		X		X
Hydrology	Data loggers, staff gauges, reference structures	X	X	X	X	X	X	X	X	X	X	X
*Birds/amphibians/reptiles	Observational/Detail ed			X		X		X		X		X

* Additional detailed monitoring of birds, amphibians, and/or reptiles may occur if early observational evidence suggests usage of restored habitat by sensitive species or if a main goal of the project is to develop habitat for these species.

ADAPTIVE MANAGEMENT PLAN

In addition to the above monitoring, the active monitoring plan will include an annual inspection form to be filled out and included in the monitoring reports. The information gained from the annual monitoring plan will provide a means of early identification of potential problems with the mitigation project such as adjacent property encroachment. The success of the project will be evaluated each year during the monitoring site visits. If the goals of the project are not being achieved or on a trajectory of being achieved, then appropriate steps will be taken to address these problems. All actions will be conducted in consultation with the USACE and Ohio EPA.

PROPOSED MAINTENANCE PLAN

A thorough mitigation monitoring plan, as described above, is a major component to a maintenance program and adaptive management plan.

In addition to the above monitoring, the active monitoring plan will include an annual inspection form to be filled out and included in the monitoring reports. In the first year following the completion of each phase, a minimum of three site visits will be performed. The annual monitoring and additional site visits will be used to determine the need for corrective actions such as stream bank repair, planting of riparian

vegetation, amphibian habitat improvements, or invasive plant species control. If any corrective actions are necessary, they will be addressed within 6 months.

The information gained from the annual monitoring plan will provide a means of early identification of potential problems with the mitigation project. The success of the project will be evaluated each year during the monitoring site visits. If the goals of the project are not being achieved or on a trajectory of being achieved, then appropriate steps will be taken to address these problems. All actions will be conducted in consultation with the USACE and Ohio EPA.

These steps may include:

- Additional plantings implemented to ensure attainment of diversity/quality/cover mitigation goals.
- Annual herbicide treatments of invasive, non-native vegetation, and as needed.
- Maintenance of instream structures.
- Improvements to amphibian species habitats.

LONG-TERM MANAGEMENT PLAN

As the OMP Instrument states, a long-term management plan must be developed for each ILF mitigation project and included in or by reference in the Mitigation Plan.

The Long-Term Management Plan includes a description of long-term management needs, annual cost estimates for these needs, and provides details regarding the identity of the non-wasting endowment that will be used to meet those needs.

The Long-Term Management Plan shall include, at a minimum, the following provisions:

1. *Maintenance of the condition of structural elements and facilities of the site such as signage, fencing, and roads. The Long-Term Management Plan will include provisions to maintain and repair these improvements as necessary to achieve the objectives of the Mitigation Project and comply with the provisions of the real estate instrument providing protection to the site.*
2. *Improvements developed for restoration purposes such as access roads, berms or water control structures that are no longer needed to facilitate or protect the ecological function of the site may be removed or abandoned if consistent with the terms and conditions of the recorded protection document.*
3. *Allowance of access to the site by the IRT.*

CREDIT RELEASE SCHEDULE

As the project meets certain milestones the associated credits will be released. These released credits will be used to fulfill any advance credits that have been already provided within the project's service area before any remaining released credits can be sold. The proposed credit release schedule for the Grafton & Lorain Correctional Facilities project is below. Tables 9 and 10 summarize the schedule and provide specific credit amounts for each milestone. Monitoring periods may be shortened if performance criteria are met before the end of the monitoring period or extended if not all performance standards have been met.

Stream Credit Release Criteria:

- Initial Release: 10% of potential credits.
 - Approval of the final detailed stream design and planting plans
 - Financial assurances in place
 - Recording of long-term protection instrument
- Completion of Construction: 10% of potential credits
 - All in-stream construction complete and inspected
 - Submittal of as-built site drawings
- Completion of Planting: 10% of Mitigation Type 1 potential credits
 - All plantings complete and inspected
 - Submittal of as-built planting drawings
- Second Year Monitoring: 20% potential credits
 - Submission of Monitoring Report (must have at least one documented bankfull event)
 - Success evaluated by:
 - All streams showing stability of in-stream pattern, streambanks, profile and dimension, and appropriate benthic substrates as documented by re-survey of the fixed cross-section and monitoring points;
 - All streams tending toward final performance standards;
 - Riparian Buffer: visual evidence of riparian buffers containing the appropriate target species in composition, diversity and density.
 - Site inspection by the Corps/IRT
- Fourth Year Monitoring: 15% potential credits
 - Submission of Monitoring Report (must have at least one documented bankfull event following second year monitoring)
 - Success evaluated by:
 - All streams showing stability of in-stream pattern, streambanks, profile and dimension, and appropriate benthic substrates as documented by re-survey of the fixed cross-section and monitoring points;
 - All streams tending toward final performance standards;

- Riparian Buffer: visual evidence of riparian buffers containing a positive trend in target species in composition, diversity and density.
 - Site inspection by Corps/IRT
 - Sixth Year Monitoring: 15% of potential credits
 - Submission of Monitoring Report (must have at least two documented bankfull events following second year monitoring)
 - Success evaluated by:
 - All streams showing stability of in-stream pattern, streambanks, profile and dimension, and appropriate benthic substrates as documented by re-survey of the fixed cross-section and monitoring points;
 - All streams tending toward final performance standards;
 - Riparian Buffer: visual evidence of riparian buffers containing a minimum of three years of positive growth of species. Positive trend in target species in composition, diversity and density towards achieving success criteria.
 - Site inspection by Corps/IRT
 - Eighth Year Monitoring: 10% of potential credits
 - Submission of Monitoring Report (must have at least two documented bankfull events following second year monitoring)
 - Success evaluated by:
 - All streams showing stability of in-stream pattern, streambanks, profile and dimension, and appropriate benthic substrates as documented by re-survey of the fixed cross-section and monitoring points;
 - All streams tending toward final performance standards;
 - Riparian Buffer: visual evidence of riparian buffers containing a minimum of five years of positive growth of species. Positive trend in target species in composition, diversity and density towards achieving success criteria.
 - Site inspection by Corps/IRT
 - The Final Release of Credits: The final 10% of the total stream credits may be released once the final monitoring report has been submitted and evaluated by the IRT. This final release is contingent on the site meeting all performance goals.

Wetland Credit Release Criteria:

Initial Credit Release: 30% of the total wetland credits projected at the project site maturity can occur, provided the following conditions are satisfied:

- The mitigation plan has been approved (signed by the sponsor, the Corps, long-term manager, and the IRT);
- The site protection instrument has been recorded;
- Appropriate financial assurances have been established; and

- Any other requirements determined to be necessary by the Corps have been fulfilled (see 33 CFR 332.8(m)).

Interim Credit Release 1: Following the successful construction of the wetland habitat and, up to 15% of the total anticipated re-established wetland credits may be released if the following conditions are met:

- A minimum of 45% of the total projected wetland area for the entire site must meet wetland criteria based on a recent delineation verified by the Corps.
- The wetland areas are inundated (flooded or ponded) or the water table is ≤ 12 inches below the soil surface area for ≤ 14 consecutive days for two successive growing seasons.
- At least 80% of the wetland areas are covered with hydrophytic vegetation; and
- For all forested wetland and upland buffer areas, it can be demonstrated that a minimum of 400 native, live and healthy (disease and pest free) woody plants (of which at least 200 are tree species) are present following initial planting.

Interim Credit Release 2: If all necessary requirements described above are still met, up to 15% of the total anticipated established wetland credits may be requested for release if the following conditions are met:

- A minimum of 60% of the total projected wetland area for the entire site must meet wetland criteria.
- These same wetland areas have 80% relative cover of native plant species;
- The same wetland areas meet either an interim VIBI-FQ score of 30 or AmphIBI score of 10; and
- For all forested wetland and upland buffer areas, it can be demonstrated that a minimum of 400 native, live and healthy (disease and pest free) woody plants per acre (of which at least 200 are tree species) are present following initial planting, and the temporal photographic sequence indicates the site is maturing and a canopy is becoming established.

Interim Credit Release 3: If all necessary requirements described above are still met, up to 15% of the total anticipated established wetland credits may be requested for release if the following conditions are met:

- A minimum of 75% of the total projected wetland area for the entire site must meet wetland criteria.
- The wetland areas are inundated (flooded or ponded) or the water table is ≤ 12 inches below the soil surface for ≥ 14 consecutive days for four growing seasons (based on hydrologic sampling);
- These same wetland areas will have 85% total relative cover of native species;
- The same wetland areas have at least 65% relative cover of native perennial hydrophytes (FAC, FACW, OBL);

- The same wetland areas meet either an interim VIBI-FQ score of 35 or AmphIBI score of 15; and
- For all forested upland buffer areas, it can be demonstrated that a minimum of 400 native, live and healthy (disease and pest free) woody plants per acre (of which at least 200 are tree species), are present and healthy following initial planting, and the temporal photographic sequence indicates that site is maturing, and a canopy is establishing.

The Final Release of Credits: The final 25% of the total established wetland credits may be released once the final monitoring report has been submitted and evaluated by the IRT. This final release is contingent on the site meeting all performance goals and any forested wetlands present have been clearly shown to be developing into successful forested ecosystems (i.e., trees and shrubs are alive, healthy, and present in the numbers and diversity described above).

Table 6: Phase I Stream Credit Release Schedule.

Mitigation Milestone	Released Credits		Cumulative Credits
	Percentage	Number of Credits	
Approval of final plans, financial assurances are in place, and the Site Protection Instrument recorded	10%	161	161
Completion of construction and submittal of as-built site drawings	10%	161	322
Completion and inspection of all plantings and the submittal of as-built planting drawings	10%	161	483
Submission of 2 nd year monitoring report, 2 nd year criteria met, and site inspection by the IRT	20%	323	806
Submission of 4 th year monitoring report, 4 th year criteria met, and site inspection by the IRT	15%	242	1,048
Submission of 6 th year monitoring report, 6 th year criteria met, and site inspection by the IRT	15%	242	1,290
Submission of 8 th year monitoring report, 8 th year criteria met, and site inspection by the IRT	10%	161	1,451
Submission of 10 th year monitoring report, all performance standards met, and site inspection by the IRT	Remaining Credits	161	1,612

*Note that the expected stream crediting for future, advanced credit sales will be altered under Ohio SWVM and this will impact the total credits earned and the relative percentage of credits.

Table 7: Phase 1 Wetland Credit Release Schedule.

Mitigation Milestone	Released Credits		Cumulative Credits
	Percentage	Number of Credits	
Approval of final plans, financial assurances are in place, and the Site Protection Instrument recorded	30%	1.8	1.8
Submission of monitoring report, wetland delineation, and site inspection by the IRT	15%	0.9	2.7
Submission of monitoring report, wetland delineation, and site inspection by the IRT	15%	0.9	3.6
Submission of monitoring report, wetland delineation, and site inspection by the IRT	15%	0.9	4.5
Submission of Final monitoring report, all performance standards met, and site inspection by the IRT	25%	1.6	6.1

FINANCIAL ASSURANCES

The project will have several financial assurances in place to help ensure a high level of confidence that the mitigation will be successfully completed. The financial assurances will include:

- *Performance Bonds* – The construction contractor will be providing a performance bond which will ensure the completion of construction activities.
- *Project Contingency Fund* – An amount equal to 5% of the projected construction costs will be set aside and placed into a Project Contingency account. Funds from this subaccount will be used to cover unanticipated costs which may arise during the implementation of the project. Once the Mitigation Site has closed, the funds in this subaccount will be released and will go into the long-term management endowment, if needed, or otherwise will be used on other mitigation projects in the same primary service area.
- *Program Contingency Fund* – 5% of all credit sales are paid into a Program Contingency Fund account. This account can be used to fund unanticipated program or project expenses not covered by the Project Contingency Fund (such as catastrophic events which occur after the project contingency fund has been released). Additionally, the funds can be used for management or maintenance costs after site closure for stream repairs or invasive plant control deemed necessary for project success.

PROPERTY ASSURANCES

PRELIMINARY TITLE REPORT

A preliminary title report has been ordered and it is pending.

WATER RIGHTS

Water rights are intact for the Fowler Woods Mitigation Site.

RESPONSE TO IRT COMMENTS - DRAFT MITIGATION PLAN

TNC received comments from the US Army Corps of Engineers Buffalo District (Susan Baker) and the US Environmental Protection Agency (Marco Finocchiaro). Comments from the IRT are in bold and underlined with follow up from TNC in italics.

US Army Corps of Engineers Comment 1. “A portion of the stream is fairly close to Noble Road. How might the road affect the integrity of the stream mitigation? Is there potential for road maintenance to infringe upon the stream corridor?”

At this time, we would not anticipate any potential affects by road maintenance. Maps included in the Draft Mitigation Plan are conceptual and likely to change as we move through the approval process. Once we have a better understanding of the potential road easements, the project will be designed accordingly to ensure that only areas having stream + 50-foot corridor are included when calculating stream credits.

US Army Corps of Engineers Comment 2. “What is the reference reach for the proposed stream mitigation? Is there enough flow/drainage area to support the sinuous stream channel?”

An appropriate reference reach will be identified further along in the project approval process. The headwaters of this stream flow from the existing mature forested vernal pool complex within the portion of Fowler Woods to the west of Olivesburg-Fitchville Road. It is also feed by runoff from the abandoned agricultural field located south of subsurface channel. As we move into the design phase of the project, detailed hydrologic studies will be conducted to determine the appropriate stream restoration approach and how sinuous the channel should be to replicate a natural stream.

US Army Corps of Engineers Comment 3. “The eastern side of the proposed vernal pools abuts active agricultural land and the northern side of the proposed vernal pools abuts Noble Road. Is the proposed buffer sufficient and what potential threats might agricultural and road maintenance activities pose to the vernal pools? Information

from TNC for other projects has indicated that larger buffers are necessary for vernal pools.”

In general, 100 feet is the minimal amount of upland buffer necessary to support sensitive amphibian breeding populations. And optimally there should be a connection to high quality vernal pools within 200 meters of the new pools. The 200 meters, however can be in any direction, and in this case the connection is to the high quality pools within the Nature Preserve both to the south and west. While Olivesburg-Fitchville Road dissects the Nature Preserve from north to south this is not an impediment to migration for amphibians and they will cross the road during breeding runs to reach the new pools. The pools to the south are on the same side of the road and amphibians will be migrating from these also. The pools to the west are within 120 meters and the pools to the south are within 50 meters of where the new vernal pools will be established. Migration can be expected from both sets of pools. Also, all the new vernal pools are provided with 100 feet of upland buffer, including the areas adjacent to the farm field and Noble road. Additional areas on the property to the west are also targeted for upland forest re-establishment to further improve the habitat potential for amphibians using the vernal pools resulting from this project. Finally, existing forest to the south and in the main portion of Fowler Woods State Nature Preserve (west of Olivesburg-Fitchville Road) will also provide important habitat during the non-breeding portion of the amphibians' life cycle.

US Army Corps of Engineers Comment 4. “Currently, 380 stream credits and zero wetland credits have been sold within the Huron-Vermilion service area. A total of \$106,400 is in the Huron-Vermilion account. The proposed project is over \$600,000 which far exceeds available funds. How does TNC propose to fund the project absent sufficient ILF funds?”

Previously, The Nature Conservancy submitted the “Low Activity Watershed Action Plan: Request to Combine Credits in the Western Lake Erie Basin (HUC 041000).” The proposed Fowler Woods State Nature Preserve In-Lieu Fee project represents the first step to implementing this plan. In that report, the Huron-Vermilion (HUC 04100012) and Sandusky (HUC 04100011) watersheds were combined. It is our intention to include the 1.6 wetland credits sold in the Sandusky watershed with this project. The \$600,000 estimate could also turn out to be too high once we develop the project further with detailed site design. We may still need to divide the project into a few different phases to be completed over time, contingent on any credit sales which may occur during the approval process.

US Army Corps of Engineers Comment 5. “How long ago were agricultural activities abandoned? Have they been abandoned long enough such that normal circumstances persist?”

According to the Richland County Auditor’s Office, the land was transferred to ODNR in 2001. Presumably, agricultural activities ceased on or near that time. However, no restoration work has occurred on-site (e.g. no herbaceous seeding, tree/shrub planting, soil contouring to restore natural topography, or disruption of subsurface drainage).

US Army Corps of Engineers Comment 6. “Has a delineation been performed on the site?”

Yes. The delineation report is included as part of the Mitigation Plan submittal.

US Army Corps of Engineers Comment 7. “Are there any encumbrances on the site?”

A full title search will be conducted on the site as part of the project development process. We will not know definitively until that work has been completed. As of right now, we are unaware of any encumbrances.

US Army Corps of Engineers Comment 8. “Buffalo District concurs with USEPA’s comments regarding proposed buffers.”

See response below for USEPA comments

US EPA Comment 1: “In general, USEPA believes the Fowler Woods site has potential to fulfill advanced credits sold in the Huron-Vermilion watershed.”

The Nature Conservancy plans to restore this entire project site with the intention of achieving its full ecological potential.

US EPA Comment 2: “8.58 acres of wetland forest buffer re-establishment is proposed to protect and/or enhance the wetland functions. Mitigation Type 4, extra buffer re-establishment is proposed to protect and/or enhance stream functions. Additional buffer labeled the 100-ft property buffer is proposed along all project boundaries. If

wetland and stream functions on-site are already being protected and/or enhanced by the proposed buffer re-establishment and rehabilitation areas, it is unclear what the function of the proposed property buffer provided. The 2008 federal mitigation rule does not allow credit generation for upland buffer areas that protect aquatic resource buffer areas. “

“It is also unclear what the 3.2 acres of “additional wetland buffer” described in Table 3 is as only the 8.58 acres of wetland forest buffer re-establishment is depicted in Figure 5.”

“As is consistent with the Guidelines for Wetland Mitigation Banking and In-Lieu Fee Programs in Ohio and the Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio, 1:4 credit for the 8.58 acres of wetland forest buffer re-establishment and 1:4 for extra stream buffer re-establishment is appropriate. From the information provided, any additional credit within the proposed buffer is inappropriate as resources are already adequately buffered. Additional information should be provided if additional buffer credit is proposed.”

The existing vernal pools located within the main portion of Fowler Woods State Nature Preserve are of exceptional quality, with robust populations of several sensitive pond-breeding amphibian species (e.g., Wood Frogs, Spotted Salamanders, Tiger Salamanders, etc.). These species require substantial amounts of mature, upland forest habitat for a majority of their life cycle. While most of these species do not travel more than a few hundred meters in their lives, limiting the re-establishment of desirable habitat to 100 feet would be limiting the potential of these species to thrive. Therefore, all areas outside the actual vernal pool and stream restoration areas will be planted with a high density of woody and herbaceous plant species to emulate the existing high quality forested habitat of Fowler Woods State Nature Preserve. This represents critical additional habitat which will enhance the amphibian breeding function of the newly established vernal pools and goes well beyond simply providing physical buffer protection for these resources. Additionally, for the mitigation plan phase of project development, we have modified the credit ratios to ensure that upland buffer represents less than 30% or the total anticipated wetland credits generated from the project.

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LIST OF ACRONYMS

AmphIBI	Amphibian Index of Biotic Integrity
CPF	Compensation Planning Framework
CVNP	Cuyahoga Valley National Park
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
MOU	Memorandum of Understanding
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
Ohio EPA	Ohio Environmental Protection Agency
OMP	The Nature Conservancy's Ohio Mitigation Program
ORC	Ohio Revised Code
PEM	Palustrine Emergent Wetland
PFO	Palustrine Forested Wetland
PSS	Palustrine Scrub-Shrub Wetland
QHEI	Qualitative Habitat Evaluation Index
TNC	The Nature Conservancy
USACE	United States Army Corps of Engineers
VIBI	Vegetation Index of Biotic Integrity

DEFINITIONS

Adaptive management means the development of a management strategy that anticipates likely challenges associated with compensatory mitigation projects and provides for the implementation of actions to address those challenges, as well as unforeseen changes to those projects. It requires consideration of the risk, uncertainty, and dynamic nature of compensatory mitigation projects and guides modification of those projects to optimize performance.

Advance credits mean any credits of an approved in-lieu fee program that are available for sale prior to being fulfilled in accordance with an approved mitigation project plan. Advance credit sales require an approved in-lieu fee program instrument that meets all applicable requirements including a specific allocation of advance credits, by service area where applicable.

Buffer means an upland, wetland, and/or riparian area that protects and/or enhances aquatic resource functions associated with wetlands, rivers, streams, lakes, marine, and estuarine systems from disturbances associated with adjacent land uses.

Compensatory mitigation means the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Compensatory mitigation project means compensatory mitigation implemented by the permittee as a requirement of a DA permit (i.e., permittee-responsible mitigation), or by a mitigation bank or an in-lieu fee program.

Condition means the relative ability of an aquatic resource to support and maintain a community of organisms having a species composition, diversity, and functional organization comparable to reference aquatic resources in the region.

Credit means a unit of measure (e.g., a functional or areal relative measure or other suitable metric) representing the accrual or attainment of aquatic functions at a compensatory mitigation site. The measure of aquatic functions is based on the resources restored, established, enhanced, or preserved.

Establishment (creation) means the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic

resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and functions.

Instrument means mitigation banking instrument or in-lieu fee program instrument.

Interagency Review Team (IRT) means an interagency group of federal, tribal, state, and/or local regulatory and resource agency representatives that reviews documentation for, and advises the district engineer on, the establishment and management of a mitigation bank or an in-lieu fee program.

Performance standards are observable or measurable physical (including hydrological), chemical and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives.

Preservation means the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Reference aquatic resources are a set of aquatic resources that represent the full range of variability exhibited by a regional class of aquatic resources as a result of natural processes and anthropogenic disturbances.

Wetland and Riparian Buffer, for this Instrument, means protective habitat within 50 feet of all restored streams and within 50 meters (164 LF) and re-established or established wetlands receiving credit.

Rehabilitation means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function but does not result in a gain in aquatic resource area.

Restoration means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is

divided into two categories: re-establishment and rehabilitation.

Riparian areas are lands adjacent to streams, rivers, lakes, and estuarine-marine shorelines. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality.

Service area means the geographic area within which impacts can be mitigated at a specific mitigation bank or an in-lieu fee program, as designated in its instrument.

Services mean the benefits that human populations receive from functions that occur in ecosystems.

Sponsor means any public or private entity responsible for establishing, and in most circumstances, operating a mitigation bank or in-lieu fee program.

Watershed means a land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean.

Watershed approach means an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by USACE permits. The watershed approach may involve consideration of landscape scale, historic and potential aquatic resource conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources when determining compensatory mitigation requirements for USACE permits.

Watershed plan means a plan developed by federal, tribal, state, and/or local government agencies or appropriate non-governmental organizations, in consultation with relevant stakeholders, for the specific goal of aquatic resource restoration, establishment, enhancement, and preservation. A watershed plan addresses aquatic resource conditions in the watershed, multiple stakeholder interests, and land uses. Watershed plans may also identify priority sites for aquatic resource restoration and protection.

Definitions Derived from: *US Army Corps of Engineers, 2008. Watershed Approach to Compensatory Mitigation Federal Register – 33 CFR 332.8.*

APPENDIX A

Figures

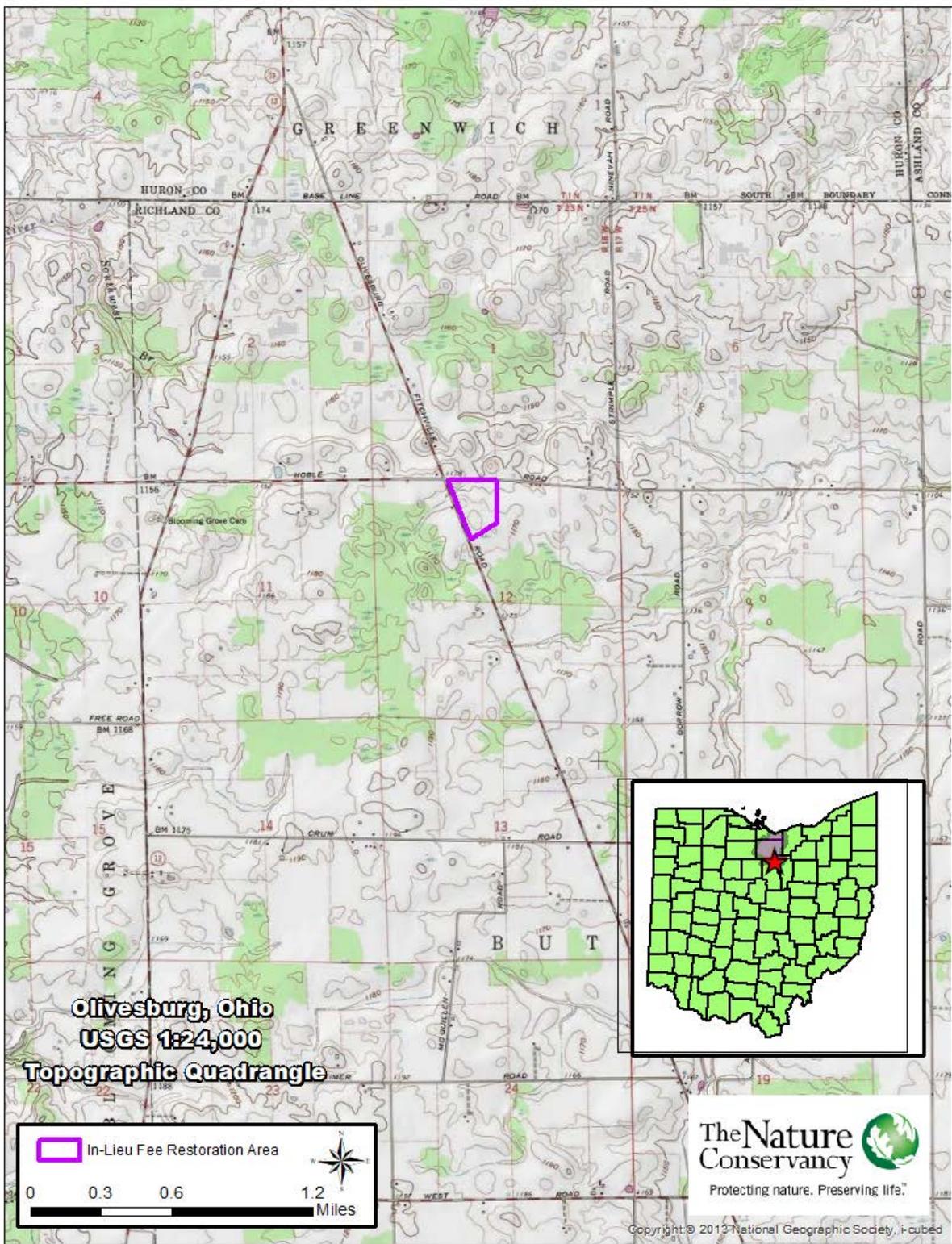


Figure 1. Fowler Woods State Nature Preserve In-Lieu Fee Project Location Map.

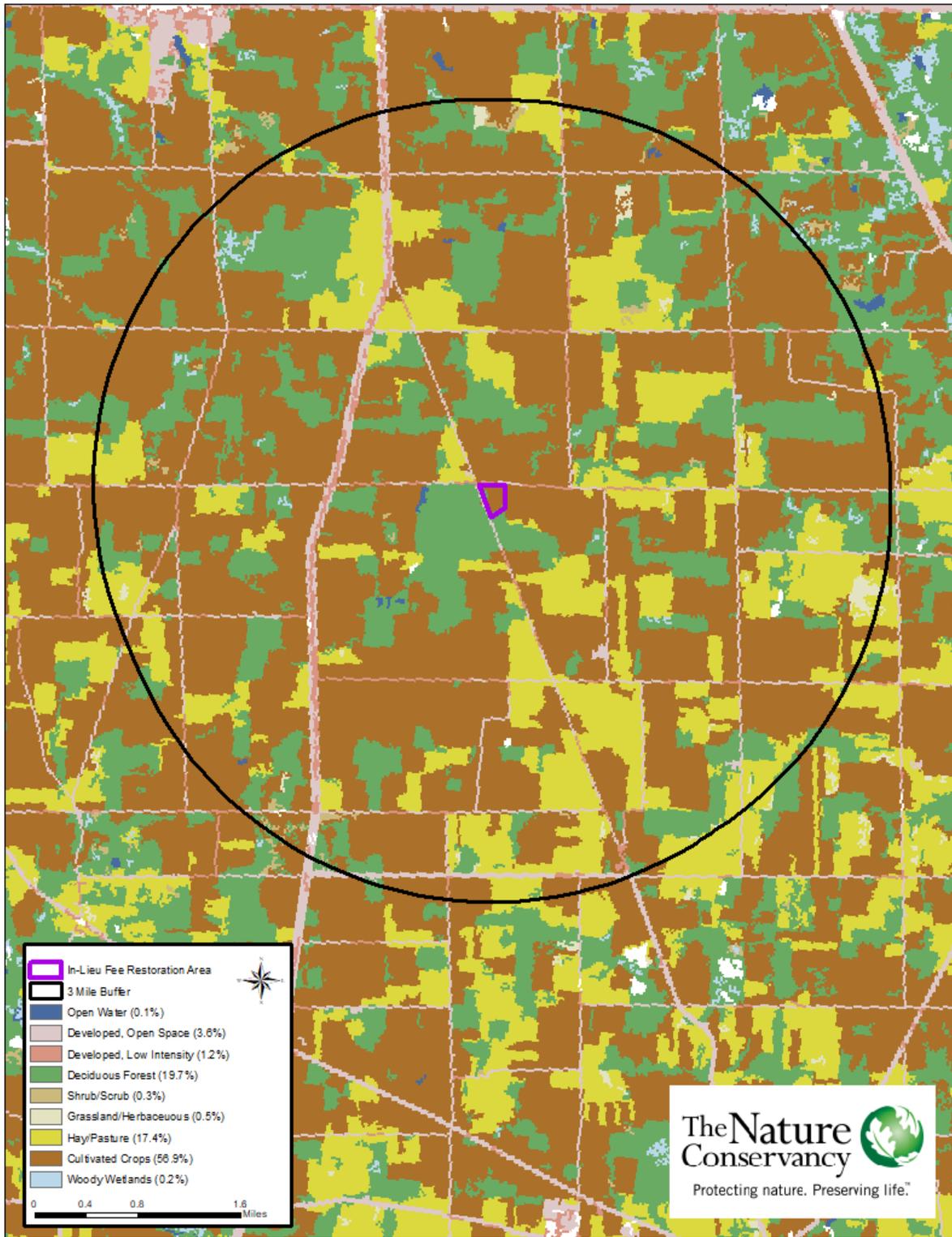


Figure 2. Fowler Woods State Nature Preserve In-Lieu Fee Project Vicinity (3-mile radius) Land Use Map.

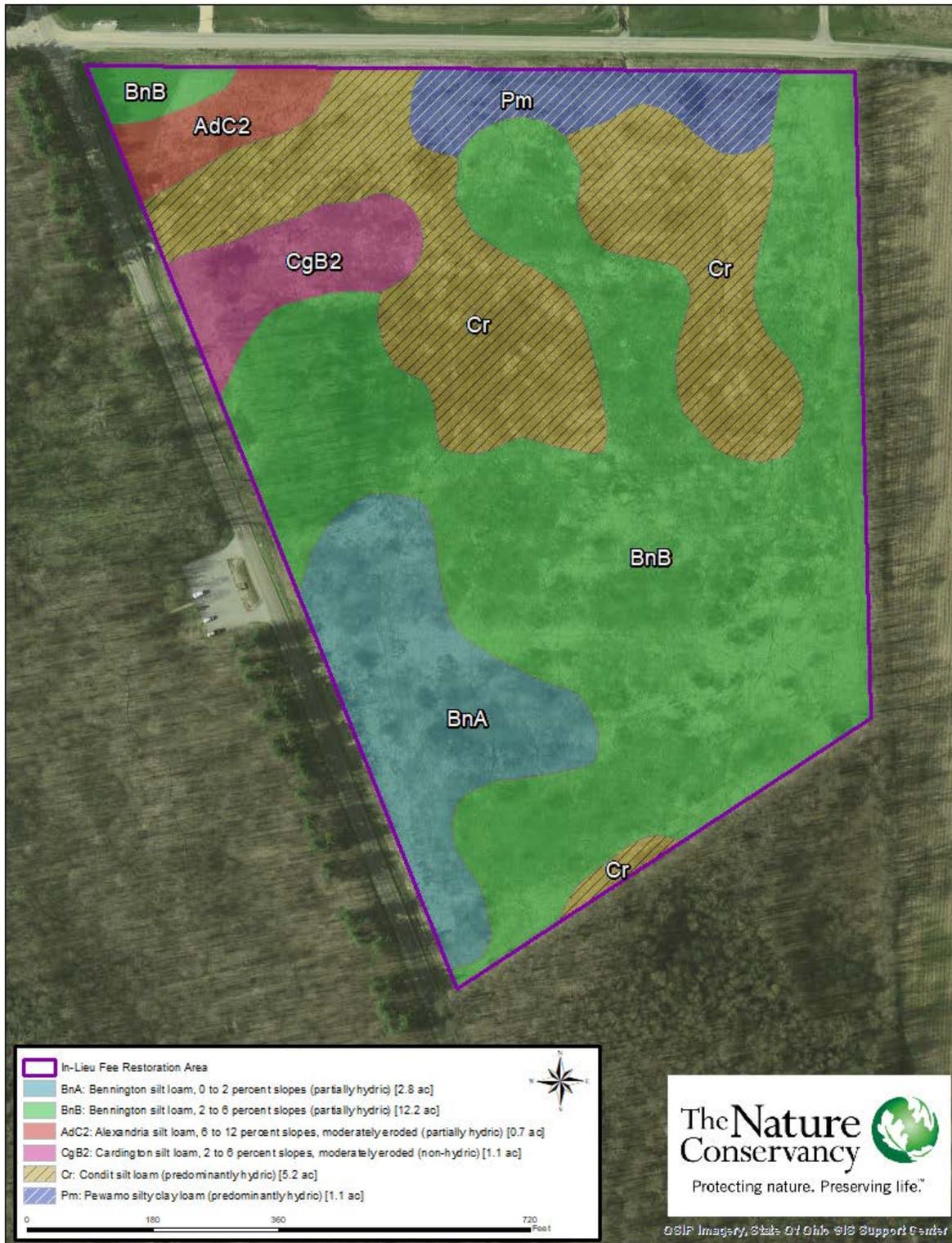


Figure 3. Fowler Woods State Nature Preserve In-Lieu Fee Project Soils Resources Map.

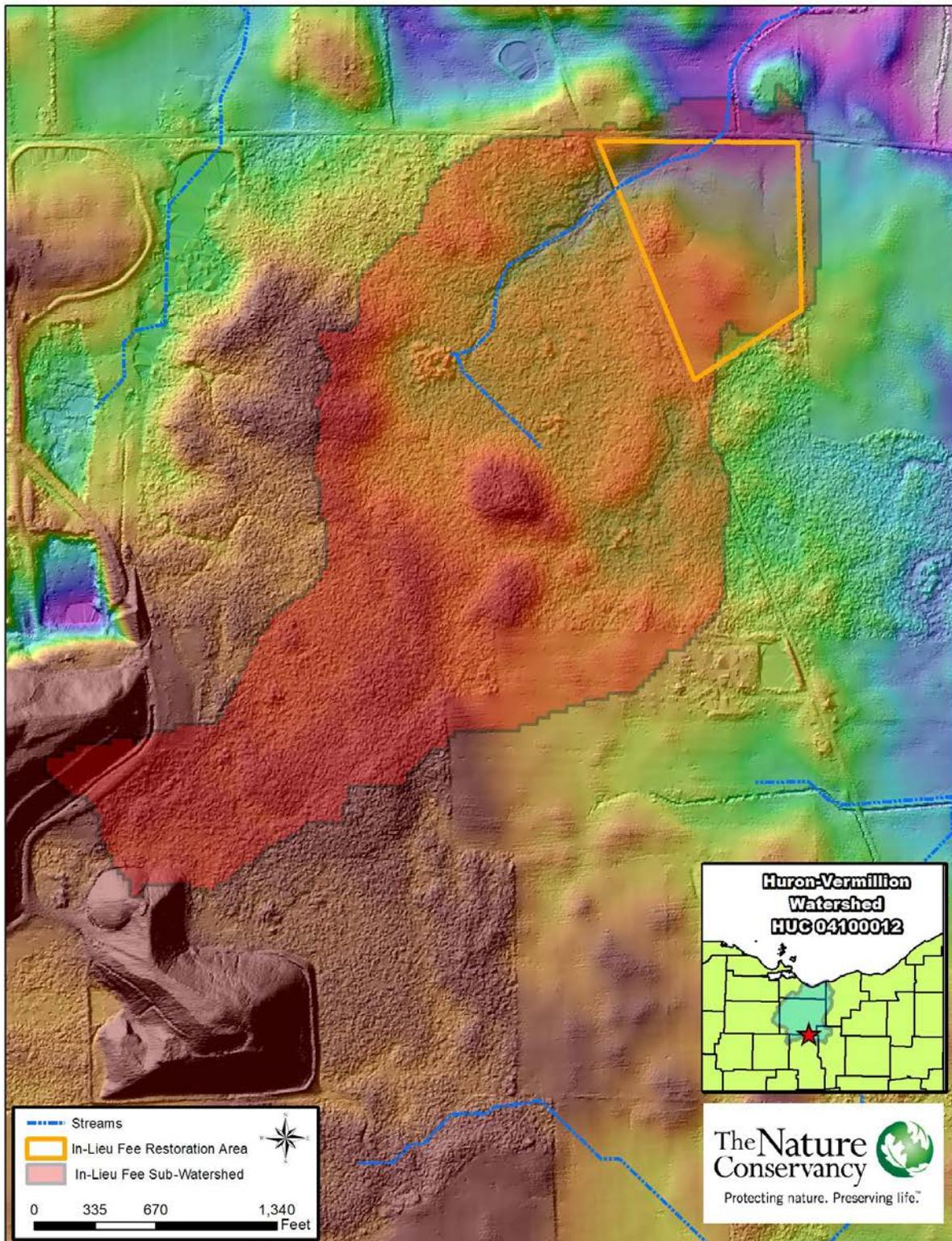


Figure 4. Fowler Woods State Nature Preserve In-Lieu Fee Project Watershed Map.



Figure 5. Fowler Woods State Nature Preserve In-Lieu Fee Project Stream Resources Map.

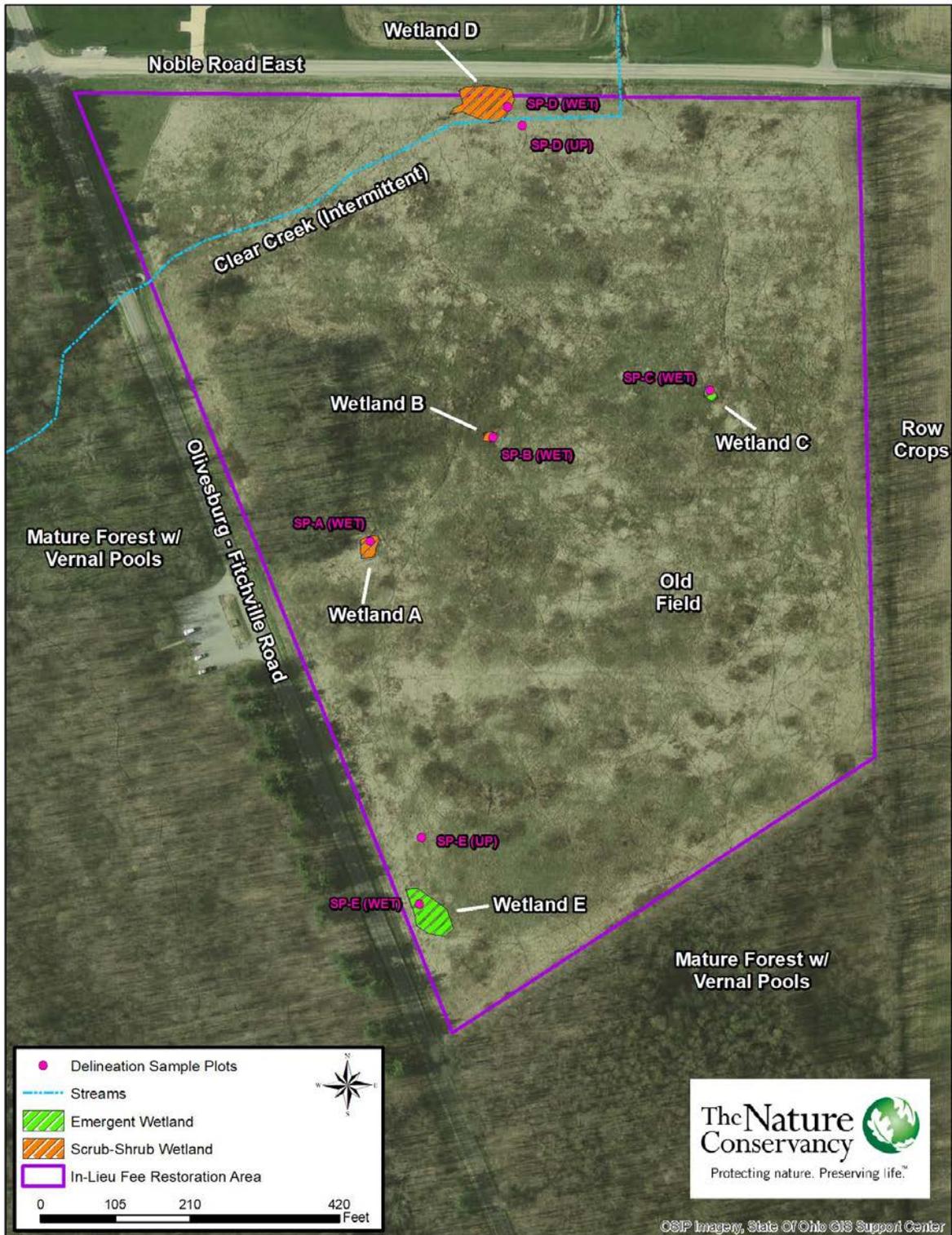


Figure 6. Fowler Woods State Nature Preserve In-Lieu Fee Project Wetlands and Other Terrestrial Resources Map.

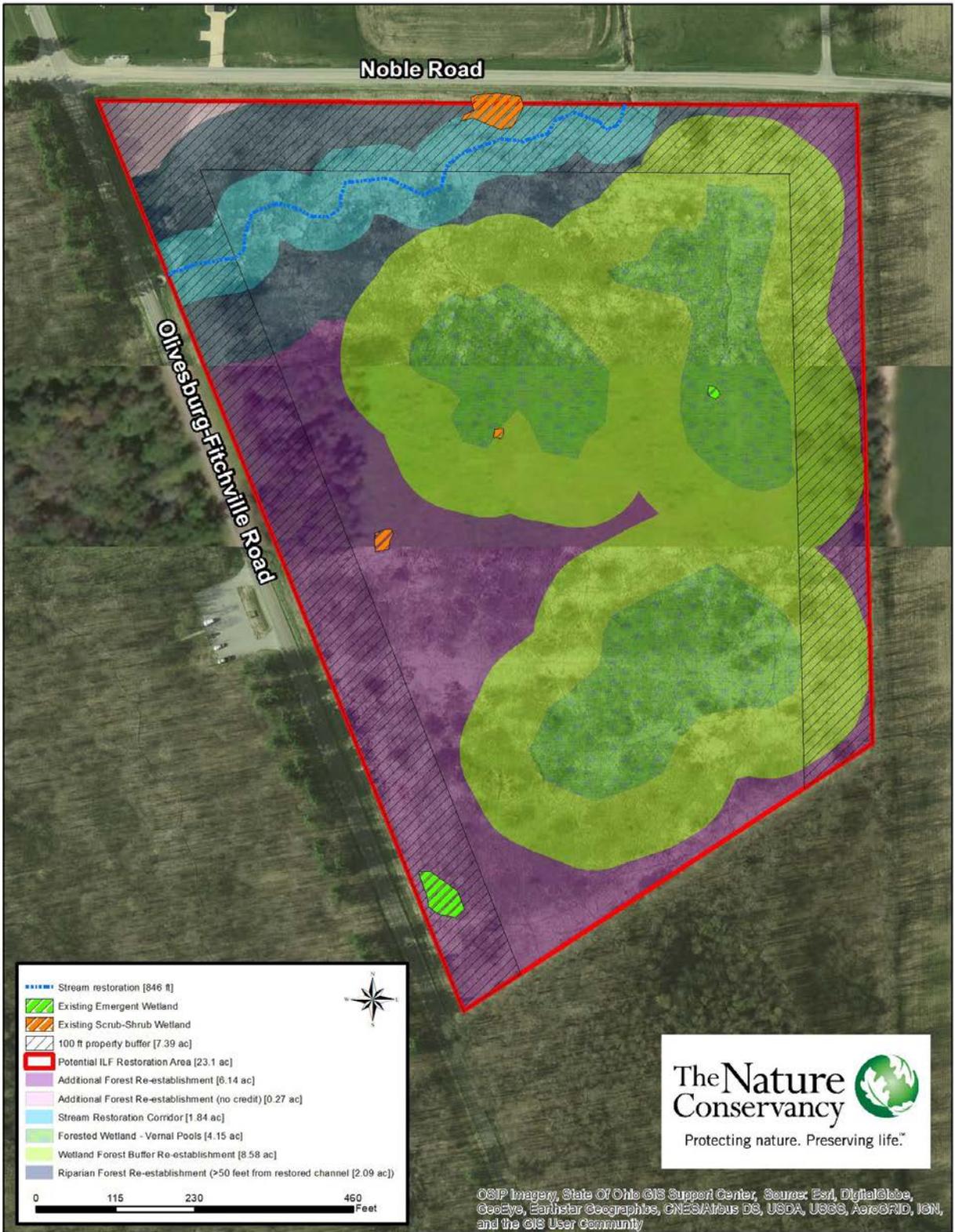


Figure 7. Fowler Woods State Nature Preserve In-Lieu Fee Project Site Restoration Map.

APPENDIX B

Site Evaluation Checklist

TNC ILF Program Site Selection Checklist

Mitigation Site Summary

Site Name	Fowler Woods
Nominating Entity	Ohio Department of Natural Resources
Watershed (HUC-8)	Huron Vermilion (041100012)
County	Richland
City	
Parcel I.D. / Latitude Longitude	948082164/ 40.973335, -82.467720
Site Size (ac)	37 acres (ILF Restoration = 23 acres)

The following conditions must be met for all projects. If any of the boxes are left unchecked the proposed property is currently not an appropriate OMP project site.

- Permanent Protection (The property is currently, or can be, protected in perpetuity)
- In Kind Mitigation (The property will provide the same type and amount of resource needed)
- Primary Service Area (The property is in a HUC-8 watershed that has OMP funds)
- Water resources impacts on the property can be restored on-site and are not the result of uncorrectable watershed-scale problems (examples: toxic inputs, combined sewer overflows)
- The property is NOT known to have severed mineral rights. Generally, ILF project sites are not acceptable if there is a potential threat of mineral extraction on the property.

Metric Summary	
Site Score	75
Stream Metric Score	70
Wetland Metric Score	70
Estimated cost of site protection	0
Estimated Stream Credits Generated	1,730
Estimated Wetland Credits Generated	6.46
Estimated Complexity of Protection Based on Landowner(s) Interest and number of parcels involved (Low, Medium, High)	Low

Additional Considerations (circle all that apply): flood attenuation, nutrient assimilation, recreation, economic activity, education/public outreach, job creation, scenic enhancements

Other:

Site Comments

Exceptional opportunity to restore high quality vernal pool habitat and an associated stream. The proposed ILF project will target an old agricultural field that was purchased as part of the overall preserve, but never restored, and has the potential to significantly enhance the already large populations of sensitive breeding amphibians currently present on-site.

Site Name: Fowler Woods
Program Site Selection Checklist: Site Metrics

Site Metrics	Evaluation Parameter	Score
1. Watershed-Based Priorities (Choose all that apply)		
1	Adjacent to restoration project	
1	Included in a Balanced Growth Plan	
2	Within same HUC-12 watershed as impact site(s)	2
2	Adjacent/within protected conservation property	2
2	Would meet a TMDL strategy	
3	Is an existing Watershed Action Plan priority	
4	Within Compensation Planning Framework priority area	4
Add all that apply SUBTOTAL (Max 15 pts):		8
2. Current Ownership - Level of Support for Conservation		
1	Private property	
3	Private property protected open space	
4	Publicly Owned (but not a Park)	
5	Park District/Conservation Ownership	5
-2	Multiple Ownership (separate parcels)	
-5	Utility easement/Road impact aquatic resources or buffer	
SubTOTAL (Max 5 pts):		5
3. Sustainability of Proposed Long-term Protection		
0	Conservation easement purchase	
5	Conservation easement donation	
5	Existing Public land (not protected)	
10	Already protected land	10
10	Fee simple purchase	
SubTOTAL (Max 10pts):		10
4. Cost of Property Protection		
0	Cost per Acre is at or below the CAUV average for the county	
10	No cost because already protected or donated easement/covenant	10
10	Potential for a significant, additional funding source(s) for site protection (>25% of total cost)	
-5	Cost per Acre is above the CAUV average for the county	
SubTOTAL (Max 10pts):		10
5. Percent of Project Area within 50m from property line, road, utility easement		
0	>90%	
1	90-75%	
3	75-50%	3
7	25-50%	
10	<25%	
SubTOTAL (Max 10pts):		3

Site Metrics	Evaluation Parameter	Score
6. Identified Potential Long-term Manager of Property - such entity must have the necessary financial, administrative, and technical capacity		
5	Potential entity identified	
10	Interested entity	
15	Committed entity	15
-2	None	
SubTOTAL (Max 5 pts):		15
7. Adjacent/Upstream Property Potential Future Land Use (20 years) (Choose 1 or 2 and average)		
	N/A	
1	suburban high density (multiple subdivisions)	
1	Urban	
1	Industrial	
3	suburban low density (occasional home sites)	
8	Rural /Agricultural	X
10	Unimpacted / Forested	X
-1	Future roads/highway expansion	
SubTOTAL (Max 10pts):		9
8. Special Ecosystems Onsite (Choose all that apply)		
Onsite	*If none apply score 0	
	Designated CWH/EWH/Superior State Waters/Outstanding State Waters	
1	Category 3 wetland	1
1	Known Federal or State Listed Species	
1	Known significant wildlife use	1
		1
1	Park or Conservation Area	
Add all that apply SUBTOTAL (Max 5 pts):		3
9. Special Ecosystems Adjacent (Check all that apply)		
Adjacent	*If none apply score 0	
3	CWH/EWH/Superior State Waters/Outstanding State Waters	
3	Category 3 wetland	3
3	Known Federal or State Listed Species	3
3	Known significant wildlife use	3
3	Park or Conservation Area	3
Add all that apply SUBTOTAL (Max 15 pts):		12
10. Existing Information on Parcel (Choose all that apply)		
1	Phase I or equivalent information completed	
1	Delineation completed (Date -) <input type="checkbox"/> Approved JD	
1	Biological inventories completed (IBI, ICI, VIBI, AmphIBI)	
1	Habitat inventory completed (QHEI, HHEI, ORAM)	
1	Morphology data	
Add all that apply SUBTOTAL (Max 5 pts):		0
SITE METRIC TOTAL SCORE (Max 100 pts)		75

Site Name: Fowler Woods
TNC ILF Program Site Selection Checklist: Stream Metrics

Stream Metrics	Evaluation Parameter	Score
1. Type of Stream Restoration (Select 1 and add Mit. 4 if applicable)		
1	Mitigation Type 4: Additional buffer work beyond 50 foot riparian area	1
1	Mitigation Type 2: preservation	
2	Mitigation Type 3: Buffer only Enhancement or re-establishment	
4	Mitigation Type 1: Level 4: Rehabilitation work on streams that directly benefit channel stability, water quality and stream ecology	
5	Mitigation Type 1: Level 3: May include but are not limited to full-extent restoration on all stream types (used for high-gradient streams with limited floodplains)	5
7	Mitigation Type 1: Level 2: full-extent channel restoration including re-establishment of new floodplain on perennial or intermittent	
9	Mitigation Type 1: Level 1: full-extent channel restoration including reconnection to original floodplain on perennial or intermittent	
	Add all that apply SUBTOTAL (Max 10 pts):	6
2. Flow Regime		
1	Ephemeral	
2	Interstitial	
4	Intermittent	4
5	Perennial	
	SUBTOTAL (Max 5 pts):	4
3. Potential Length		
0	<1000	
5	1000-2000	
10	2000-3000	
15	>3000	
	SUBTOTAL (Max 15pts):	0
4. Drainage Area from furthest downstream point (select 1 per stream)		
2	0-50 acres	
2	20+ sq mi	
4	50-200 acres	4
4	10-20 sq mi	
6	200-400 acre	
6	5-10 sq mi	
8	400-640 acres	
8	3-5 sq mi	
10	1-3 sq mi (2.65mi ²)	
	SUBTOTAL (Max 10pts):	4
5. Overall Stream and Riparian Condition (choose 1 or 2 and average)		
Restoration		
0	Stable, natural unimpacted	
2	Recovered, modified or channelized, natural	
10	Unrecovered disturbed, modified, or armored	
15	Unrecovered Channelized/Culverted/Dammed	15
	SUBTOTAL (Max 15pts):	15

Stream Metrics	Evaluation Parameter	Score
6. Cause of Impairment (Select 1 or 2 and average)		
0	little to no impairments	
8	impacts partly from correctable channel modifications unrelated to watershed-scale problems	
10	correctable channel modifications within properly functioning watersheds	10
	SUBTOTAL (Max 10 pts):	10
7. Gradient (Select 1 or 2 and average)		
1	high >3.0%	
2	mod. High 1.5-3.0	
3	low<0.5%	
4	moderate 0.8-1.5%	
5	mod. Low 0.5-0.8%	5
	SUBTOTAL (Max 5 pts):	5
8. Biological Restoration Potential (choose all that apply)		
1	Project reach is <1 Rivermile (RM) of 4th order stream or larger	
2	Project reach is in attainment of stream potential (WWH / PHWH)	
2	Depth of topsoil is greater than 2 inches within the riparian buffer	2
3	Upstream is in attainment of stream potential	2
3	Project reach is in Non-attainment of stream potential (WWH / PHWH)	3
4	Downstream is in attainment of stream potential	4
-1	Upstream project reach is in Non-attainment of stream potential	
-5	Project reach is upstream of significant humanmade obstruction to fish passage	
-5	Downstream of project reach is in Non-attainment of stream potential	
	SUBTOTAL (Max 15 points):	11
9. Project Complexity		
9.1 Floodplain Restoration (Select 1 that best describes approach)		
1	Stabilize stream in place (high gradient stream with no significant floodplain)	
5	Excavate new floodplain	
7	Need to elevate stream to attach it to historic floodplain	
10	Still attached to historic floodplain	10
	Sub-subtotal (Max 10):	10
9.2 Rank Project Components on scale -1 to 1 (-1 difficult/poor to 1 simplistic/excellent)		
1 or -1	Good Site access / trucking access / ease of equipment movement	1
1 or -1	Balanced Cut and fill requirements	1
1 or -1	Low amount of fill import needed	1
1 or -1	On-site spoil potential / material available	1
1 or -1	No water diversion / control required during construction	1
	Sub-subtotal (Max 5):	5
	Metric 9 SUBTOTAL (Max 15 points):	15
STREAM METRIC TOTAL SCORE (Max 100 pts)		70

Site Name: Fowler Woods
TNC ILF Program Site Selection Checklist: Wetland Metrics

Wetland Metrics		
1. Type of Wetland Restoration		
3	Preservation of Category 3 wetlands	
10	Enhancement of Existing Wetlands	
15	Restoration of hydric soil areas	15
SUBTOTAL (Max 15 points):		15
2. Soil Drainage Class		
3	Somewhat Poorly Drained (SPD)	
6	Poorly Drained (PD)	
10	Very Poorly Drained (VPD)	10
-50 (highly undesirable)	Only non-hydric soils present	
SUBTOTAL (Max 10 points):		10
3. Slope of Proposed Restoration Site based on topo map or Soil Survey Classification		
3	2-6%	
7	0.5-2%	7
10	0-0.5%	
-50 (highly undesirable)	>6%	
SUBTOTAL (Max 10 points):		7
4. Current Impairments (check all that apply)		
1	invasive species	
2	Tilling	2
2	filling/grading	2
2	mowing	
2	clearing	
3	Tile	3
3	Ditch	3
-1	stormwater inputs	
-1	Urban/residential encroachment	
SUBTOTAL (Max 15 points):		10
5. Final Expected Condition		
3	Emergent	
5	wet prairie/sedge meadow	
5	Scrub-shrub	
10	bog/fen/kettle lake	
10	Forested (vernal pool, wet woods)	10
SUBTOTAL (Max 10 points):		10
6. Wetland Restoration/Creation Acreage		
0	0-5 ac	0
5	5-10 ac	
7	10-25 ac	
10	25-50 ac	
12	50-100ac	
15	100+ ac	
SUBTOTAL (Max 15 points):		0

Wetland Metrics		
7. Project Complexity		
7.1	Likely Construction Methods (score all that apply)	
1	excavation	1
1	water control structure manipulation	
4	break tile	4
-1	berm construction	
-1	diversion channel	
SUBTOTAL (Max 5 points):		5
7.2	Planting Effort Required ((d)(1)(i))	
1	High	
3	Medium	3
5	Low	
SUBTOTAL (Max 5 points):		3
7.3	Threats to Project Success (invasives, point sources, easements, herbivory)	
5	Medium	5
8	Low	
10	none	
-3	High	
SUBTOTAL (Max 10 points):		5
7.4	Rank Project Components on scale -1 to 1 (-1 difficult/poor to 1 simplistic/excellent) ((d)(1)(i))	
1 or -1	Good site access / trucking access / ease of equipment movement	1
1 or -1	Balanced cut and fill potential	1
1 or -1	Low amount of fill import needed	1
1 or -1	On-site spoil potential / material available	1
1 or -1	No water diversion / control required	1
sub-subtotal (Max 5 points):		5
Metric 7 SUBTOTAL (Max 25 points):		18
Wetland Metric Score:		70
WETLAND METRIC TOTAL SCORE (Max 100 pts):		
70		

APPENDIX C

Stream Habitat Quality Assessment Field Forms

HHEI (Primary Headwater Habitat Evaluation)

QHEI (Qualitative Habitat Evaluation Index)



Perennial Modified Class II PHWH
Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 52

SITE NAME/LOCATION Fowler Woods Stream 1
Clear Creek SITE NUMBER RIVER BASIN Vermilion River DRAINAGE AREA (mi²) 0.28
LENGTH OF STREAM REACH (ft) 78.8* LAT. 40.974797 LONG. 82.467253 RIVER CODE RIVER MILE 6.4
DATE 11/19/2018 SCORER Jenna Odegaard COMMENTS Daylighted stream from failed tile

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY
MODIFICATIONS: Tile drain 12"

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 40). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>20</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACKWOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>60</u>
<input type="checkbox"/> GRAVEL (2-64 mm) [8 pts]	<u>5</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<u>16</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 3 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 4

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<u>25.4 cm</u>	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]	_____
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	_____	<input type="checkbox"/> < 5 cm [5 pts]	_____
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	_____	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [10 pts]	_____

COMMENTS 3", 8", 10" MAXIMUM POOL DEPTH (centimeters): 25.4

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	_____

COMMENTS 8', 3', 2.5' AVERAGE BANKFULL WIDTH (meters) 1.4

HHEI Metric Points

Substrate Max = 40 7

A + B 11

Pool Depth Max = 30 30

Bankfull Width Max = 30 15

This information must also be completed
RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN WIDTH		FLOODPLAIN QUALITY	
<input checked="" type="checkbox"/> L <input checked="" type="checkbox"/> R (Per Bank)	Wide >10m	<input type="checkbox"/> L <input type="checkbox"/> R (Most Predominant per Bank)	Mature Forest, Wetland
<input type="checkbox"/> Moderate 5-10m		<input checked="" type="checkbox"/> L <input checked="" type="checkbox"/> R	Immature Forest, Shrub or Old Field
<input type="checkbox"/> Narrow <5m		<input type="checkbox"/> Residential, Park, New Field	
<input type="checkbox"/> None		<input type="checkbox"/> Fenced Pasture	
COMMENTS		<input type="checkbox"/> Conservation Tillage	
		<input type="checkbox"/> Urban or Industrial	
		<input type="checkbox"/> Open Pasture, Row Crop	
		<input type="checkbox"/> Mining or Construction	

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

COMMENTS underground; possibly 1.5 bends

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input checked="" type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	---	---	--	--

Elevation 1163-1153
 $\frac{6.6}{100} = \frac{10}{150}$

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PHWH Form Page - 1

*observed sections. Other portions underground.



Fowler Woods
In-Lieu Fee Mitigation Project
Huron-Vermilion (HUC 04100012)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? Yes No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

WWH Name: _____ Distance from Evaluated Stream _____
 CWH Name: _____ Distance from Evaluated Stream _____
 EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Olivesburg NRCs Soil Map Page: _____ NRCs Soil Map Stream Order _____
County: Richland Township / City: Mansfield, OH

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 11/19/2018 Quantity: 0.15" rain + snow

Photograph Information: DSCN 6336-6348

Elevated Turbidity? (Y/N): N Canopy (% open): ~25% Mostly herb/shrubs where daylighted

Were samples collected for water chemistry? (Y/N): _____ (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: NA Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (umhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: Captured stream running along broken/failed tile from historic farming.

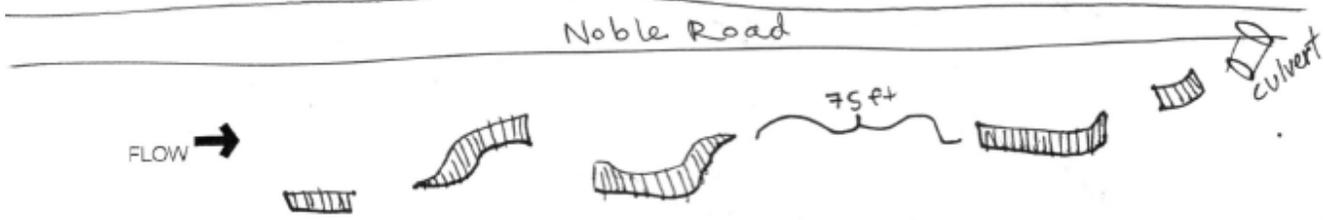
BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N
Comments Regarding Biology: No survey conducted but no biota observed.

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



key: stream 1 daylighted sections (total length 78.8 ft) over 0.05 mi located on northern boundary of site in center.

PHWH Form Page - 2

June 20, 2008 Revision

This HHEI only assessed daylighted portions; conditions may vary underground.

APPENDIX D

Wetland Habitat Quality Assessment Field Forms

ORAM (Ohio Rapid Assessment Method for Wetlands)

Background Information

Name: Jim Palus, Jenna Odegard	
Date: 12/5/2018	
Affiliation: MAD Scientist Associates	
Address: 253 North State Street, Suite 101 Westerville, Ohio 43081	
Phone Number: (614) 818-9156	
e-mail address: jenna@madscientistassociates.net	
Name of Wetland: WETLAND A	
Vegetation Communit(ies): Palustrine scrub-shrub	
HGM Class(es): Depressional (surface water)	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
	
Lat/Long or UTM Coordinate	WGS 84: 40.974006° -82.469079°
USGS Quad Name	Olivesburg
County	Richland
Township	Butler
Section and Subsection	
Hydrologic Unit Code	041000120101
Site Visit	11/19/2018
National Wetland Inventory Map	-----
Ohio Wetland Inventory Map	-----
Soil Survey	Bennington silt loam
Delineation report/map	Yes

Name of Wetland:		WETLAND A	
Wetland Size (acres, hectares):		0.0151 acres	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.			
			
<p>Comments, Narrative Discussion, Justification of Category Changes:</p> <p>Wetland A is a small (<0.1 acre) palustrine scrub-shrub wetland in the center of the Site toward the western side. It is surrounded by wide buffers and low to very low intensity of surrounding land use. It has less than 0.4 m maximum water depth and is seasonally saturated in the upper 30 cm. There is likely historic disturbance from farming on the site (indicated by aerial imagery from 1994), but no hydrologic or habitat disturbances were observed. Wetland A appears to have a recovered substrate and hydrologic regime, although extensive coverage of invasive plants, low horizontal interspersion, and a lack of microtopography. These characteristics led this wetland to receive a score of 29 and be categorized as a Category 1 wetland.</p>			
Final score : 29		Category: 1	

WETLAND A

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		✓

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

WETLAND A

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	<input type="radio"/> NO Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	<input type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input type="radio"/> NO Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	<input type="radio"/> NO Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	<input type="radio"/> NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	<input type="radio"/> NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	<input type="radio"/> NO Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	<input type="radio"/> NO Go to Question 8b

WETLAND A

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia halmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Fowler Woods Wetland A	Rater(s): JP and JO	Date: 12/5/2018
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

- 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)

WETLAND A

13	13
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

- 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), shrub land, 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)

10	23
max 30 pts.	subtotal

Metric 3. Hydrology.

- 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)
- 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)
- 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)
- 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)
- 3e. Modifications to natural hydrologic regime. Score one or double check and average.
- | | | | | | | | | | | | |
|---|---|--------------------------------|---|-------------------------------|--|-------------------------------|--|-------------------------------|-----------------------------------|---|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (12) <input checked="" type="checkbox"/> Recovered (7) <input type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;"><input type="checkbox"/> ditch</td> <td style="width: 50%; padding: 2px;"><input type="checkbox"/> point source (nonstormwater)</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> tile</td> <td style="padding: 2px;"><input type="checkbox"/> filling/grading</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> dike</td> <td style="padding: 2px;"><input type="checkbox"/> road bed/RR track</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> weir</td> <td style="padding: 2px;"><input type="checkbox"/> dredging</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> stormwater input</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> other farming/ tillage in field</td> </tr> </table> | <input type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) | <input type="checkbox"/> tile | <input 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 checked="" type="checkbox"/> other farming/ tillage in field |
| <input type="checkbox"/> ditch | <input type="checkbox"/> point source (nonstormwater) | | | | | | | | | | |
| <input type="checkbox"/> tile | <input 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 checked="" type="checkbox"/> other farming/ tillage in field | | | | | | | | | | |

9	32
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

- 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.
- | | | | | | | | | | | | | | |
|--|--|---------------------------------|--|----------------------------------|---|---------------------------------------|--|--|-----------------------------------|---|---|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (9) <input type="checkbox"/> Recovered (8) <input checked="" type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;"><input type="checkbox"/> mowing</td> <td style="width: 50%; padding: 2px;"><input type="checkbox"/> shrub/sapling removal</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> grazing</td> <td style="padding: 2px;"><input type="checkbox"/> herbaceous/aquatic bed removal</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> clearcutting</td> <td style="padding: 2px;"><input type="checkbox"/> sedimentation</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> selective cutting</td> <td style="padding: 2px;"><input type="checkbox"/> dredging</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> woody debris removal</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> farming</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> toxic pollutants</td> <td style="padding: 2px;"><input type="checkbox"/> nutrient enrichment</td> </tr> </table> | <input type="checkbox"/> mowing | <input type="checkbox"/> shrub/sapling removal | <input type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal | <input type="checkbox"/> clearcutting | <input type="checkbox"/> sedimentation | <input type="checkbox"/> selective cutting | <input type="checkbox"/> dredging | <input type="checkbox"/> woody debris removal | <input checked="" type="checkbox"/> farming | <input type="checkbox"/> toxic pollutants | <input type="checkbox"/> nutrient enrichment |
| <input type="checkbox"/> mowing | <input type="checkbox"/> shrub/sapling removal | | | | | | | | | | | | |
| <input type="checkbox"/> grazing | <input type="checkbox"/> herbaceous/aquatic bed removal | | | | | | | | | | | | |
| <input type="checkbox"/> clearcutting | <input type="checkbox"/> sedimentation | | | | | | | | | | | | |
| <input type="checkbox"/> selective cutting | <input type="checkbox"/> dredging | | | | | | | | | | | | |
| <input type="checkbox"/> woody debris removal | <input checked="" type="checkbox"/> farming | | | | | | | | | | | | |
| <input type="checkbox"/> toxic pollutants | <input type="checkbox"/> nutrient enrichment | | | | | | | | | | | | |

32
subtotal this page

last revised 1 February 2001 jjm

Site: Fowler Woods Wetland A	Rater(s): JP and JO	Date: 12/5/2018
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32	
subtotal first page	
0	32
max 10 pts.	subtotal

Metric 5. Special Wetlands.

WETLAND A

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)

-3	29
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
- 0 Shrub
- 0 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.

- 0 Vegetated hummocks/tussucks
- 0 Coarse woody debris >15cm (8in)
- 0 Standing dead >25cm (10in) dbh
- 0 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

29

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	13	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	9	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	-3	
	TOTAL SCORE	29	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> NO	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (excluding gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> NO	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (including any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	<input checked="" type="radio"/> YES Wetland is assigned to the appropriate category based on the scoring range	<input type="radio"/> NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

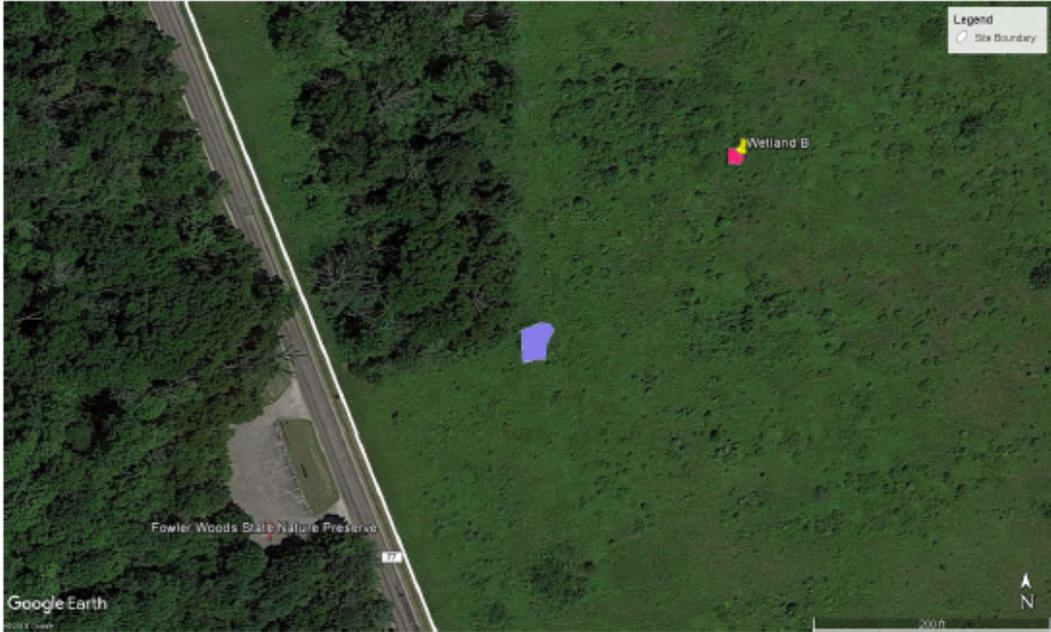
Final Category

Choose one	<input checked="" type="radio"/> Category 1	<input type="radio"/> Category 2	<input type="radio"/> Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name: Jim Palus, Jenna Odegard	
Date: 12/5/2018	
Affiliation: MAD Scientist Associates	
Address: 253 North State Street, Suite 101 Westerville, Ohio 43081	
Phone Number: (614) 818-9156	
e-mail address: jenna@madscientistassociates.net	
Name of Wetland: WETLAND B	
Vegetation Communit(ies): Palustrine emergent	
HGM Class(es): Depressional (surface water)	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
	
Lat/Long or UTM Coordinate	WGS 84: 40.974407° -82.468468°
USGS Quad Name	Olivesburg
County	Richland
Township	Butler
Section and Subsection	
Hydrologic Unit Code	041000120101
Site Visit	11/19/2018
National Wetland Inventory Map	-----
Ohio Wetland Inventory Map	-----
Soil Survey	Condit silt loam
Delineation report/map	Yes

Name of Wetland:		WETLAND B	
Wetland Size (acres, hectares):		0.0039 acres	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.			
			
<p>Comments, Narrative Discussion, Justification of Category Changes:</p> <p>Wetland B is a small (<0.1 acre) palustrine emergent wetland in the center of the Site. It is surrounded by wide buffers and low to very low intensity of surrounding land use. It has less than 0.4 m maximum water depth and is seasonally saturated in the upper 30 cm. There are likely historic disturbance from farming on the site (indicated by aerial imagery from 1994), but no hydrologic or habitat disturbances were observed. The hydrologic regime and substrate appear to be recovered. Wetland B supports fair habitat development, however, it also was observed to have extensive coverage of invasive plants, low horizontal interspersion, and a lack of microtopography. These characteristics led this wetland to receive a score of 29 and be categorized as a Category 1 wetland.</p>			
Final score : 29		Category: 1	

WETLAND B

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		✓

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

WETLAND B

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	<input checked="" type="radio"/> NO Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	<input checked="" type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input checked="" type="radio"/> NO Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	<input checked="" type="radio"/> NO Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	<input checked="" type="radio"/> NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	<input checked="" type="radio"/> NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	<input checked="" type="radio"/> NO Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	<input checked="" type="radio"/> NO Go to Question 8b

WETLAND B

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	<input type="radio"/> NO Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	<input type="radio"/> NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	<input type="radio"/> NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	<input type="radio"/> NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Caila palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex triasperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Toxifolia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Fowler Woods Wetland B	Rater(s): JP and JO	Date: 12/5/2018
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

- 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)

WETLAND B

13	13
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

- 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), shrub land, 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)

10	23
max 30 pts.	subtotal

Metric 3. Hydrology.

- 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)
- 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)
- 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)
- 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)
- 3e. Modifications to natural hydrologic regime. Score one or double check and average.
- | | |
|---|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (12) <input checked="" type="checkbox"/> Recovered (7) <input type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <ul style="list-style-type: none"> <input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input |
|---|---|

9	32
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

- 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.
- | | |
|--|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (9) <input type="checkbox"/> Recovered (8) <input checked="" type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants |
|--|---|

32
subtotal this page

last revised 1 February 2001 jjm

Site: Fowler Woods Wetland B	Rater(s): JP and JO	Date: 12/5/2018
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32

subtotal first page

0	32
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max 10 pts. subtotal

Metric 5. Special Wetlands.

WETLAND B

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)

-3	29
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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/tussocks
- 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

29

End of Quantitative Rating. Complete Categorization Worksheets.

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	13	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	9	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	-3	
	TOTAL SCORE	29	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

WETLAND B

Wetland Categorization Worksheet

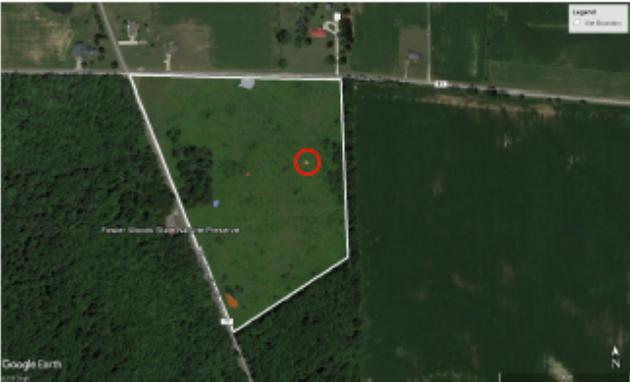
Choices	Circle one	NO	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/>	Is quantitative rating score less than the Category 2 scoring threshold (excluding gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/>	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/>	Is quantitative rating score greater than the Category 2 scoring threshold (including any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	<input checked="" type="radio"/> Wetland is assigned to the appropriate category based on the scoring range	<input type="radio"/>	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/>	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/>	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	<input checked="" type="radio"/> Category 1	<input type="radio"/> Category 2	<input type="radio"/> Category 3
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End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name: Jim Palus, Jenna Odegard	
Date: 12/5/2018	
Affiliation: MAD Scientist Associates	
Address: 253 North State Street, Suite 101 Westerville, Ohio 43081	
Phone Number: (614) 818-9156	
e-mail address: jenna@madscientistassociates.net	
Name of Wetland: WETLAND C	
Vegetation Communit(ies): Palustrine emergent	
HGM Class(es): Depressional (surface water)	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
	
Lat/Long or UTM Coordinate	WGS 84: 40.974572° -82.467346°°
USGS Quad Name	Olivesburg
County	Richland
Township	Butler
Section and Subsection	
Hydrologic Unit Code	041000120101
Site Visit	11/19/2018
National Wetland Inventory Map	-----
Ohio Wetland Inventory Map	-----
Soil Survey	Condit silt loam
Delineation report/map	Yes

Name of Wetland:		WETLAND C	
Wetland Size (acres, hectares):		0.0055 acres	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.			
			
<p>Comments, Narrative Discussion, Justification of Category Changes:</p> <p>Wetland C is a small (<0.1 acre) palustrine emergent wetland in the center region of the Site near the eastern Site border. It is surrounded by wide buffers and low to high intensity of surrounding land use due to the nature preserve on one side and agricultural farming on the other. It has less than 0.4 m maximum water depth and is seasonally saturated in the upper 30 cm. It lacks connection any surface waters, and its only obvious source of water is from precipitation. There was indication of habitat disturbance from farming on the site (indicated by aerial imagery from 1994), but no recent hydrologic disturbances were observed. It appears to have a recovered substrate and hydrologic regime. Wetland C displays poor habitat development and lacks horizontal interspersions and microtopography; however, ORAM-listed invasive plants were absent from the wetland. These characteristics led this wetland to receive a score of 29 and be categorized as a Category 1 wetland.</p>			
Final score : 29		Category: 1	

WETLAND C

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		✓

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

WETLAND C

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	<input type="radio"/> NO Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	<input type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input type="radio"/> NO Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	<input type="radio"/> NO Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	<input type="radio"/> NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	<input type="radio"/> NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	<input type="radio"/> NO Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	<input type="radio"/> NO Go to Question 8b

WETLAND C

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygodenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buxbaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sarrewellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemophanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terabinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serotima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Fowler Woods Wetland C	Rater(s): JP and JO	Date: 12/5/2018
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

- 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)

WETLAND C

10	10
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

- 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), shrub land, 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)

10	20
max 30 pts.	subtotal

Metric 3. Hydrology.

- 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)
- 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)
- 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)
- 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)
- 3e. Modifications to natural hydrologic regime. Score one or double check and average.
- | | |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (12) <input checked="" type="checkbox"/> Recovered (7) <input type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <ul style="list-style-type: none"> <input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input |
| | <ul style="list-style-type: none"> <input type="checkbox"/> point source (nonstormwater) <input type="checkbox"/> filling/grading <input type="checkbox"/> road bed/RR track <input type="checkbox"/> dredging <input checked="" type="checkbox"/> other farming/filling of field |

7	27
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

- 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.
- | | | | |
|---|--|---|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (9) <input type="checkbox"/> Recovered (6) <input checked="" type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <table style="width:100%;"> <tr> <td style="width:50%; vertical-align: top;"> <ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants* </td> <td style="width:50%; vertical-align: top;"> <ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment </td> </tr> </table> <p>*possible, not confirmed through review of chemical data</p> | <ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants* | <ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment |
| <ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants* | <ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment | | |

27
subtotal this page

last revised 1 February 2001 jjm

Site: Fowler Woods Wetland C	Rater(s): JP and JO	Date: 12/5/2018
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27

subtotal first page

0	27
max 10 pts.	subtotal

Metric 5. Special Wetlands.

WETLAND C

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)

2	29
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/tussocks
- 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

29

End of Quantitative Rating. Complete Categorization Worksheets.

WETLAND C

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	10	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	7	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	2	
	TOTAL SCORE	29	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

WETLAND C

Wetland Categorization Worksheet

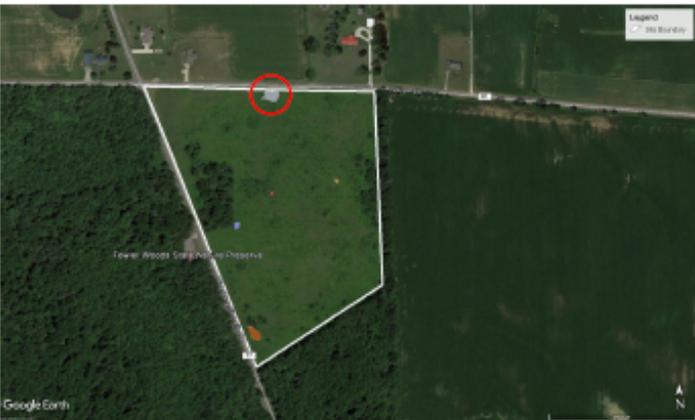
Choices	Circle one	NO	Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/>	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/>	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/>	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	<input checked="" type="radio"/> YES Wetland is assigned to the appropriate category based on the scoring range	<input type="radio"/> NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Background Information

Name: Jim Palus, Jenna Odegard	
Date: 12/5/2018	
Affiliation: MAD Scientist Associates	
Address: 253 North State Street, Suite 101 Westerville, Ohio 43081	
Phone Number: (614) 818-9156	
e-mail address: jenna@madscientistassociates.net	
Name of Wetland: WETLAND D	
Vegetation Communit(ies): Palustrine scrub-shrub	
HGM Class(es): Depressional (surface and ground water)	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
	
Lat/Long or UTM Coordinate	WGS 84: 40.975686° -82.468495°
USGS Quad Name	Olivesburg
County	Richland
Township	Butler
Section and Subsection	
Hydrologic Unit Code	041000120101
Site Visit	11/19/2018
National Wetland Inventory Map	-----
Ohio Wetland Inventory Map	-----
Soil Survey	Pewamo silty clay loam
Delineation report/map	Yes

Name of Wetland:		WETLAND D	
Wetland Size (acres, hectares):		0.0739 acres	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.			
			
<p>Comments, Narrative Discussion, Justification of Category Changes:</p> <p>Wetland D is a small (<0.1 acre) palustrine scrub-shrub wetland on the northern end of the Site. It is surrounded by medium buffers and low to high intensity of surrounding land use due to Fowler Woods State Nature Preserve on one side and agricultural fields on the other. It has less than 0.4 m maximum water depth and is seasonally saturated in the upper 30 cm. It has connectivity between stream lake and other human use, which is represented by a tiled stream that connects to Clear Creek. Hydrologic disturbances were present in the form of a road-side ditch adjacent to the wetland and collapsed drain tile from historic farming. The wetland receives water from precipitation and perennial surface water from the stream. Modifications to the natural hydrologic regime have recent to no recovery because the tiles appear to be eroding and have become daylighted in five separate sections. Wetland D displays fair habitat development, however it also was observed to have moderate coverage of ORAM-listed invasive plants, low horizontal interspersion, and a lack of microtopography. These characteristics led this wetland to receive a score of 22 and be categorized as a Category 1 wetland.</p>			
Final score : 22		Category: 1	

WETLAND D

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		✓

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

WETLAND D

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	<input type="radio"/> NO Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	<input type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input type="radio"/> NO Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	<input type="radio"/> NO Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	<input type="radio"/> NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	<input type="radio"/> NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	<input type="radio"/> NO Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	<input type="radio"/> NO Go to Question 8b

WETLAND D

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lytium salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Calla palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex biochaumii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex triperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne corymbulata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha xglauca</i>	<i>Lobelia kalmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lytium alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbocum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serissima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Fowler Woods Wetland E	Rater(s): JP and JO	Date: 12/5/2018
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

- Select one size class and assign score.
- >50 acres (>20.2ha) (8 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)

WETLAND D

7	7
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

- 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), shrub land, 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)

10	17
max 30 pts.	subtotal

Metric 3. Hydrology.

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

<p>None or none apparent (12)</p> <p><input type="checkbox"/> Recovered (7)</p> <p><input type="checkbox"/> Recovering (3)</p> <p><input checked="" type="checkbox"/> Recent or no recovery (1)</p>	<p>Check all disturbances observed</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> ditch <input checked="" type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input
<p><input type="checkbox"/> point source (nonstormwater)</p> <p><input checked="" type="checkbox"/> filling/grading</p> <p><input type="checkbox"/> road bed/RR track</p> <p><input type="checkbox"/> dredging</p> <p><input type="checkbox"/> other _____</p>	

7	24
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

- 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.

<p>None or none apparent (9)</p> <p><input type="checkbox"/> Recovered (8)</p> <p><input checked="" type="checkbox"/> Recovering (3)</p> <p><input type="checkbox"/> Recent or no recovery (1)</p>	<p>Check all disturbances observed</p> <ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants
<p><input type="checkbox"/> shrub/sapling removal</p> <p><input type="checkbox"/> herbaceous/aquatic bed removal</p> <p><input type="checkbox"/> sedimentation</p> <p><input type="checkbox"/> dredging</p> <p><input checked="" type="checkbox"/> farming</p> <p><input type="checkbox"/> nutrient enrichment</p>	

24
subtotal this page

last revised 1 February 2001 jjm

Site: Fowler Woods Wetland E	Rater(s): JP and JO	Date: 12/5/2018
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24

subtotal first page

0	24
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max 10 pts. subtotal

Metric 5. Special Wetlands.

WETLAND D

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)

-2	22
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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) Interspersions.

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/tussocks
- 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

22

End of Quantitative Rating. Complete Categorization Worksheets.

WETLAND D

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	7	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	7	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	-2	
	TOTAL SCORE	22	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

WETLAND D

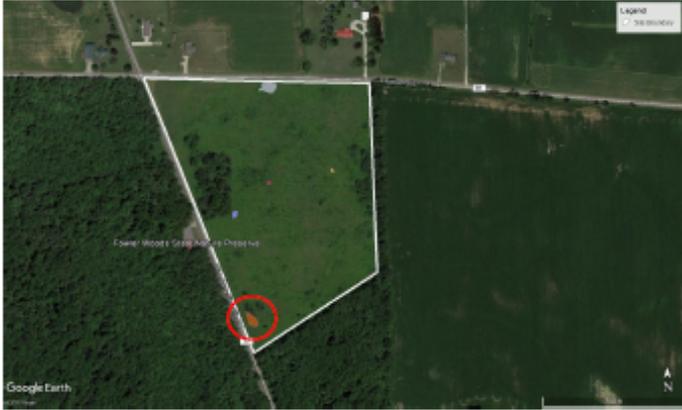
Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10</p>	<p>YES</p> <p>Wetland is categorized as a Category 3 wetland</p>	<p><input checked="" type="radio"/> NO</p>	<p>Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM</p>
<p>Did you answer "Yes" to any of the following questions:</p> <p>Narrative Rating Nos. 1, 8b, 9b, 9e, 11</p>	<p>YES</p> <p>Wetland should be evaluated for possible Category 3 status</p>	<p><input checked="" type="radio"/> NO</p>	<p>Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.</p>
<p>Did you answer "Yes" to</p> <p>Narrative Rating No. 5</p>	<p>YES</p> <p>Wetland is categorized as a Category 1 wetland</p>	<p><input checked="" type="radio"/> NO</p>	<p>Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM</p>
<p>Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?</p>	<p><input checked="" type="radio"/> YES</p> <p>Wetland is assigned to the appropriate category based on the scoring range</p>	<p>NO</p>	<p>If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.</p>
<p>Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?</p>	<p>YES</p> <p>Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria</p>	<p><input checked="" type="radio"/> NO</p>	<p>Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc. and a consideration of the narrative criteria in OAC rule 3745-1-54(C).</p>
<p>Does the wetland otherwise exhibit <i>moderate</i> OR <i>superior</i> hydrologic OR habitat, OR recreational functions AND the wetland was <i>not</i> categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?</p>	<p>YES</p> <p>Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form</p>	<p><input checked="" type="radio"/> NO</p> <p>Wetland is assigned to category as determined by the ORAM.</p>	<p>A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.</p>

Final Category

Choose one	<input checked="" type="radio"/> Category 1	<input type="radio"/> Category 2	<input type="radio"/> Category 3
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Background Information

Name: Jim Palus, Jenna Odegard	
Date: 12/5/2018	
Affiliation: MAD Scientist Associates	
Address: 253 North State Street, Suite 101 Westerville, Ohio 43081	
Phone Number: (614) 818-9156	
e-mail address: jenna@madscientistassociates.net	
Name of Wetland: WETLAND E	
Vegetation Communit(ies): Emergent	
HGM Class(es): Depression (surface water)	
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.	
	
Lat/Long or UTM Coordinate	WGS 84: 40.972566° -82.468779°
USGS Quad Name	Olivesburg
County	Richland
Township	Butler
Section and Subsection	
Hydrologic Unit Code	041000120101
Site Visit	11/19/2018
National Wetland Inventory Map	-----
Ohio Wetland Inventory Map	-----
Soil Survey	Bennington silt loam
Delineation report/map	Yes

Name of Wetland:		WETLAND E	
Wetland Size (acres, hectares):		0.0586 acres	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.			
			
<p>Comments, Narrative Discussion, Justification of Category Changes:</p> <p>Wetland E is a small (<0.1 acre) palustrine emergent wetland on the southern end of the Site. It is surrounded by medium buffers and very low to low intensity of surrounding land use due to the nature preserve and mature forest on two sides, albeit a road situated between them. It has less than 0.4 m maximum water depth and is seasonally saturated in the upper 30 cm. It lacks any surface water connection and its only source of water is from precipitation. There was indication of habitat disturbance from farming on the site (indicated by aerial imagery from 1994), but no hydrologic was observed. It appears to have a recovered substrate and hydrologic regime, yet recovering habitat alteration due to the adjusting vegetation community. Wetland E displays poor to fair habitat development, extensive coverage of ORAM listed invasive species, and lacks significant microtopography. There were some shrubs and trees scattered throughout, horizontal interspersion still scored moderately low. These characteristics led this wetland to receive a score of 26 and be categorized as a Category 1 wetland.</p>			
Final score : 26		Category: 1	

WETLAND E

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the “scoring boundaries” of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the “jurisdictional boundaries.” For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland’s jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland’s scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	✓	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	✓	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	✓	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	✓	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		✓
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		✓

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

WETLAND E

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), <http://www.dnr.state.oh.us/dnap>. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (85 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	<input type="radio"/> NO Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	<input type="radio"/> NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	<input type="radio"/> NO Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	<input type="radio"/> NO Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by <i>Phalaris arundinacea</i> , <i>Lythrum salicaria</i> , or <i>Phragmites australis</i> , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	<input type="radio"/> NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	<input type="radio"/> NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral pH (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	<input type="radio"/> NO Go to Question 8a
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	<input type="radio"/> NO Go to Question 8b

WETLAND E

8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	Oak Opening species	wet prairie species
<i>Lythrum salicaria</i>	<i>Zygadenus elegans</i> var. <i>glaucus</i>	<i>Caila palustris</i>	<i>Carex cryptolepis</i>	<i>Calamagrostis canadensis</i>
<i>Myriophyllum spicatum</i>	<i>Cacalia plantaginea</i>	<i>Carex atlantica</i> var. <i>capillacea</i>	<i>Carex lasiocarpa</i>	<i>Calamagrostis stricta</i>
<i>Najas minor</i>	<i>Carex flava</i>	<i>Carex echinata</i>	<i>Carex stricta</i>	<i>Carex atherodes</i>
<i>Phalaris arundinacea</i>	<i>Carex sterilis</i>	<i>Carex oligosperma</i>	<i>Cladium mariscoides</i>	<i>Carex buchananii</i>
<i>Phragmites australis</i>	<i>Carex stricta</i>	<i>Carex trisperma</i>	<i>Calamagrostis stricta</i>	<i>Carex pellita</i>
<i>Potamogeton crispus</i>	<i>Deschampsia caespitosa</i>	<i>Chamaedaphne calyculata</i>	<i>Calamagrostis canadensis</i>	<i>Carex sartwellii</i>
<i>Ranunculus ficaria</i>	<i>Eleocharis rostellata</i>	<i>Decodon verticillatus</i>	<i>Quercus palustris</i>	<i>Gentiana andrewsii</i>
<i>Rhamnus frangula</i>	<i>Eriophorum viridicarinatum</i>	<i>Eriophorum virginicum</i>		<i>Helianthus grosseserratus</i>
<i>Typha angustifolia</i>	<i>Gentianopsis</i> spp.	<i>Larix laricina</i>		<i>Liatris spicata</i>
<i>Typha x glauca</i>	<i>Lobelia halmii</i>	<i>Nemopanthus mucronatus</i>		<i>Lysimachia quadriflora</i>
	<i>Parnassia glauca</i>	<i>Scheuchzeria palustris</i>		<i>Lythrum alatum</i>
	<i>Potentilla fruticosa</i>	<i>Sphagnum</i> spp.		<i>Pycnanthemum virginianum</i>
	<i>Rhamnus alnifolia</i>	<i>Vaccinium macrocarpon</i>		<i>Silphium terebinthinaceum</i>
	<i>Rhynchospora capillacea</i>	<i>Vaccinium corymbosum</i>		<i>Sorghastrum nutans</i>
	<i>Salix candida</i>	<i>Vaccinium oxycoccos</i>		<i>Spartina pectinata</i>
	<i>Salix myricoides</i>	<i>Woodwardia virginica</i>		<i>Solidago riddellii</i>
	<i>Salix serotima</i>	<i>Xyris difformis</i>		
	<i>Solidago ohioensis</i>			
	<i>Toxifolia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site: Fowler Woods Wetland E	Rater(s): JP and JO	Date: 12/5/2018
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0	0
max 6 pts.	subtotal

Metric 1. Wetland Area (size).

- Select one size class and assign score.
- >50 acres (>20.2ha) (8 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)

WETLAND E

10	10
max 14 pts.	subtotal

Metric 2. Upland buffers and surrounding land use.

- 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), shrub land, 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)

10	20
max 30 pts.	subtotal

Metric 3. Hydrology.

- 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)
- 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)
- 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)
- 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)
- 3e. Modifications to natural hydrologic regime. Score one or double check and average.
- | | |
|---|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (12) <input checked="" type="checkbox"/> Recovered (7) <input type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <ul style="list-style-type: none"> <input type="checkbox"/> ditch <input type="checkbox"/> tile <input type="checkbox"/> dike <input type="checkbox"/> weir <input type="checkbox"/> stormwater input |
|---|---|

8	28
max 20 pts.	subtotal

Metric 4. Habitat Alteration and Development.

- 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.
- | | | | |
|--|---|--|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> None or none apparent (9) <input type="checkbox"/> Recovered (6) <input checked="" type="checkbox"/> Recovering (3) <input type="checkbox"/> Recent or no recovery (1) | <p>Check all disturbances observed</p> <table style="width:100%;"> <tr> <td style="width:50%; vertical-align: top;"> <ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants </td> <td style="width:50%; vertical-align: top;"> <ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment </td> </tr> </table> | <ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants | <ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment |
| <ul style="list-style-type: none"> <input type="checkbox"/> mowing <input type="checkbox"/> grazing <input type="checkbox"/> clearcutting <input type="checkbox"/> selective cutting <input type="checkbox"/> woody debris removal <input type="checkbox"/> toxic pollutants | <ul style="list-style-type: none"> <input type="checkbox"/> shrub/sapling removal <input type="checkbox"/> herbaceous/aquatic bed removal <input type="checkbox"/> sedimentation <input type="checkbox"/> dredging <input checked="" type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment | | |

28

subtotal this page

last revised 1 February 2001 jjm

Site: Fowler Woods Wetland E	Rater(s): JP and JO	Date: 12/5/2018
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28

subtotal first page

0	28
max 10 pts.	subtotal

Metric 5. Special Wetlands.

WETLAND E

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)

-2	26
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

26

End of Quantitative Rating. Complete Categorization Worksheets.

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 1.
	Question 6. Bogs	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 7. Fens	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3
Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Question 10. Oak Openings	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input type="radio"/> NO <input checked="" type="radio"/>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	0	
	Metric 2. Buffers and surrounding land use	10	
	Metric 3. Hydrology	10	
	Metric 4. Habitat	8	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersions, microtopography	-2	
	TOTAL SCORE	26	Category based on score breakpoints 1

Complete Wetland Categorization Worksheet.

WETLAND E

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	<input checked="" type="radio"/> NO	Is quantitative rating score <i>less</i> than the Category 2 scoring threshold (<i>excluding</i> gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	<input checked="" type="radio"/> NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	<input checked="" type="radio"/> NO	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold (<i>including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	<input checked="" type="radio"/> YES Wetland is assigned to the appropriate category based on the scoring range	<input type="radio"/> NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	<input checked="" type="radio"/> NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	<input checked="" type="radio"/> NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one Category 1 Category 2 Category 3

End of Ohio Rapid Assessment Method for Wetlands.

APPENDIX E

Jurisdictional Waters of the US Field Forms

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Fowler Woods City/County: Richland Sampling Date: 11/19/18
 Applicant/Owner: The Nature Conservancy State: OH Sampling Point: A-WET
 Investigator(s): Jim Palus & Jenna Odgaard Section, Township, Range: S12 T23N R18W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave
 Slope (%): 0-2 Lat: 40.974011 Long: -82.469075 Datum: WGS 84
 Soil Map Unit Name: Bennington silt loam, 0 to 2 percent slopes NWI classification: Not mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? N Are 'Normal Circumstances' present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? N (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No <u> </u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>			
Remarks: <u>Small depressional wetland</u> <u>Photos: 6306-6314</u>					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30-ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Quercus palustris</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>4</u> (A)
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Total Number of Dominant Species Across All Strata:	<u>4</u> (B)
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Prevalence Index worksheet:	
5. <u> </u>	<u>15</u> = Total Cover	<u> </u>	<u> </u>	Total % Cover of:	Multiply by:
Sapling/Shrub Stratum (Plot size: <u>15-ft</u>)				OBL species	x 1 = <u> </u>
1. <u>Cornus sericea</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	FACW species	x 2 = <u> </u>
2. <u>Quercus palustris</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>	FAC species	x 3 = <u> </u>
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FACU species	x 4 = <u> </u>
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	UPL species	x 5 = <u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Column Totals:	(A) <u> </u> (B) <u> </u>
Herb Stratum (Plot size: <u>5 ft</u>)				Prevalence Index = B/A = <u> </u>	
1. <u>Phalaris arundinacea</u>	<u>95</u>	<u>Y</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators:	
2. <u>Solidago altissima</u>	<u>10</u>	<u>-</u>	<u>FACU</u>	1 - Rapid Test for Hydrophytic Vegetation	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 3 - Prevalence Index is ≤ 3.0 ¹	
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Hydrophytic Vegetation Present?	
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Yes <u>X</u> No <u> </u>	
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Remarks: (Include photo numbers here or on a separate sheet.)	
Woody Vine Stratum (Plot size: <u>30-ft</u>)					
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>		
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>		

SOIL

Sampling Point: A-WET

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	10 YR 4/2	97	5 YR 4/6	3	C	PL	SiCL	
6-11	10 YR 4/2	97	7.5 YR 5/8	3	C	PL, M	SiC	
11-20 ⁺	7.5 YR 4/1	80	5 YR 4/6	20	C	M	SiC	

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

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<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 observed):
 Type: N/A
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input 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 checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<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 checked="" 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>5</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>2</u>	

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

Remarks:
Light rain/snow day of sampling

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Fowler Woods City/County: Richland Sampling Date: 11/19/18
 Applicant/Owner: The Nature Conservancy State: OH Sampling Point: B-WET
 Investigator(s): Jim Palus & Jenna Odegard Section, Township, Range: S12 T23N R18W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave
 Slope (%): 0-1 Lat: 40.974912 Long: -82.468452 Datum: WGS 84 Palustrine
 Soil Map Unit Name: Condit silt loam, 0 to 1 percent slopes NWI classification: Not mapped Emergent
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? N Are "Normal Circumstances" present? Yes X No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? N (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>		
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>		
Remarks: <u>Small depressional wetland dominated by pussy willow & red osier dogwood</u> <u>Photos 6315-6322</u>			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30-ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>/</u>				Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. <u>/</u>				Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. <u>/</u>				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100%</u> (A/B)
4. <u>/</u>				= Total Cover	
5. <u>/</u>				Prevalence Index worksheet:	
Sapling/Shrub Stratum (Plot size: <u>15-ft</u>)				Total % Cover of:	Multiply by:
1. <u>Cornus sericea</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	OBL species	<u> </u> x 1 = <u> </u>
2. <u>Salix discolor</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	FACW species	<u> </u> x 2 = <u> </u>
3. <u>Acer rubrum</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	FAC species	<u> </u> x 3 = <u> </u>
4. <u>Pyrus calleryana</u>	<u>3</u>	<u>N</u>	<u>UPL</u>	FACU species	<u> </u> x 4 = <u> </u>
5. <u>/</u>				UPL species	<u> </u> x 5 = <u> </u>
				Column Totals:	<u> </u> (A) <u> </u> (B)
				Prevalence Index = B/A = <u> </u>	
Herb Stratum (Plot size: <u>5-ft</u>)				Hydrophytic Vegetation Indicators:	
1. <u>Phalaris arundinacea</u>	<u>90</u>	<u>Y</u>	<u>FACW</u>	<u>1</u> - Rapid Test for Hydrophytic Vegetation	
2. <u>Solidago altissima</u>	<u>10</u>	<u>X</u>	<u>FACU</u>	<u>2</u> - Dominance Test is >50%	
3. <u>Apocynum cannabinum</u>	<u>2</u>	<u>/</u>	<u>FAC</u>	<u>3</u> - Prevalence Index is $\leq 3.0^1$	
4. <u>Rubus occidentalis</u>	<u>5</u>	<u>/</u>	<u>UPL</u>	<u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
5. <u>/</u>				<u>Problematic Hydrophytic Vegetation¹</u> (Explain)	
6. <u>/</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7. <u>/</u>				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	
8. <u>/</u>					
9. <u>/</u>					
10. <u>/</u>					
Woody Vine Stratum (Plot size: <u>30-ft</u>)					
1. <u>/</u>					
2. <u>/</u>					
				= Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: Bwet

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	10 YR 4/2	98	7.5 YR 4/4	2	C	PL	S:CL	
6-12	10 YR 4/2	67	10 YR 4/1	30	D	M	S:C	
			10 YR 4/6	3	C	M		
12-17 ⁺	10 YR 4/2	88	10 YR 4/6	12	C	M	S:C	

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

Hydric Soil Indicators:

<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"/> Dark Surface (S7)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" 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)		

Restrictive Layer (if observed):
 Type: N/A
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input 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 on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<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 checked="" 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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>5</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>3</u>	

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

Remarks:



WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Fowler Woods City/County: Richland Sampling Date: 11/19/18
 Applicant/Owner: The Nature Conservancy State: OH Sampling Point: C-WET
 Investigator(s): Jim Palus & Jenna Odegard Section, Township, Range: S12 T23N R18W
 Landform (hillslope, terrace, etc.): Hill slope Local relief (concave, convex, none): Concave
 Slope (%): 0-4 Lat: 40.974592 Long: -82.467347 Datum: WGS 84 Palustrine
 Soil Map Unit Name: Conditi silt loam, 0 to 1 percent slopes NWI classification: Not mapped Emergent
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? N Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? N (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____		
Wetland Hydrology Present?	Yes <u>X</u> No _____		
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
= Total Cover				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 = _____
Sapling/Shrub Stratum (Plot size: <u>15-ft</u>)				
1. <u>Cornus sericea</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
2. _____				
3. _____				
= Total Cover				
Herb Stratum (Plot size: <u>5-ft</u>)				
1. <u>Juncus effusus</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Scirpus cyperinus</u>	<u>40</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Solidago altissima</u>	<u>7</u>		<u>FACU</u>	
4. <u>Festuca Arundinacea</u>	<u>26</u>	<u>Y</u>	<u>FACW</u>	
5. <u>Daucus carota</u>	<u>2</u>		<u>UPL</u>	
6. <u>Euthamia graminifolia</u>	<u>5</u>		<u>FACW</u>	
7. _____				
8. _____				
9. _____				
10. _____				
= Total Cover				
Woody Vine Stratum (Plot size: <u>30-ft</u>)				
1. _____				
2. _____				
= Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				

SOIL

Sampling Point: C-Wet

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	Loc ¹		
0-10	10YR 4/2	94	10YR 5/6	6	C	M	S:C	
10-18	2.5YR 4/2	92	10YR 5/8	8	C	M	S:C	
18-28	10YR 5/1	77	10YR 5/6	20	C	M	S:C	
			10YR 3/1	3	D	M		

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

Hydric Soil Indicators:

<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"/> Dark Surface (S7)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" 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 observed):
 Type: N/A
 Depth (inches): _____

Hydric Soil Present? Yes No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> 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 on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<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)	

Secondary Indicators (minimum of two required)

Field Observations:

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

Water Table Present? Yes No _____ Depth (inches): 2

Saturation Present? Yes No _____ Depth (inches): 1

(includes capillary fringe)

Wetland Hydrology Present? Yes No _____

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

Remarks:



WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Fowler Woods City/County: Richland Sampling Date: 11/19/18
 Applicant/Owner: The Nature Conservancy State: OH Sampling Point: D-UP
 Investigator(s): Jim Palus, Jenna Odegard Section, Township, Range: S12 T23N R18W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex
 Slope (%): 0-2 Lat: 40.975613 Long: -82.468301 Datum: WGS 84
 Soil Map Unit Name: Pewama silty clay loam, low carbonate till, 0-2% slopes NWI classification: Not Mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>110</u> x 4 = <u>440</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>110</u> (A) <u>440</u> (B) Prevalence Index = B/A = <u>4</u>
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u>Fraxinus americana</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
2. _____				
3. _____				
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>Dipsacus fullonum</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
2. <u>Festuca arundinacea</u>	<u>50</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Sparganium angustifolium</u>	<u>40</u>	<u>Y</u>	<u>FACU</u>	
4. <u>Galea virginiana</u>	<u>5</u>	<input checked="" type="checkbox"/>	<u>FACU</u>	
5. _____				
_____ = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft</u>)				
1. _____				
2. _____				
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				



Sampling Point D-up

SOIL

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		
0-21	10 YR 4/1	100					S:CL	
21-28	10 YR 4/1	97	10 YR 5/6	3	C	m	S:CL	

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

Hydric Soil Indicators:

<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"/> Dark Surface (S7)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<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)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)		

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required, check all that apply)		Secondary Indicators (minimum of two required)
<input 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 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 on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<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 <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Water Table Present?	Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>9</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>20</u>	

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

Remarks:



WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Fowler Woods City/County: Richland Sampling Date: 11/19/18
 Applicant/Owner: The Nature Conservancy State: OH Sampling Point: D-Wet
 Investigator(s): Jim Palus & Jenna Odegaard Section, Township, Range: S12 T23N R18W
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): none
 Slope (%): 0-2 Lat: 40.975685 Long: -82.468375 Datum: WGS84
 Soil Map Unit Name: Pewama silty clay loam, low carbonate till NWI classification: Not mapped; Palustrine, scrub-shrub
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N Soil N or Hydrology Y significantly disturbed? Y Are "Normal Circumstances" present? Yes No
 Are Vegetation N Soil N or Hydrology N naturally problematic? N (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: <u>*capture stream routed through subsurface tile has been daylighted in a small segment of wetland</u>					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
= Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>100</u> x 2 = <u>200</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>90</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>190</u> (A) <u>560</u> (B) Prevalence Index = B/A = <u>2.94</u>
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>) 1. <u>Salix interior</u> <u>100</u> <u>Y</u> <u>FACW</u> 2. _____ 3. _____ 4. _____ 5. _____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft</u>) 1. <u>Solidago altissima</u> <u>50</u> <u>Y</u> <u>FACU</u> 2. <u>Festuca arundinacea</u> <u>40</u> <u>Y</u> <u>FACU</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft</u>) 1. _____ 2. _____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

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

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

Hydrophytic Vegetation Present? Yes No



SOIL

Sampling Point: D-Wet

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	Loc		
0-13	10YR 4/1	98	10YR 5/6	2	C	PL	SiCL	
13-21	10YR 4/1	96	10YR 4/6	4	C	M	SiCL	
21-25	10YR 4/1	74	10YR 4/4	6	C	M	CL	
			10YR 3/1	20	C	M	CL	
25-28	10YR 4/1	67	10YR 5/6	25	C	M	CL	
			10YR 3/1	3	C	M	CL	
			10YR 5/2	5	D	M	CL	

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

Hydric Soil Indicators:

<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"/> Dark Surface (S7)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" 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 observed):
 Type: N/A
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required, check all that apply)		Secondary Indicators (minimum of two required)
<input 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 on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<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 <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>7</u>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>7</u>	

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

Remarks:
 Shallow standing water along deer trail
 Precipitation today

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Fowler Woods City/County: Richland Sampling Date: 11/19/2018
 Applicant/Owner: The Nature Conservancy State: OH Sampling Point: E-UP
 Investigator(s): Jim Palus, Jenna Odegard Section, Township, Range: S12 T23N R18W
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex
 Slope (%): 0-2 Lat: 40.972867 Long: -82.468815 Datum: WGS 84
 Soil Map Unit Name: Bennington silt loam, 0 to 2 percent slopes NWI classification: Not mapped
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <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:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____				Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (AB)	
4. _____					
5. _____					
= Total Cover					
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:	
1. <u>Pinus strobus</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	Total % Cover of:	Multiply by:
2. <u>Populus tremuloides</u>	<u>2</u>	<u>Y</u>	<u>FAC</u>	OBL species <u>0</u> x 1 = <u>0</u>	
3. _____				FACW species <u>0</u> x 2 = <u>0</u>	
4. _____				FAC species <u>72</u> x 3 = <u>216</u>	
5. _____				FACU species <u>46</u> x 4 = <u>184</u>	
= Total Cover				UPL species <u>0</u> x 5 = <u>0</u>	
				Column Totals: <u>118</u> (A) <u>400</u> (B)	
				Prevalence Index = B/A = <u>3.39</u>	
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:	
1. <u>Solidago altissima</u>	<u>40</u>	<u>Y</u>	<u>FACU</u>	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0' <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
2. <u>Festuca arundinacea</u>	<u>70</u>	<u>Y</u>	<u>FACU</u>		
3. <u>Dipsacus fullonum</u>	<u>1</u>	<input checked="" type="checkbox"/>	<u>FACU</u>		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
= Total Cover					
Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
1. _____					
2. _____					
= Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: E-UP

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 5/2	100	1				S; CL	
16-28	10YR 5/2	90	10YR 5/8	10	c	m	S; CL	

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

Hydric Soil Indicators:

<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"/> Dark Surface (S7)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<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 observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (CB)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

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

Water Table Present? Yes No _____ Depth (inches): 11

Saturation Present? (includes capillary fringe) Yes No _____ Depth (inches): 11

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: Fowler Woods City/County: Richland Sampling Date: 1/19/2018
 Applicant/Owner: The Nature Conservancy State: OH Sampling Point: E-WET
 Investigator(s): Jim Palus, Jenna Odgaard Section, Township, Range: S12 T23N R18W
 Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave
 Slope (%): 0-2 Lat: 40.972610 Long: -82.468827 Datum: WGS 84
 Soil Map Unit Name: Beaumont silt loam, 0 to 2 percent slopes NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <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:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100 %</u> (A/B)
1. <u>Populus tremuloides</u>	<u>35</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>35</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is $\geq 3.0^1$ <input type="checkbox"/> 4 - 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>Cornus sericea</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Salix discolor</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>Phalaris arundinacea</u>	<u>95</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Aperyanum canadense</u>	<u>2</u>	<u>/</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>97</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: E-WET

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 5/1	90	10YR 5/8	10	C	M, PL	S, CL	
14-28	10YR 4/1	100					S, CL	

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

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

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

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

Field Observations:

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

Water Table Present? Yes No Depth (inches): 2

Saturation Present? Yes No Depth (inches): 2

(includes capillary fringe)

Wetland Hydrology Present? Yes No

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

Remarks:

