

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 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>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: <u>Brunstetter W-1</u>	Rater(s): <u>L. Sayre</u>	Date: <u>11/15/12</u>
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3	3
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)

7	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)

15	25
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)

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

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

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

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

Check all disturbances observed

- ☐ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ stormwater input

3b. Connectivity. Score all that apply.

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

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

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

12	37
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.

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

Check all disturbances observed

- ☒ mowing
- ☒ grazing
- ☒ clearcutting
- ☐ selective cutting
- ☐ woody debris removal
- ☐ toxic pollutants

- ☐ shrub/sapling removal
- ☐ herbaceous/aquatic bed removal
- ☐ sedimentation
- ☐ dredging
- ☒ farming
- ☐ nutrient enrichment

37
subtotal this page

Site: <u>Brunstetter W-1</u>	Rater(s): <u>L. Sayre</u>	Date: <u>11/15/12</u>
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37

subtotal first page

0	37	Metric 5. Special Wetlands.
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max 10 pts. subtotal

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)

4	41	Metric 6. Plant communities, interspersions, microtopography.
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max 20 pts. subtotal

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☐ Emergent
- ☒ 2 Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high (4)
- ☐ Moderate (3)
- ☒ 2 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)
- ☒ -3 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
- ☐ 1 Coarse woody debris >15cm (6in)
- ☐ 0 Standing dead >25cm (10in) dbh
- ☐ 1 Amphibian breeding pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

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End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES <u>NO</u>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <u>NO</u>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <u>NO</u>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <u>NO</u>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <u>NO</u>	If yes, Category 1.
	Question 6. Bogs	YES <u>NO</u>	If yes, Category 3.
	Question 7. Fens	YES <u>NO</u>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <u>NO</u>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <u>NO</u>	If yes, Category 3
Quantitative Rating	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES <u>NO</u>	If yes, Category 3
	Question 11. Relict Wet Prairies	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	3	
	Metric 2. Buffers and surrounding land use	7	
	Metric 3. Hydrology	15	
	Metric 4. Habitat	12	
	Metric 5. Special Wetland Communities	0	
Metric 6. Plant communities, interspersed, microtopography	4		
TOTAL SCORE		41	Category based on score breakpoints Mod 2

Complete Wetland Categorization Worksheet.

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?	YES Wetland is assigned to the appropriate category based on the scoring range	<input checked="" 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?	<input checked="" type="radio"/> YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	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 <i>moderate OR 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?	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.

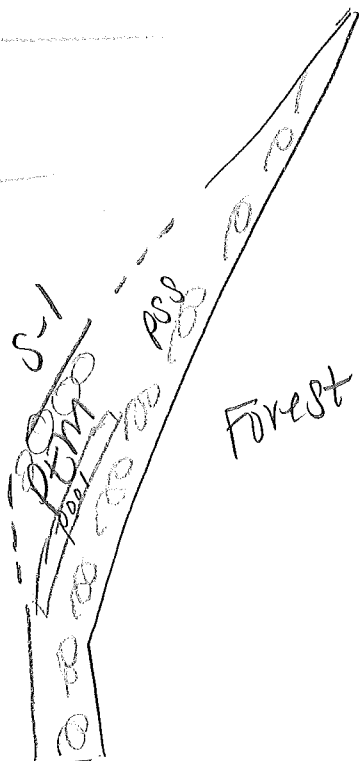
Final Category

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

Background Information

Name:	Laura Sayre		
Date:	11/15/12		
Affiliation:	EnviroScience, Inc.		
Address:	3781 Darrow Rd., Stow OH 44224		
Phone Number:	(330) 688-0111		
e-mail address:	LSayre@EnviroScienceInc.com		
Name of Wetland:	W-2		
Vegetation Community(ies):	PEM / PSS		
HGM Class(es):	Riverine		
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.			
See attached maps			
Lat/Long or UTM Coordinate	41.181189°N -80.837241°W		
USGS Quad Name	WARREN		
County	Trumbull		
Township	Lordstown		
Section and Subsection	—		
Hydrologic Unit Code	05030103		
Site Visit	11/15/12		
National Wetland Inventory Map	enclosed		
Ohio Wetland Inventory Map	—		
Soil Survey	enclosed		
Delineation report/map	enclosed		

Name of Wetland: W-2	
Wetland Size (acres, hectares): 0.025 ac. on site 0.037 ac. total	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p style="font-size: 1.2em;">Agricultural Field</p> </div> <div style="text-align: center;">  </div> </div>	
<p style="font-size: 1.2em;">NA</p> <p>Comments, Narrative Discussion, Justification of Category Changes:</p>	
Final score : 45	Category: 2

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.

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

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 checked="" 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 checked="" 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 checked="" 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 checked="" 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>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 viridicaratum</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>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: <u>Brunstetter W-2</u>	Rater(s): <u>L. Sayre</u>	Date: <u>11/15/12</u>
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<u>0</u>	<u>0</u>
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)

<u>7</u>	<u>7</u>
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)

<u>20</u>	<u>27</u>
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)
- 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)

3b. Connectivity. Score all that apply.

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

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

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

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

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

Check all disturbances observed

- | | |
|---|---|
| <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 type="checkbox"/> other _____ |

<u>16</u>	
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.

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

Check all disturbances observed

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

<u>43</u>
subtotal this page

Site: <u>Brunstetter W-2</u>	Rater(s): <u>L. Sayre</u>	Date: <u>11/15/12</u>
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43

subtotal first page

0	43
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

2	45
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

45

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO	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	20	
	Metric 4. Habitat	16	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersed, microtopography	2	
	TOTAL SCORE	45	Category based on score breakpoints

Complete Wetland Categorization Worksheet.

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 <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?	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.

Background Information

Name:	Laura Sayre		
Date:	11/15/12		
Affiliation:	EnviroScience, Inc.		
Address:	3781 Darrow Rd., Stow OH 44224		
Phone Number:	(330) 688-0111		
e-mail address:	LSayre@EnviroScienceInc.com		
Name of Wetland:	W-3		
Vegetation Community(ies):	PEM1PSS		
HGM Class(es):	Riverine		
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc. See attached maps			
Lat/Long or UTM Coordinate	41.181245°N -80.834119°W		
USGS Quad Name	WARREN		
County	Trumbull		
Township	Lordstown		
Section and Subsection	—		
Hydrologic Unit Code	05030103		
Site Visit	11/15/12		
National Wetland Inventory Map	enclosed		
Ohio Wetland Inventory Map	—		
Soil Survey	enclosed		
Delineation report/map	enclosed		

Name of Wetland:

W-3

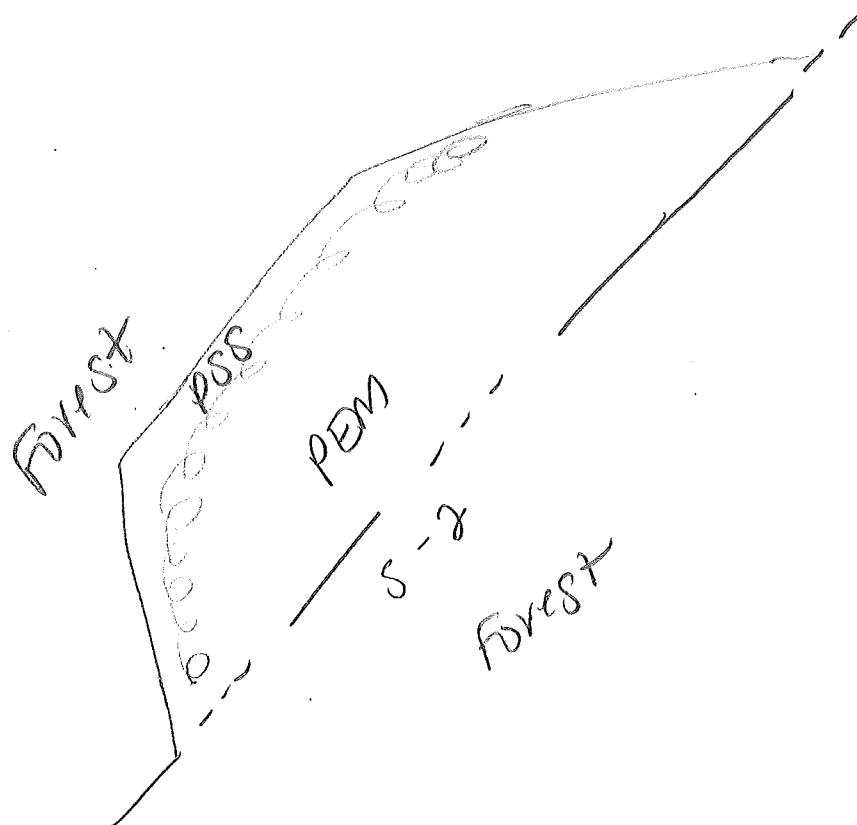
Wetland Size (acres, hectares):

0.011 ac. onsite; 0.018 ac. total

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

Ag Field

NA



Comments, Narrative Discussion, Justification of Category Changes:

Final score :

44

Category:

Mod 2

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.

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

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 checked="" 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 checked="" 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 checked="" 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 checked="" 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>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 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>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: <u>Brunstetter</u> <u>W-3</u>	Rater(s): <u>L. Sayre</u>	Date: <u>11/15/12</u>
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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)

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)

20	27
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)

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

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

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

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

Check all disturbances observed

- ☐ ditch
☐ tile
☐ dike
☐ weir
☐ stormwater input

3b. Connectivity. Score all that apply.

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

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

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

16	43
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.

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

Check all disturbances observed

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

43
subtotal this page

Site: <u>Brunswick w-3</u>	Rater(s): <u>L. Sayre</u>	Date: <u>11/15/12</u>
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43

subtotal first page

0	43
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

1	44
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

44

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1. Critical Habitat	YES <u>NO</u>	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <u>NO</u>	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <u>NO</u>	If yes, Category 3.
	Question 4. Significant bird habitat	YES <u>NO</u>	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <u>NO</u>	If yes, Category 1.
	Question 6. Bogs	YES <u>NO</u>	If yes, Category 3.
	Question 7. Fens	YES <u>NO</u>	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <u>NO</u>	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted with native plants	YES <u>NO</u>	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.
Question 10. Oak Openings	YES <u>NO</u>	If yes, Category 3	
Question 11. Relict Wet Prairies	YES <u>NO</u>	If yes, evaluate for Category 3; may also be 1 or 2.	
Quantitative Rating	Metric 1. Size	<u>0</u>	
	Metric 2. Buffers and surrounding land use	<u>7</u>	
	Metric 3. Hydrology	<u>20</u>	
	Metric 4. Habitat	<u>16</u>	
	Metric 5. Special Wetland Communities	<u>0</u>	
	Metric 6. Plant communities, interspersed, microtopography	<u>1</u>	
	TOTAL SCORE	<u>44</u>	Category based on score breakpoints <u>mod 2</u>

Complete Wetland Categorization Worksheet.

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?	YES Wetland is assigned to the appropriate category based on the scoring range	<input checked="" 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?	<input checked="" type="radio"/> YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	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 <i>moderate OR 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?	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.

Background Information

Name:	Laura Sayre		
Date:	11/15/12		
Affiliation:	EnviroScience, Inc.		
Address:	3781 Darrow Rd., Stow OH 44224		
Phone Number:	(330) 688-0111		
e-mail address:	LSayre@EnviroScienceInc.com		
Name of Wetland:	W-4		
Vegetation Community(ies):	PFD		
HGM Class(es):	Riverine		
Location of Wetland: Include map, address, north arrow, landmarks, distances, roads, etc.	See attached maps		
Lat/Long or UTM Coordinate	41.181006°N -80.831629°W		
USGS Quad Name	WARREN		
County	Trumbull		
Township	Lordstown		
Section and Subsection	—		
Hydrologic Unit Code	05030103		
Site Visit	11/15/12		
National Wetland Inventory Map	enclosed		
Ohio Wetland Inventory Map	—		
Soil Survey	enclosed		
Delineation report/map	enclosed		

Name of Wetland: <u>W-4</u>	
Wetland Size (acres, hectares): <u>0.002 ac. on site; approx 0.75 ac. total</u>	
Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.	
Comments, Narrative Discussion, Justification of Category Changes:	
Final score :	<div>50</div> <div>Category: 2</div>

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.

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

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 checked="" 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 checked="" 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 checked="" 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 checked="" 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>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 viridicaratum</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>Tofieldia glutinosa</i>			
	<i>Triglochin maritimum</i>			
	<i>Triglochin palustre</i>			

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

Site: Brunstetter W-4	Rater(s): L. Sayre	Date: 11/15/12
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2	2	Metric 1. Wetland Area (size).
max 6 pts.	subtotal	

- Select one size class and assign score.
- ☐ >50 acres (>20.2ha) (6 pts)
 - ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
 - ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
 - ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
 - ☒ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
 - ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
 - ☐ <0.1 acres (0.04ha) (0 pts)

9	11	Metric 2. Upland buffers and surrounding land use.
max 14 pts.	subtotal	

- 2a. Calculate average buffer width. Select only one and assign score. Do not double check.
- ☒ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
 - ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
 - ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
 - ☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)
- 2b. Intensity of surrounding land use. Select one or double check and average.
- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
 - ☒ LOW. Old field (>10 years), 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)

20	31	Metric 3. Hydrology.
max 30 pts.	subtotal	

- 3a. Sources of Water. Score all that apply.
- ☐ High pH groundwater (5)
 - ☐ Other groundwater (3)
 - ☒ Precipitation (1)
 - ☒ Seasonal/Intermittent surface water (3)
 - ☐ Perennial surface water (lake or stream) (5)
- 3c. Maximum water depth. Select only one and assign score.
- ☐ >0.7 (27.6in) (3)
 - ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
 - ☒ <0.4m (<15.7in) (1)
- 3e. Modifications to natural hydrologic regime. Score one or double check and average.
- | | |
|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> None or none apparent (12) <input 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 |
|---|---|
- 3b. Connectivity. Score all that apply.
- ☐ 100 year floodplain (1)
 - ☐ Between stream/lake and other human use (1)
 - ☐ Part of wetland/upland (e.g. forest), complex (1)
 - ☒ Part of riparian or upland corridor (1)
- 3d. Duration inundation/saturation. Score one or dbl check.
- ☐ Semi- to permanently inundated/saturated (4)
 - ☐ Regularly inundated/saturated (3)
 - ☒ Seasonally inundated (2)
 - ☐ Seasonally saturated in upper 30cm (12in) (1)

16	47	Metric 4. Habitat Alteration and Development.
max 20 pts.	subtotal	

- 4a. Substrate disturbance. Score one or double check and average.
- ☒ None or none apparent (4)
 - ☐ Recovered (3)
 - ☐ Recovering (2)
 - ☐ Recent or no recovery (1)
- 4b. Habitat development. Select only one and assign score.
- ☐ Excellent (7)
 - ☐ Very good (6)
 - ☐ Good (5)
 - ☐ Moderately good (4)
 - ☒ Fair (3)
 - ☐ Poor to fair (2)
 - ☐ Poor (1)
- 4c. Habitat alteration. Score one or double check and average.
- | | | | |
|--|---|--|--|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> None or none apparent (9) <input type="checkbox"/> Recovered (6) <input 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 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 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 type="checkbox"/> farming <input type="checkbox"/> nutrient enrichment | | |

47

 subtotal this page

Site: Brunswick W-4 Rater(s): L. Sayre Date: 11/15/12

47

subtotal first page

0

47

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

3

50

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

50

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES <input checked="" type="radio"/> NO	If yes, Category 1.
	Question 6. Bogs	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 7. Fens	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES <input checked="" type="radio"/> NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands -- Unrestricted with native plants	YES <input checked="" type="radio"/> NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Question 10. Oak Openings	YES <input checked="" type="radio"/> NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES <input checked="" type="radio"/> NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Metric 1. Size	2	
	Metric 2. Buffers and surrounding land use	9	
	Metric 3. Hydrology	20	
	Metric 4. Habitat	10	
	Metric 5. Special Wetland Communities	0	
	Metric 6. Plant communities, interspersed, microtopography	3	
	TOTAL SCORE	50	Category based on score breakpoints 2

Complete Wetland Categorization Worksheet.

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 <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?	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	<input checked="" type="radio"/> Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.

Appendix E:
Qualitative Habitat Evaluation Index (QHEI) Forms



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **38**

Stream & Location: Brunstetter S-1

RM: _____ Date: 11/16/12

Scorers Full Name & Affiliation: L. Sayre / EnviroScience

River Code: _____ STORET #: _____

Lat./ Long.: 41.1810180.8372

Office verified location ☐

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

Check ONE (Or 2 & average)

BEST TYPES		OTHER TYPES	
<input type="checkbox"/> BDR/SLABS [10]	<input type="checkbox"/> POOL RIFFLE	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> POOL RIFFLE
<input type="checkbox"/> BOULDER [9]		<input type="checkbox"/> DETRITUS [3]	
<input type="checkbox"/> COBBLE [8]		<input checked="" type="checkbox"/> MUCK [2]	<u>30</u>
<input type="checkbox"/> GRAVEL [7]	<u>10</u>	<input checked="" type="checkbox"/> SILT [2]	<u>40</u>
<input type="checkbox"/> SAND [6]	<u>80</u>	<input type="checkbox"/> ARTIFICIAL [0]	
<input type="checkbox"/> BEDROCK [5]			

ORIGIN	
<input type="checkbox"/> LIMESTONE [1]	<input checked="" type="checkbox"/> TILES [1]
<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/> HARDPAN [0]
<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> RIP/RAP [0]
<input type="checkbox"/> LACUSTURINE [0]	<input type="checkbox"/> SHALE [1]
<input type="checkbox"/> COAL FINES [2]	

QUALITY	
<input checked="" type="checkbox"/> HEAVY [2]	<input type="checkbox"/> MODERATE [1]
<input type="checkbox"/> NORMAL [0]	<input type="checkbox"/> FREE [1]
<input checked="" type="checkbox"/> EXTENSIVE [2]	<input type="checkbox"/> MODERATE [1]
<input type="checkbox"/> NORMAL [0]	<input type="checkbox"/> NONE [1]

Substrate
1
Maximum
20

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

Comments

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

AMOUNT

Check ONE (Or 2 & average)

<u>0</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70cm [2]	<u>0</u> OXBOWS, BACKWATERS [1]
<u>1</u> OVERHANGING VEGETATION [1]	<u>0</u> ROOTWADS [1]	<u>0</u> AQUATIC MACROPHYTES [1]
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>0</u> BOULDERS [1]	<u>1</u> LOGS OR WOODY DEBRIS [1]
<u>0</u> ROOTMATS [1]		

<input type="checkbox"/> EXTENSIVE > 75% [1]
<input type="checkbox"/> MODERATE 25-75% [1]
<input type="checkbox"/> SPARSE 5-25% [3]
<input checked="" type="checkbox"/> NEARLY ABSENT < 5% [1]

Cover
Maximum
20
4

Comments

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Channel
Maximum
20
9

Comments

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

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

Indicate predominant land use(s) past 100m riparian.

Riparian
Maximum
10
10

Comments

5) **POOL / GLIDE AND RIFFLE / RUN QUALITY**

MAXIMUM DEPTH

Check ONE (ONLY)

<input type="checkbox"/> < 1m [6]
<input type="checkbox"/> 0.7-1m [4]
<input checked="" type="checkbox"/> 0.4-0.7m [2]
<input type="checkbox"/> 0.2-0.4m [1]
<input type="checkbox"/> < 0.2m [0]

CHANNEL WIDTH

Check ONE (Or 2 & average)

<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]
<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]
<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply

<input type="checkbox"/> TORRENTIAL [1]	<input checked="" type="checkbox"/> SLOW [1]
<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> INTERSTITIAL [1]
<input type="checkbox"/> FAST [1]	<input type="checkbox"/> INTERMITTENT [2]
<input type="checkbox"/> MODERATE [1]	<input type="checkbox"/> EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Pool / Current
Maximum
12
4

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 & average).

RIFFLE DEPTH

<input type="checkbox"/> BEST AREAS > 10cm [2]
<input type="checkbox"/> BEST AREAS > 10cm [1]
<input type="checkbox"/> BEST AREAS > 5cm [metric=0]

RUN DEPTH

<input type="checkbox"/> MAXIMUM > 50cm [2]
<input type="checkbox"/> MAXIMUM > 50cm [1]

RIFFLE / RUN SUBSTRATE

<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]
<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]
<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]

<input type="checkbox"/> NONE [2]
<input type="checkbox"/> LOW [1]
<input type="checkbox"/> MODERATE [0]
<input type="checkbox"/> EXTENSIVE [1]

Riffle / Run
Maximum
8
0

Comments

6) **GRADIENT** (15.9 ft/mi) ☐ VERY LOW / LOW [2-4] ☒ MODERATE [6-10] ☐ HIGH / VERY HIGH [10-6]

DRAINAGE AREA (3.6 mi²)

% POOL: _____

% GLIDE: 100

% RUN: _____

% RIFFLE: _____

Gradient
Maximum
10
10

AJ SAMPLED REACH

Check ALL that apply

METHOD

BOAT ☐ WAD ☐ LINE ☐ OTHER ☐

STAGE

1st sample pass-- 2nd

HIGH ☐ UP ☐ NORMAL ☐ LOW ☐ DRY ☐

CLARITY

1st sample pass-- 2nd

<20 cm ☐ 20-40 cm ☐ 40-70 cm ☐ >70 cm/CTB ☐

SECCI DEPTH ☐

meters

CANOPY

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

CJ RECREATION

POOL: ☐ >100ft ☐ >3ft

BJAESTHETICS

NUISANCE ALGAE ☐ INVASIVE MACROPHYTES ☐ EXCESS TURBIDITY ☐ DISCOLORATION ☐ FOAM/SCUM ☐ OIL SHEEN ☐ TRASH/LITTER ☐ NUISANCE ODOR ☐ SLUDGE DEPOSITS ☐ CSOS/SOS/OUTLETS ☐

DJ MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA

ACTIVE / HISTORIC / BOTH / NA

YOUNG SUCCESSION-OLD

SPRAY / SNAG / REMOVED

MODIFIED / DIPPED OUT / NA

LEVEED / ONE SIDED

RELOCATED / CUTOFFS

MOVING-BED LOAD-STABLE

ARMOURD / SLUMPS

ISLANDS / SCOURD

IMPOUNDED / DESICCATED

FLOOD CONTROL / DRAINAGE

EJ ISSUES

WWTP / CSO / NPDES / INDUSTRY

HARDENED / URBAN / DIRT & GRIME

CONTAMINATED / LANDFILL

BMPs-CONSTRUCTION-SEDIMENT

LOGGING / IRRIGATION / COOLING

BANK / EROSION / SURFACE

FALSE BANK / MANURE / LAGOON

WASH H₂O / TILE / H₂O TABLE

ACID / MINE / QUARRY / FLOW

NATURAL / WETLAND / STAGNANT

PARK / GOLF / LAWN / HOME

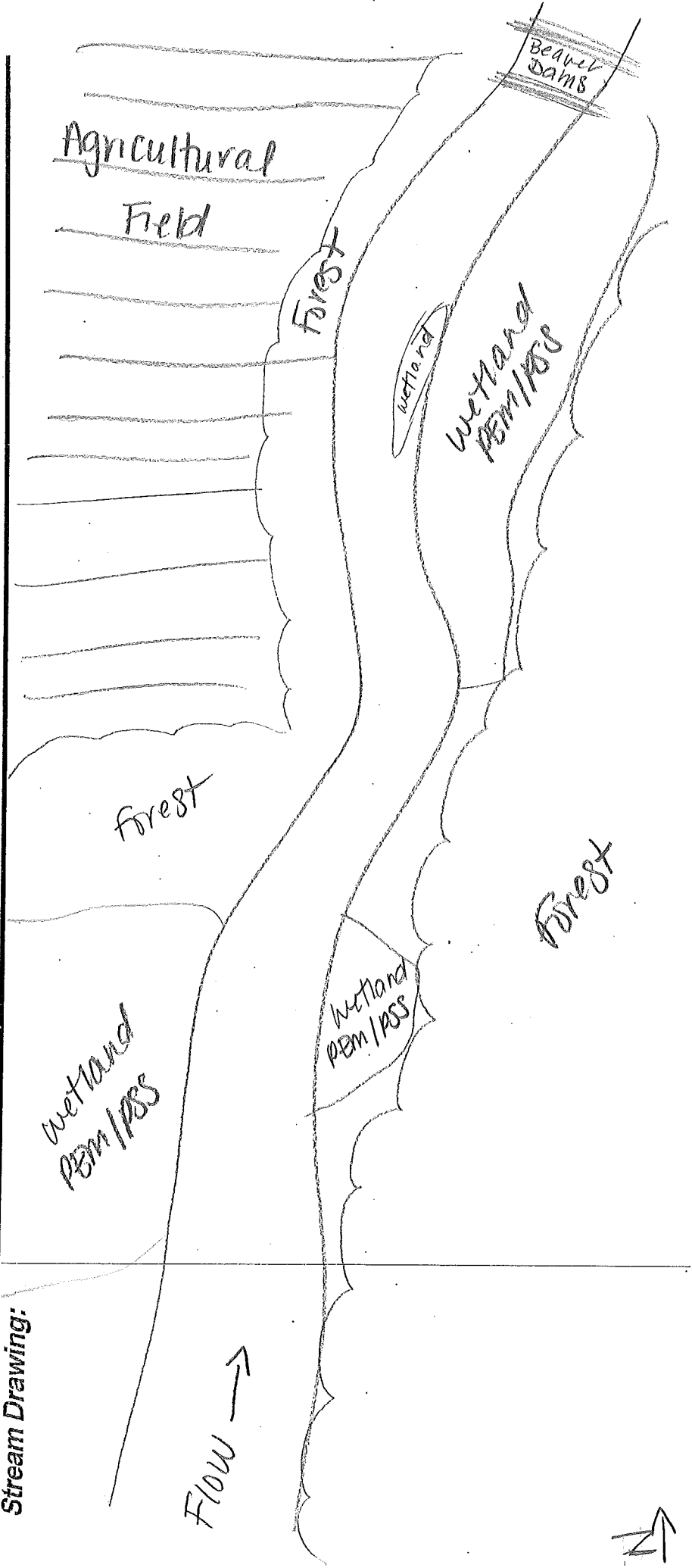
ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

width ☐ depth ☐ max depth ☐ bankfull width ☐ bankfull depth ☐ W/D ratio ☐ bankfull max depth ☐ flood prone x width ☐ entrench ratio ☐

Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 66Stream & Location: Brunstetter S-2aRM: _____ Date: 11/16/12Scorers Full Name & Affiliation: L. Sayre / EnviroScience

River Code: _____ STORET #: _____

Lat./Long.: 41.181188, 83.41Office verified location ☐

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

Check ONE (Or 2 & average)

BEST TYPES		OTHER TYPES	
POOL RIFFLE		POOL RIFFLE	
<input type="checkbox"/> BDR/SLABS [10]	_____	<input type="checkbox"/> HARDPAN [4]	_____
<input type="checkbox"/> BOULDER [9]	_____	<input type="checkbox"/> DETRITUS [3]	_____
<input checked="" type="checkbox"/> COBBLE [8]	<u>25</u>	<input type="checkbox"/> MUCK [2]	_____
<input checked="" type="checkbox"/> GRAVEL [7]	<u>35</u>	<input type="checkbox"/> SILT [2]	<u>20</u>
<input type="checkbox"/> SAND [6]	<u>20</u>	<input type="checkbox"/> ARTIFICIAL [0]	_____
<input type="checkbox"/> BEDROCK [5]	_____	(Score natural substrates; ignore sludge from point-sources)	

ORIGIN	
<input type="checkbox"/> LIMESTONE [1]	_____
<input checked="" type="checkbox"/> TILES [1]	_____
<input type="checkbox"/> WETLANDS [0]	_____
<input type="checkbox"/> HARDPAN [0]	_____
<input type="checkbox"/> SANDSTONE [0]	_____
<input type="checkbox"/> RIP/RAP [0]	_____
<input type="checkbox"/> LACUSTURINE [0]	_____
<input type="checkbox"/> SHALE [1]	_____
<input type="checkbox"/> COAL FINES [2]	_____

QUALITY	
<input type="checkbox"/> HEAVY [2]	_____
<input type="checkbox"/> MODERATE [1]	_____
<input checked="" type="checkbox"/> NORMAL [0]	_____
<input type="checkbox"/> FREE [1]	_____
<input type="checkbox"/> EXTENSIVE [2]	_____
<input type="checkbox"/> MODERATE [1]	_____
<input checked="" type="checkbox"/> NORMAL [0]	_____
<input type="checkbox"/> NONE [1]	_____

Substrate
16
Maximum
20NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Comments _____

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

AMOUNT

Check ONE (Or 2 & average)

<input type="checkbox"/> UNDERCUT BANKS [1]	<u>0</u>	<input type="checkbox"/> POOLS > 70cm [2]	<u>0</u>	<input type="checkbox"/> OXBOWS / BACKWATERS [1]	<u>0</u>
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<u>0</u>	<input type="checkbox"/> ROOTWADS [1]	<u>0</u>	<input type="checkbox"/> AQUATIC MACROPHYTES [1]	<u>2</u>
<input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<u>0</u>	<input type="checkbox"/> BOULDERS [1]	<u>0</u>	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<u>2</u>
<input type="checkbox"/> ROOTMATS [1]	<u>0</u>				

<input type="checkbox"/> EXTENSIVE > 75% [1]	_____
<input type="checkbox"/> MODERATE 25-75% [7]	_____
<input checked="" type="checkbox"/> SPARSE 5-25% [3]	_____
<input type="checkbox"/> NEARLY ABSENT < 5% [1]	_____

Cover
Maximum
20

Comments _____

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [0]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input checked="" type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Channel
Maximum
20

Comments _____

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

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

Indicate predominant land use(s) past 100m riparian.

Riparian
Maximum
10

Comments _____

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check ONE (ONLY!)

<input type="checkbox"/> > 1m [6]
<input type="checkbox"/> 0.7-1m [4]
<input type="checkbox"/> 0.4-0.7m [2]
<input checked="" type="checkbox"/> 0.2-0.4m [1]
<input type="checkbox"/> < 0.2m [0]

CHANNEL WIDTH

Check ONE (Or 2 & average)

<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]
<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]
<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply

<input type="checkbox"/> TORRENTIAL [1]	<input checked="" type="checkbox"/> SLOW [1]
<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> INTERSTITIAL [1]
<input type="checkbox"/> FAST [1]	<input type="checkbox"/> INTERMITTENT [2]
<input checked="" type="checkbox"/> MODERATE [1]	<input type="checkbox"/> EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)Pool /
Current
Maximum
12

Comments _____

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 & average).

[] NO RIFFLE [metric=0]

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

Riffle /
Run
Maximum
8

Comments _____

6] GRADIENT (17.3 ft/mi) ☐ VERY LOW / LOW [2-4] ☐ MODERATE [6-10] ☐ HIGH / VERY HIGH [10-6]DRAINAGE AREA (5.08 mi²)

% POOL: _____

% GLIDE: _____

Gradient
Maximum
10

% RUN: _____

% RIFFLE: _____

Maximum
10

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

STAG-HOD

□ DRY □

VIII

☐ $> 70 \text{ cm/CTB}$ ☐

10%~30%

100% 100% 100%

100

二、

تاریخ

100

USADIS / SUNY ISI
EJMHOTG / CTJONWY

PARK / GOLF / LAWN / HOME

entrench ratio

[illegible]



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **68**

Stream & Location: Brunsketter S-26

RM: _____ Date: 11/16/12

Scorers Full Name & Affiliation: L. Sayre / EnviroScience
River Code: _____ STORET #: _____ Lat./Long.: 41.1810 180.8314 Office verified location ☐
(NAD 83 - decimal)

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

BEST TYPES		OTHER TYPES	
<input type="checkbox"/> SLUR/SLABS [10]	<input type="checkbox"/> POOL RIFFLE	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> POOL RIFFLE
<input type="checkbox"/> BOULDER [1]	<input type="checkbox"/> 10	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/> 25
<input type="checkbox"/> COBBLE [8]	<input type="checkbox"/> 20	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/> 5
<input type="checkbox"/> GRAVEL [7]	<input type="checkbox"/> 40	<input type="checkbox"/> SILT [2]	<input type="checkbox"/> (Score natural substrates; ignore sludge from point-sources)
<input checked="" type="checkbox"/> SAND [5]		<input type="checkbox"/> ARTIFICIAL [0]	
<input type="checkbox"/> DRIFT [1]			

ORIGIN		QUALITY	
<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> SILT	<input type="checkbox"/> HEAVY [2]	<input type="checkbox"/> MODERATE [1]
<input checked="" type="checkbox"/> TILLS [1]	<input type="checkbox"/> EMBEDDEDNESS	<input type="checkbox"/> NORMAL [0]	<input type="checkbox"/> POOR [1]
<input type="checkbox"/> WETLANDS [0]		<input type="checkbox"/> EXTENSIVE [4]	<input type="checkbox"/> MODERATE [1]
<input type="checkbox"/> HARDPAN [0]		<input type="checkbox"/> NORMAL [0]	<input type="checkbox"/> POOR [1]
<input type="checkbox"/> SANDSTONE [0]		<input type="checkbox"/> NONFILL [0]	
<input type="checkbox"/> RIP/RAP [0]			
<input type="checkbox"/> LACUSTURINE [0]			
<input type="checkbox"/> SHALE [1]			
<input type="checkbox"/> COAL FINES [2]			

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

Comments

Substrate
Maximum
7
20

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

AMOUNT	
<input type="checkbox"/> UNDERCUT BANKS [1]	<input type="checkbox"/> POOLS > 70cm [2]
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]
<input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/> BOULDERS [1]
<input type="checkbox"/> ROOTMATS [1]	<input type="checkbox"/> OXBOWS / BACKWATERS [1]
	<input type="checkbox"/> AQUATIC MACROPHYTES [1]
	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]

Comments

Cover
Maximum
6
20

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [0]	<input type="checkbox"/> HIGH [3]
<input checked="" type="checkbox"/> MODERATE [3]	<input checked="" type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

Channel
Maximum
16
20

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)
River right looking downstream

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

Comments

Riparian
Maximum
10
10

5] **POOL / GLIDE AND RIFFLE / RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY
<input type="checkbox"/> 5-10m [8]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [1]
<input type="checkbox"/> 10-25m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input checked="" type="checkbox"/> SLOW [1]
<input checked="" type="checkbox"/> 25-50m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> VERY FAST [1]
<input type="checkbox"/> 50-75m [1]		<input type="checkbox"/> INTERSTITIAL [1]
<input type="checkbox"/> 75-100m [0]		<input type="checkbox"/> FAST [1]
		<input checked="" type="checkbox"/> MODERATE [1]
		<input type="checkbox"/> INTERMITTENT [2]
		<input type="checkbox"/> EDDIES [1]

Comments

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Pool /
Current
Maximum
6
12

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

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

Comments

Riffle /
Run
Maximum
3
8

6] **GRADIENT** 17.3 ft/mi
DRAINAGE AREA 15.08 mi²

%POOL: _____ %GLIDE: _____
%RUN: _____ %RIFFLE: _____

Gradient
Maximum
10
10

AJ SAMPLED REACH

Check ALL that apply

METHOD

1st sample pass-2nd

POART ☐ WAD ☐ L LINE ☐ OTHER ☐

STAGE

HIGH ☐ UP ☐ NORMAL ☐ LOW ☐ DRY ☐

DISTANCE

0.5 Km ☐ 0.2 Km ☐ 0.15 Km ☐ 0.12 Km ☐ OTHER ☐

CLARITY

1st sample pass-2nd

<20 cm ☐ 20-40 cm ☐ 40-70 cm ☐ >70 cm / CTB ☐

SECCI DEPTH ☐

meters

CANOPY

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

CJ RECREATION

AREA DEPTH

POOL: ☐ >100ft ☐ >3ft

BJ AESTHETICS

NUISANCE ALGAE ☐ INVASIVE MACROPHYTES ☐ EXCESS TURBIDITY ☐ DISCOLORATION ☐ FOAM / SCUM ☐ OIL / SHEEN ☐ TRASH / LITTER ☐ NUISANCE ODOR ☐ SLUDGE DEPOSITS ☐ CSO / SSO / OUTFALLS ☐

DJ MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA

ACTIVE / HISTORIC / BOTH / NA

YOUNG SUCCESSION-OLD

SPRAY / SNAG / REMOVED

MODIFIED / DIPPED OUT / NA

LEVEED / ONE SIDED

RELOCATED / CUTOFFS

MOVING-BEDLOAD-STABLE

ARMOURD / SLUMPS

ISLANDS / SCOURD

IMPOUNDED / DESICCATED

FLOOD CONTROL / DRAINAGE

EJ ISSUES

WWTP / CSO / NPDES / INDUSTRY

HARDENED / URBAN / DIRT & GRIME

CONTAMINATED / LANDFILL

BMPs-CONSTRUCTION-SEDIMENT

LOGGING / IRRIGATION / COOLING

BANK / EROSION / SURFACE

FALSE BANK / MANURE / LAGOON

WASH H₂O / TILE / H₂O TABLE

ACID / MINE / QUARRY / FLOW

NATURAL / WETLAND / STAGNANT

PARK / GOLF / LAWN / HOME

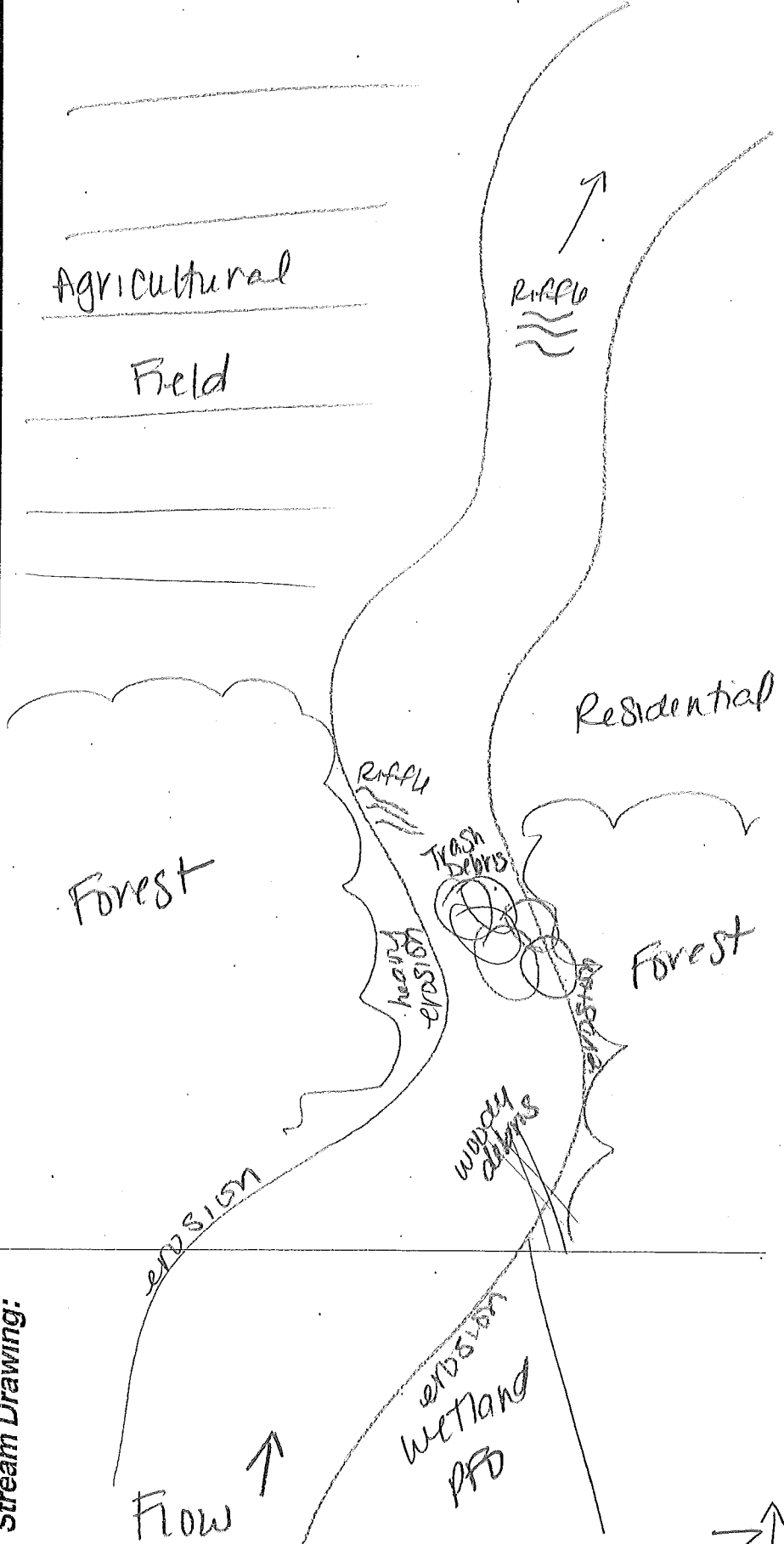
ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

width ☐ depth ☐ max depth ☐ bankfull width ☐ bankfull depth ☐ W/D ratio ☐ bankfull max depth ☐ flood prone x width ☐ entrench ratio ☐

Legacy Tree:

Stream Drawing:



Attachment C

ODNR Correspondence Pertaining to Threatened and Endangered Species



December 14, 2012

BY EMAIL

John Kessler, P.E.
Ohio Division of Natural Resources
Office of Real Estate
2045 Morse Road, Building E-2
Columbus, Ohio 43229-6693

**RE: The East Ohio Gas Company
Ohio Endangered Species Consultation
Brunstetter Connector**

Dear Mr. Kessler:

Please review the following information regarding the East Ohio Gas Company (EOG) Brunstetter Connector project. To assist with your review of the project area, project maps and photographs are enclosed.

Project Purpose, Description, and Location

EOG proposes to install approximately 2,500 feet of new 12-inch natural gas pipeline to connect the existing EOG Brunstetter Station to Line 264. The Brunstetter Connector project is located directly west of the intersection of Brunstetter Road and Highland Avenue in the City of Lordstown, Trumbull County, Ohio. Construction will be limited to a right-of-way (ROW) of 60 feet wide along the proposed pipeline. The Brunstetter Connector project will require minor tree and shrub clearing to complete the project and will cross two (2) streams and four (4) wetlands. All proposed activities involved will follow those authorized in the U.S. Army Corps of Engineers 2012 Nationwide Permits for a NWP #12 (Utility Line Activities). After all work is completed, grades will be returned to pre-construction contours.

The center latitude and longitude coordinates for the project area are 41.181032°N and -80.833727°W.

Site Description

An ecological survey of the project area was conducted in November 2012. The site map (Attachment A; Figure 1) from the survey and a topographic map (Attachment A; Figure 2) of the project area are included. Additionally, photographs of the site are enclosed in Attachment B.

The upland portion of the project area exists as agricultural field, maintained lawn, new field, and forest. Typical vegetation in the agricultural field includes remnant corn (*Zea mays*), Kentucky bluegrass (*Poa pratensis*), dandelion (*Taraxacum officinale*), and ground ivy (*Glechoma hederacea*) in the herbaceous layer. The maintained lawn includes Kentucky bluegrass, common dandelion, white clover (*Trifolium repens*), narrow plantain (*Plantago lanceolata*), and ground ivy in the herbaceous stratum. Typical vegetation in the new field includes multiflora rose (*Rosa multiflora*), blackberry (*Rubus allegheniensis*), and glossy buckthorn (*Rhamnus frangula*) in the shrub layer and orchard grass (*Dactylis glomerata*) and late goldenrod (*Solidago gigantea*) in the herbaceous layer. Typical vegetation in the forest includes sugar maple (*Acer saccharum*), pin oak (*Quercus palustris*), green ash (*Fraxinus pennsylvanica*), and Eastern white pine (*Pinus strobus*) in the tree layer.

Four (4) wetlands (W-1, W-2, W-3, and W-4) exist within the project area. W-1, W-2 and W-3 consist of a mix of palustrine emergent and palustrine scrub/shrub (PEM/PSS) vegetation. Typical vegetation found in the PEM/PSS wetlands includes reed canary grass (*Phalaris arundinacea*), stinging nettle (*Urtica dioica*), and fowl manna grass (*Glyceria striata*) in the herbaceous stratum and glossy buckthorn, Northern arrowwood (*Viburnum recognitum*), and silky dogwood (*Cornus amomum*) in the scrub/shrub layer. W-4 is dominated by palustrine forested (PFO) vegetation. Typical vegetation found in the PFO wetland includes American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), glossy buckthorn, Northern arrowwood, and wood reed grass (*Cinna arundinacea*). Temporary wetland impacts will be limited to a 50-foot construction width. All impacts to wetlands will be temporary and impacted areas will be restored to pre-construction contours.

Two (2) streams (S-1 and S-2) exist within the project area and are shown on Figure 1 (Attachment A). S-1 is classified as a perennial stream and is flowing north offsite and eventually into S-2. S-2 crosses the project area twice and is also classified as a perennial stream. S-2 is flowing north and east offsite into Mud Creek, a tributary of the Mahoning River. Temporary stream impacts will be limited to a 50-foot construction width. All impacts to streams will be temporary and impacted areas will be restored to pre-construction contours.

The project area was reviewed for trees that could provide habitat for the federally endangered Indiana bat. Ten (10) potential roosting trees (PRTs) were identified within or near the project area. The Indiana bat may use these trees as summer roosting habitat between April 1 and September 30. Presently, seven (7) of the PRTs may need to be cut to safely conduct the work. If clearing is necessary, EOG proposes to cut PRTs between October 1 and March 31. The locations of these trees are indicated on Attachment A; Figure 1. Photographs of representative trees are included in Attachment B.

Request for Finding

Considering the information above, EOG is requesting a finding from ODNR regarding any adverse effect to any state-listed species and natural areas with ecological and/or

geological significance. This project is anticipated to begin in February 2013. Therefore, a timely response is respectfully requested to ensure compliance relative to state-listed endangered species prior to initiating activities.

An email response would be greatly appreciated. Please send the email to Tara Milette at Tara.E.Milette@dom.com. If you have any questions or need additional information, please contact Tara Milette at (330) 664-2579.

Sincerely,

A handwritten signature in blue ink that reads "Lisa C. Moerner". The signature is written in a cursive style with a large initial "L".

Lisa C. Moerner

Director, Environmental Sustainability and Gas Environmental Services

Enclosures

cc: Tara Milette

Attachment A
(Maps)

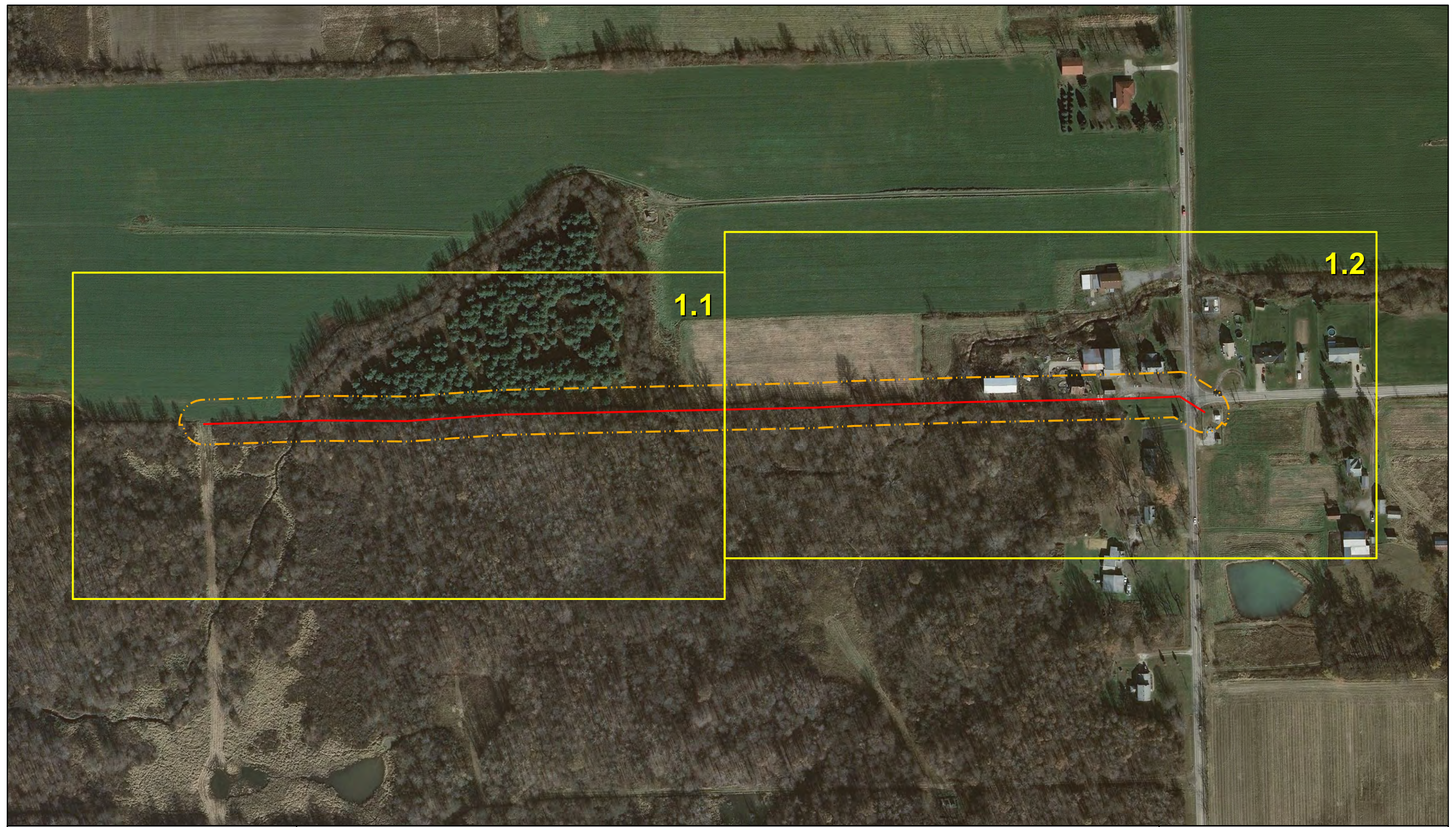


Figure 1. Site Overview Map
of Wetlands and Other Resources.
Brunstetter Connector.

— Pipeline
- - - Project Area



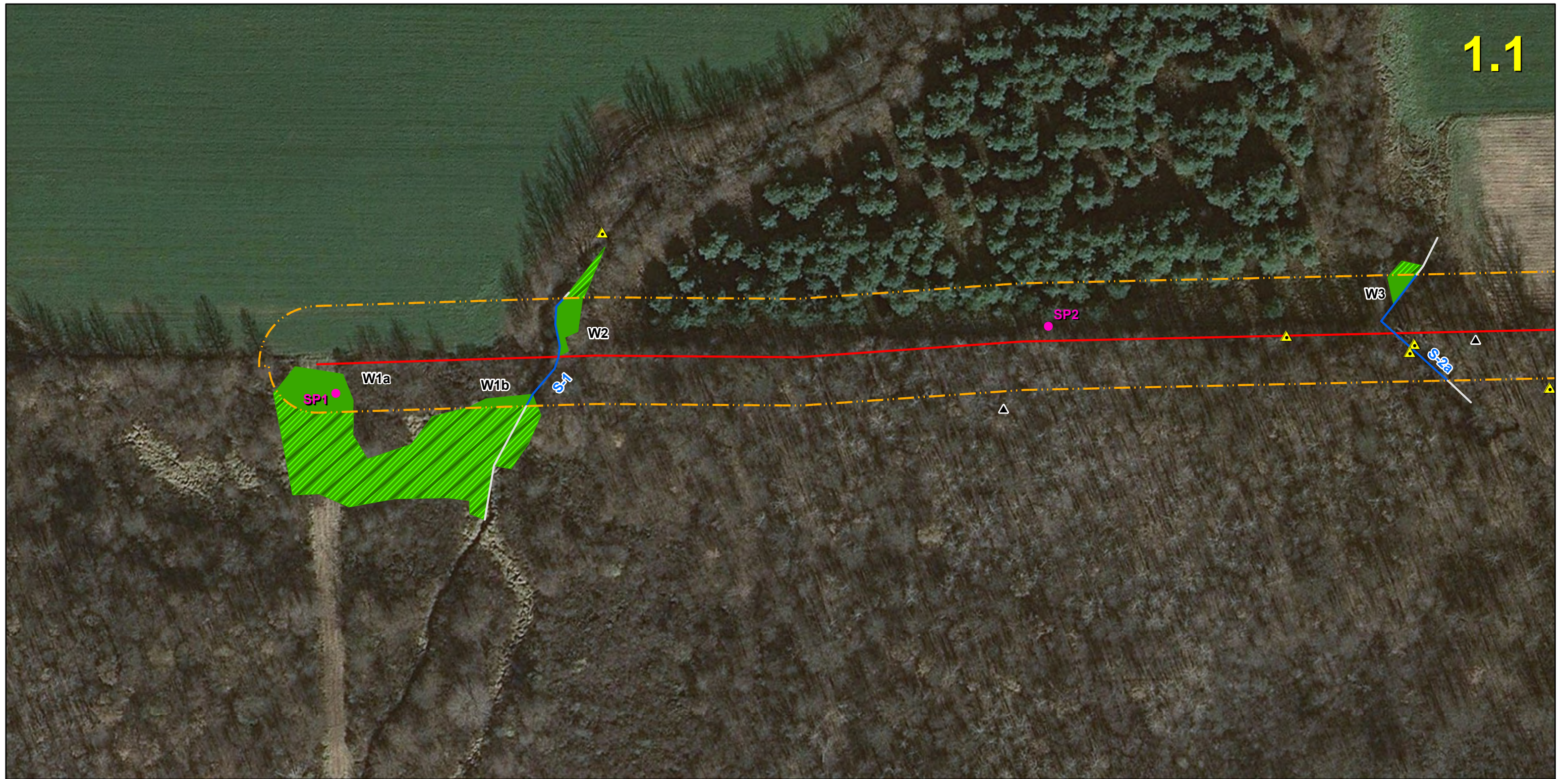


Figure 1.1. Site Map of Wetlands and Other Water Resources.
Brunstetter Connector.

- | | | | |
|-------------------|----------------------|-------------------|---------------------|
| ▲ PMRT | — Stream (Perennial) | ■ Wetland (PEMSS) | ■ Wetland (Offsite) |
| ▲ PRT | — Stream (Offsite) | ■ Wetland (PFO) | ■ Project Area |
| ● Sample Location | — Proposed Pipeline | | |

200 100 0 200 Feet

50 25 0 50 Meters



"Excellence in
Any Environment"



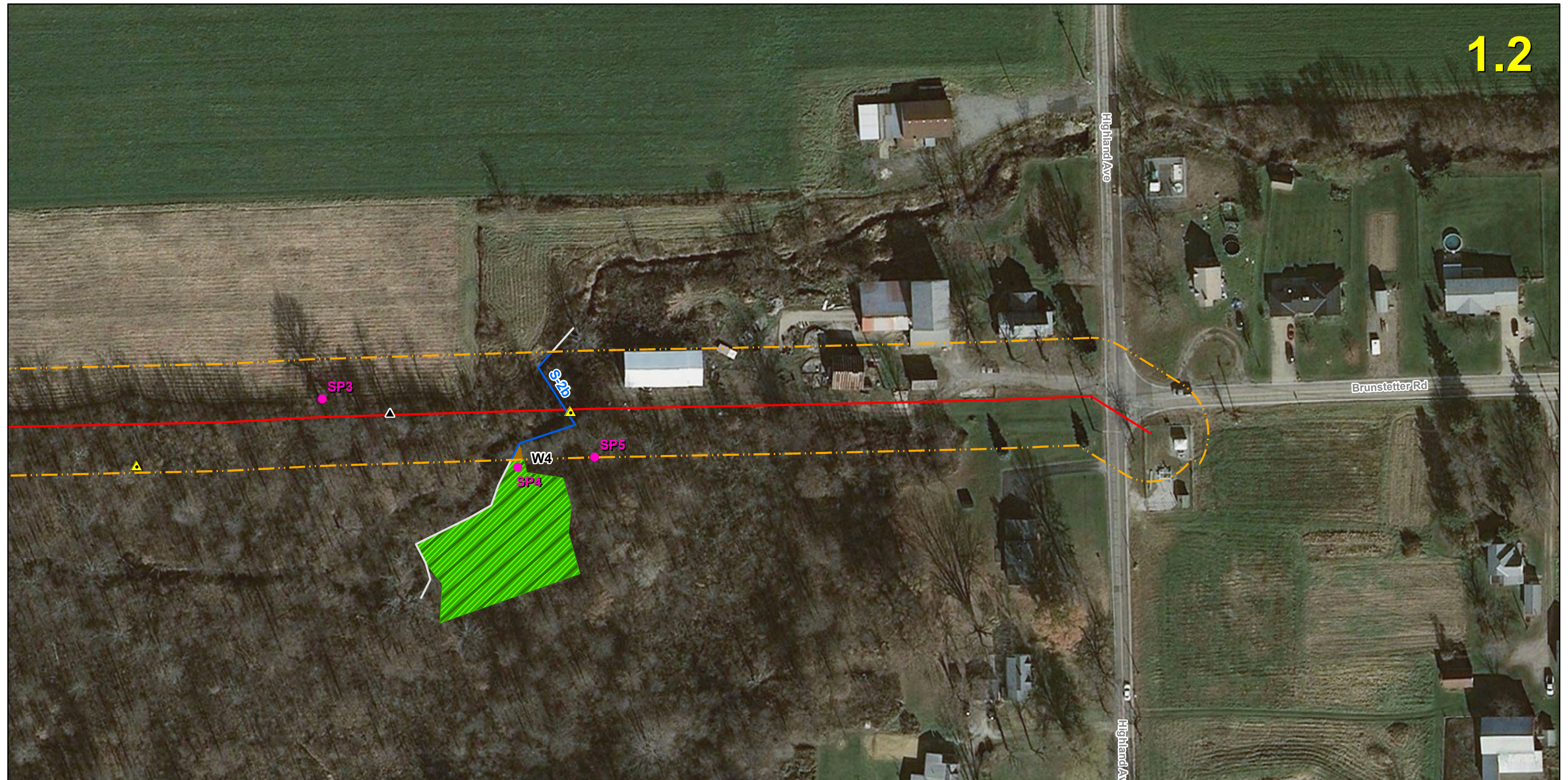


Figure 1.2. Site Map of Wetlands and Other Water Resources.
Brunstetter Connector.



- | | | | |
|-------------------|----------------------|-------------------|---------------------|
| ▲ PMRT | — Stream (Perennial) | ■ Wetland (PEMSS) | ■ Wetland (Offsite) |
| ▲ PRT | — Stream (Offsite) | ■ Wetland (PFO) | ■ Project Area |
| ● Sample Location | — Proposed Pipeline | | |

200 100 0 200 Feet

50 25 0 50 Meters



Attachment B
(Photographs)

Brunstetter Connector
Photographed November 15, 2012



Photo 1. Typical agricultural field within the project area.



Photo 2. Typical new field within the project area.

Brunstetter Connector
Photographed November 15, 2012



Photo 3. Typical forest within the project area.



Photo 4. Typical palustrine emergent and palustrine scrub/shrub wetland within the project area.

Brunstetter Connector
Photographed November 15, 2012



Photo 5. Typical palustrine forested wetland within the project area.



Photo 6. Typical perennial stream within the project area.

Brunstetter Connector
Photographed November 15, 2012

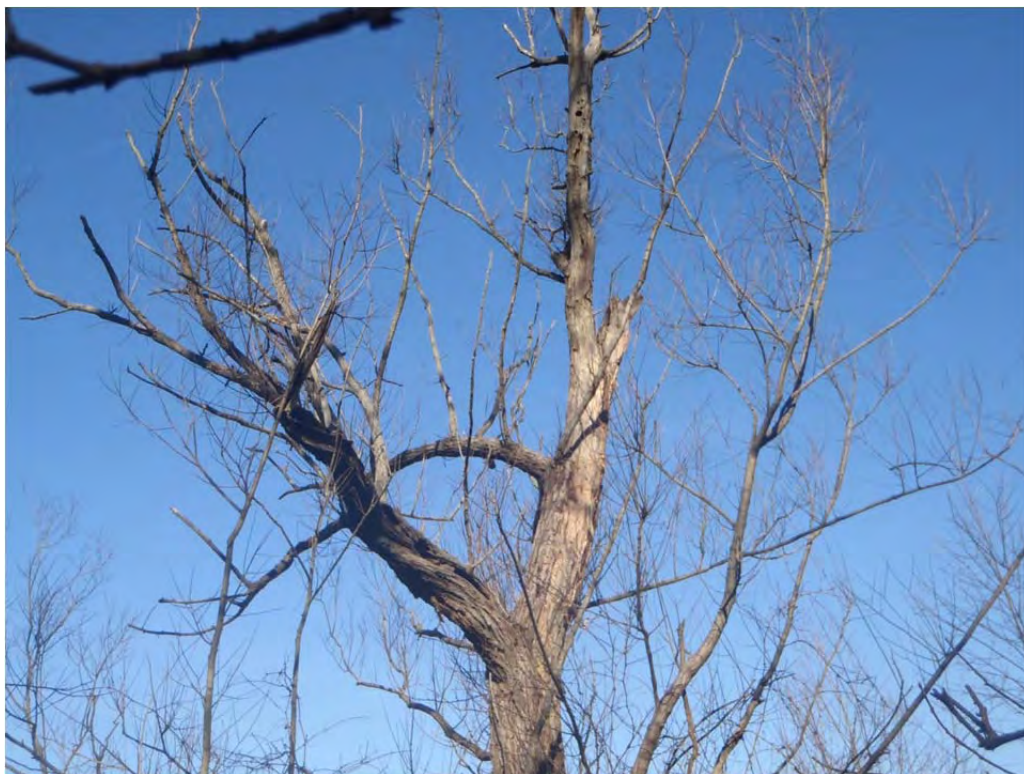


Photo 7. Typical potential roost tree within the project area.

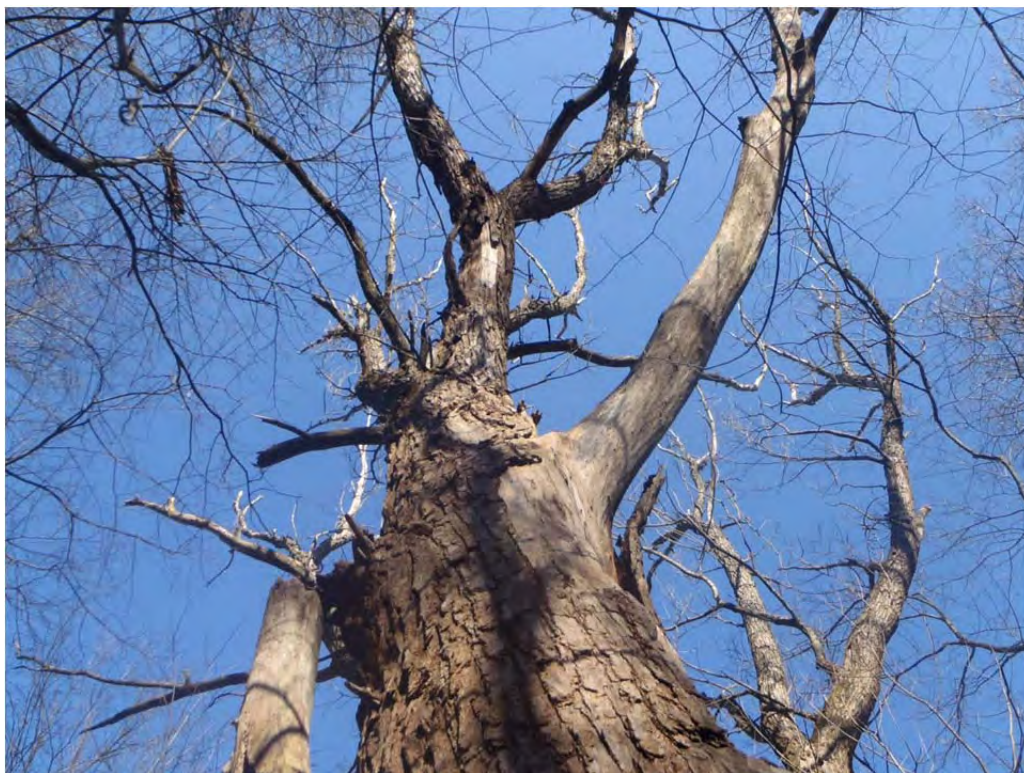


Photo 8. Typical potential roost tree within the project area.

Attachment D

**Preliminary Jurisdictional Determination (JD) Form and Aquatic Resource
Table**

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD):

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Mike Reed, Director, Gas Operations
The East Ohio Gas Company
320 Springside Drive, Suite 320
Akron, Ohio 44333

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

**D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT
DIFFERENT SITES)**

State: Ohio

County/parish/borough: Trumbull

City: Lordstown

Center coordinates of site (lat/long in degree decimal format):

Lat. 41.181032° N,

Long. -80.833727° W

Universal Transverse Mercator: 17 Easting (x) N Northing (y)

Name of nearest waterbody: Mahoning River

Identify (estimate) amount of waters in the review area:

Non-wetland waters: 450 linear feet: 15, 20 width (ft) and/or 0.192 acres.

Cowardin Class: Riverine

Stream Flow: Perennial

Wetlands: 0.119 acres.

Cowardin Class: Forested and Emergent/Scrub/Shrub

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: N/A

Non-Tidal: N/A

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination.

Date:

☐ Field Determination.

Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.


This preliminary JD finds that there "*may be*" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☐ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - ☐ Office concurs with data sheets/delineation report.
 - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☐ U.S. Geological Survey Hydrologic Atlas:
 - ☐ USGS NHD data.
 - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name:
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation:
- ☐ National wetlands inventory map(s). Cite name:
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date):
☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

 12/19/12
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining the
signature is impracticable)

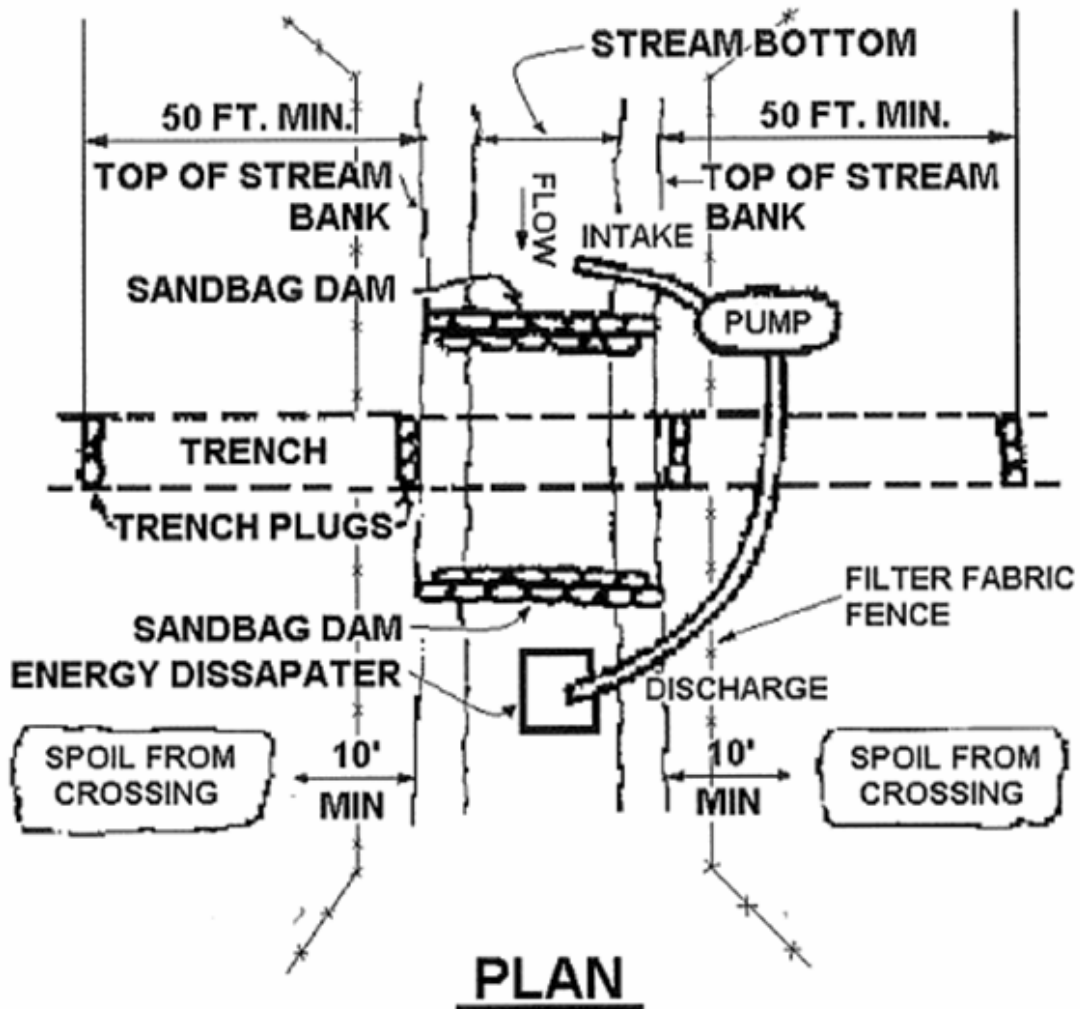
Project Location Information Table
Brunstetter Connector

Site number		Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area (acres or linear feet)	Class of aquatic resource
W-1	a	41.181003	-80.838188	PEM/PSS	0.066 ac.	non-section 10 – wetland
	b	41.180963	-80.837474		0.015 ac.	
W-2		41.181189	-80.837241	PEM/PSS	0.025 ac.	non-section 10 – wetland
W-3		41.181245	-80.834119	PEM/PSS	0.011 ac.	non-section 10 – wetland
W-4		41.181006	-80.831629	PFO	0.002 ac.	non-section 10 – wetland
S-1		41.181084	-80.837279	R2	125 lf, 0.043 ac.	non-section 10 – non-wetland
S-2	a	41.181112	-80.834144	R2	153 lf, 0.070 ac.	non-section 10 – non-wetland
	b	41.181090	-80.831416		172 lf, 0.079 ac.	

Attachment E
Typical Construction Drawings

DETAIL B-2

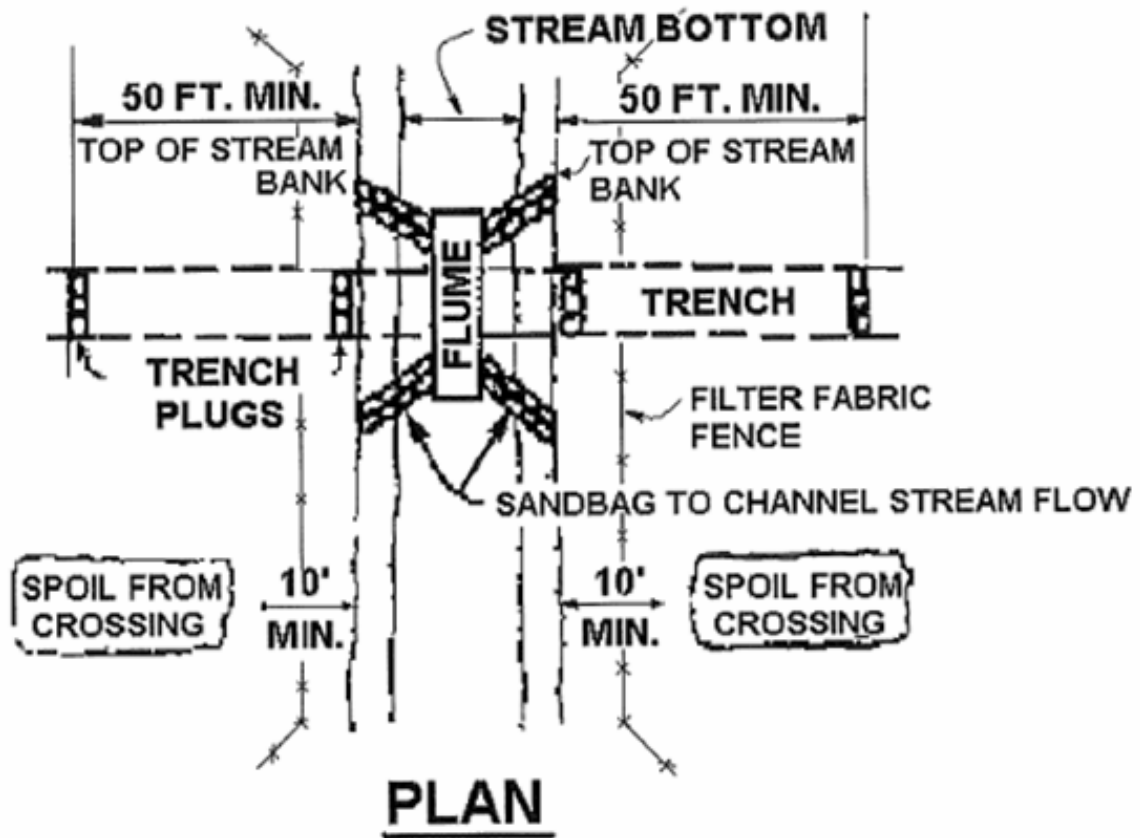
TYPICAL STREAM CROSSING WITH PUMPED BYPASS



Note: A secondary dam may be needed to completely dry the streambed. A sump pump pumping behind the primary dam can usually handle this task.

DETAIL B-3

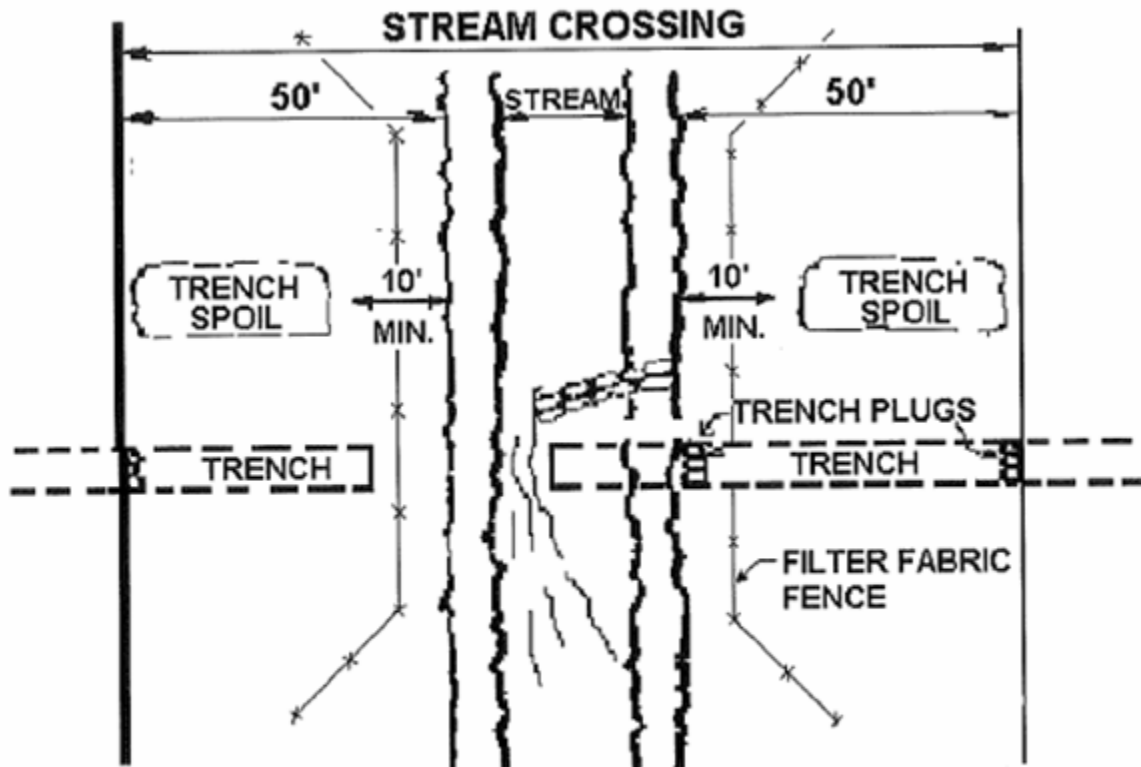
TYPICAL FLUMED STREAM CROSSING



Note: Scour prevention at the downstream end of the flume pipe should be considered.

DETAIL B-4

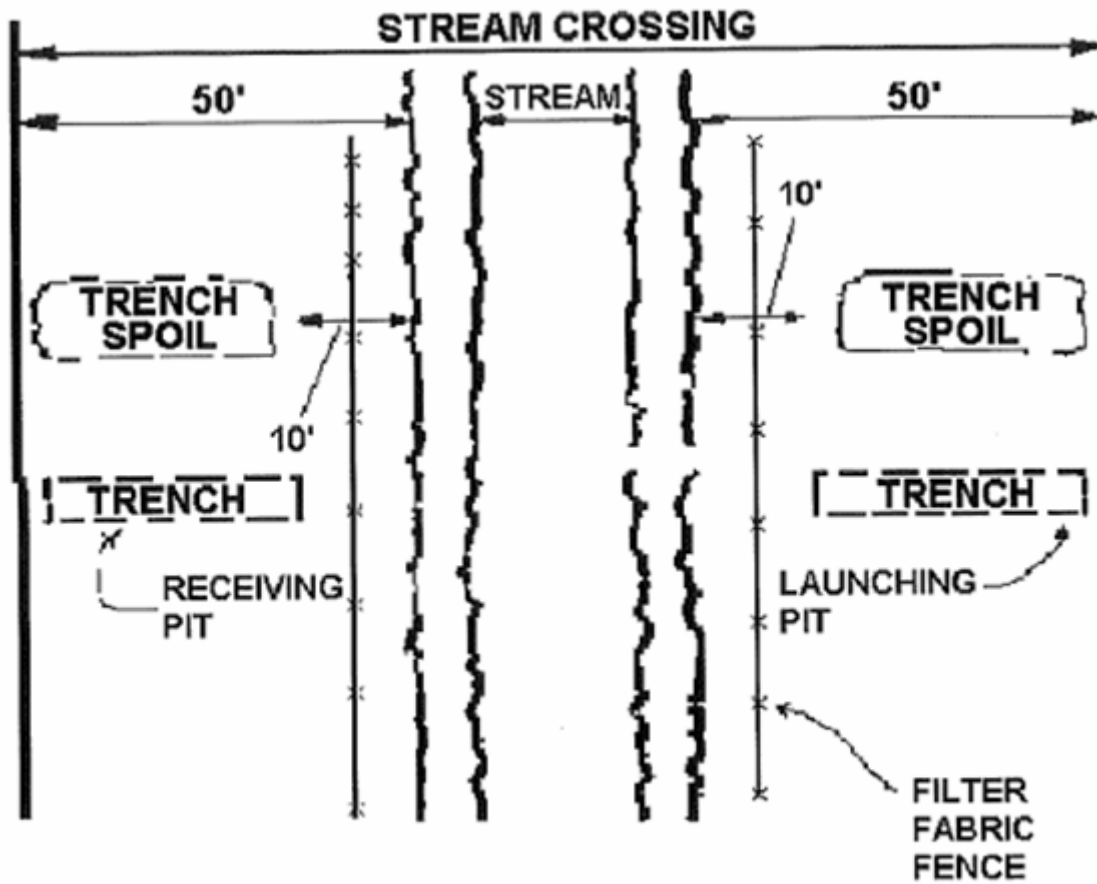
TYPICAL DIVERSION BARRIER STREAM CROSSING



PLAN
N.T.S

DETAIL B-5

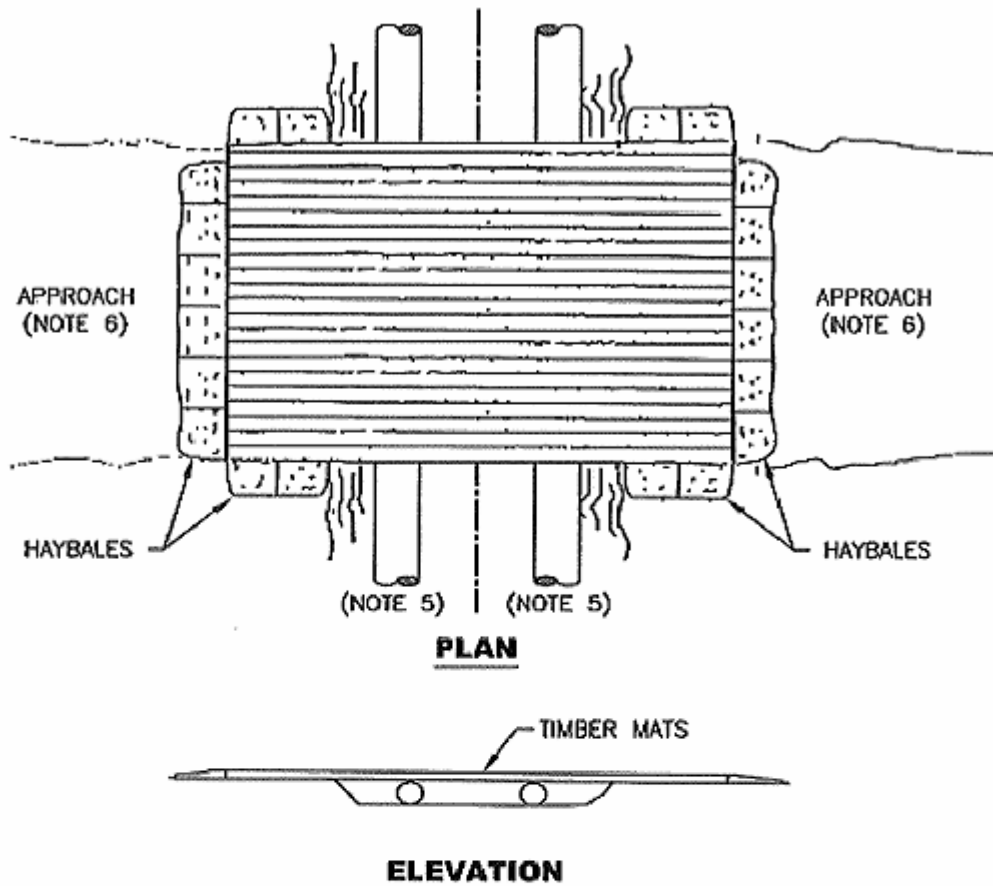
TYPICAL BORED STREAM CROSSING



PLAN
N.T.S

DETAIL B-6

TYPICAL TIMBER MAT BRIDGE FOR STREAM CROSSINGS

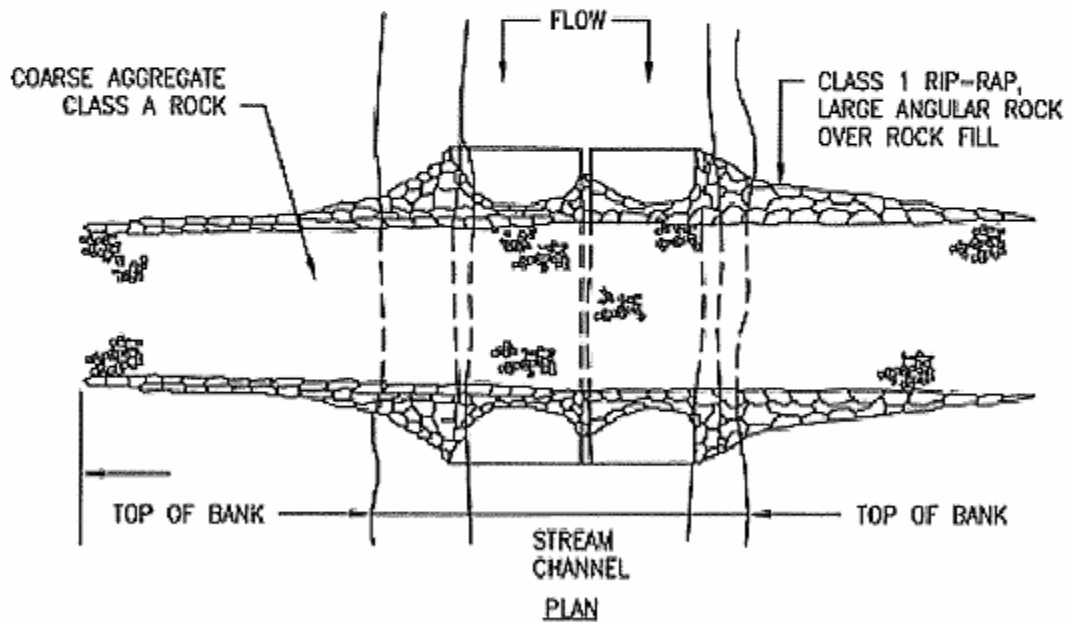
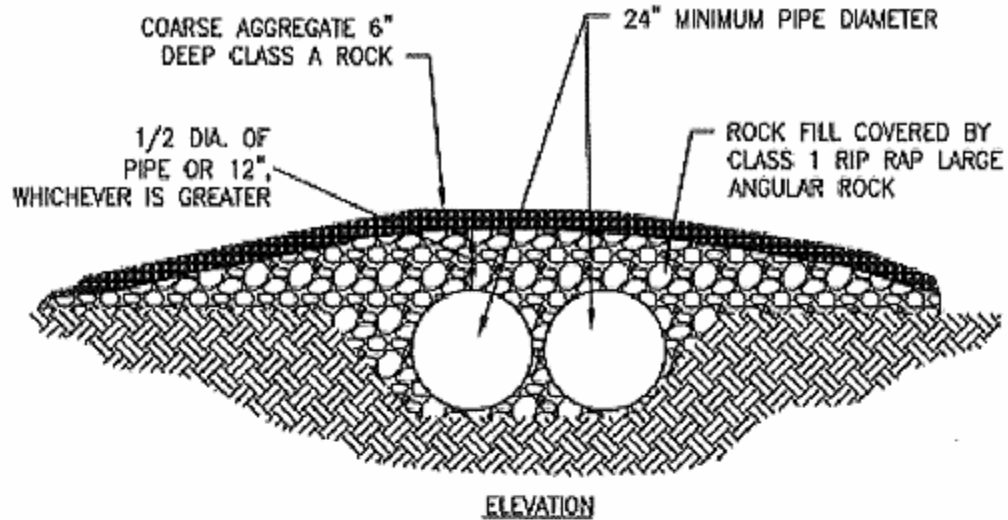


NOTES:

1. THIS TYPE OF BRIDGE IS GENERALLY USED FOR SMALL STREAM CROSSINGS LESS THAN 20 FEET IN WIDTH IN COMBINATION WITH A PROPER STREAM BANK CONFIGURATION.
2. BRIDGE WILL BE TEMPORARILY REMOVED IF HIGH WATER RENDERS IT UNSAFE FOR CROSSING.
3. BRIDGE TO REMAIN IN PLACE UNTIL THE COMPLETION OF FINAL RESTORATION.
4. FILTER SOCKS ARE RECOMMENDED IN LIEU OF STRAW BALES, SAND BAGS, AND SILT FENCE. REMOVE DURING USE; REPLACE AT NIGHT AND WHEN CROSSING IS NOT BEING USED.
5. CULVERT PIPES MAY BE UTILIZED IF ADDITIONAL SUPPORT IS REQUIRED.
6. RAMP APPROACHES CAN BE EITHER GRADED OR DUG INTO GROUND IF NECESSARY, STONE MAY BE USED ON APPROACHES.
7. MAINTAIN PADS TO PREVENT SOIL FROM ENTERING STREAM.

DETAIL B-7

TYPICAL FLUMED EQUIPMENT CROSSING



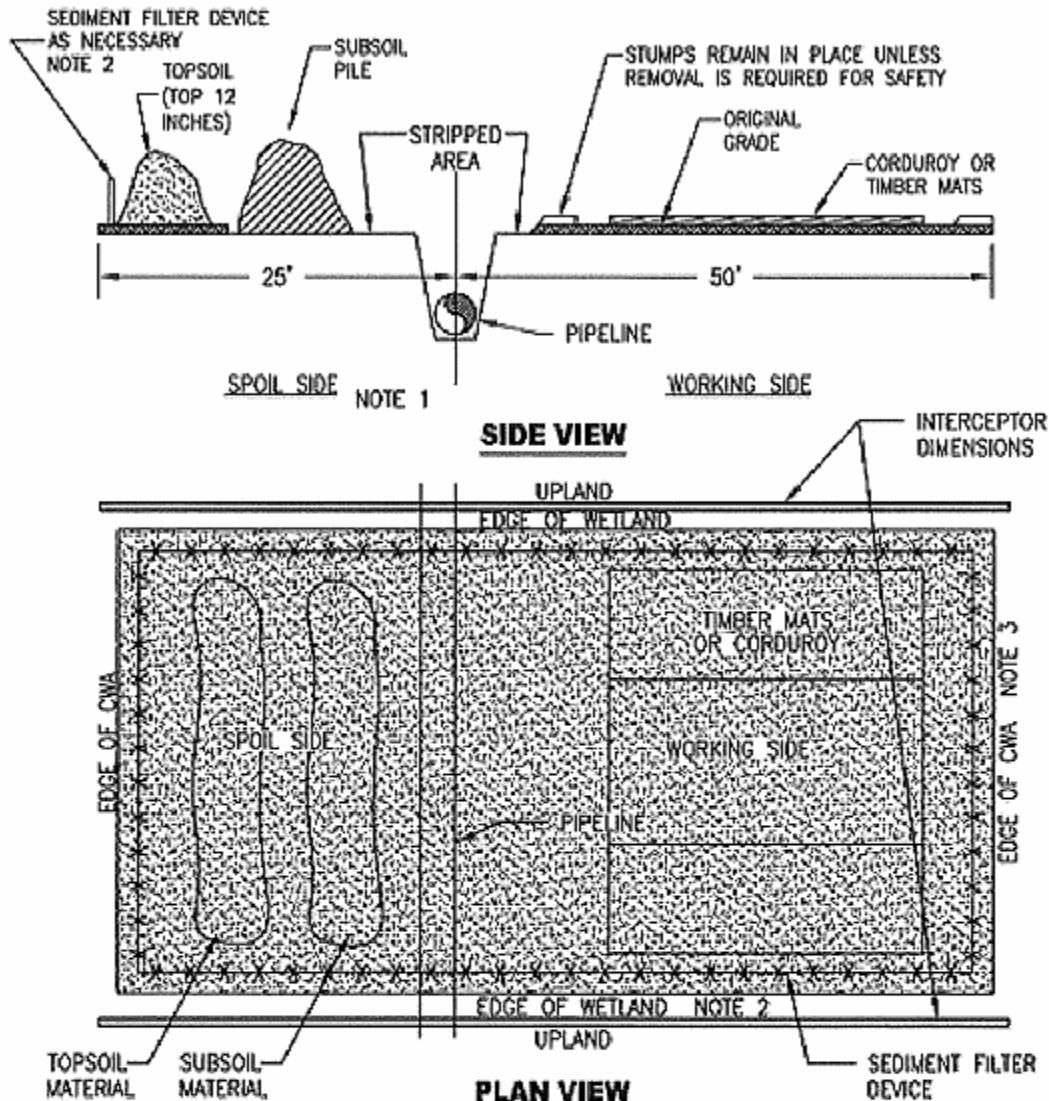
GENERAL NOTES:

1. NOT TO SCALE
2. THIS TYPE OF CROSSING CAN BE INSTALLED IN BOTH WET OR DRY WEATHER STREAM CONDITIONS WHERE THE DRAINAGE AREA EXCEEDS 10 ACRES.
3. A CULVERTED CROSSING MAY NOT BE APPROVED IN HIGH FISHERY VALUE STREAMS.

FLUMED EQUIPMENT CROSSING

DETAIL B-8

TYPICAL CONVENTIONAL WETLAND CROSSING



NOTES:

- 1: IN WETLAND AREAS WHICH CONTAIN NO STANDING WATER OR SATURATED SOILS, TOPSOIL (TOP 12 INCHES) AND SUBSOIL SHOULD BE STOCKPILED SEPARATELY WITHIN THE WETLAND CWA. TOPSOIL SHOULD BE DISTINGUISHED FROM SUBSOIL BY A COMMUNICATING DEVICE (FLAGGING, RIBBON, OR OTHER EFFECTIVE DEVICE).
- 2: A SEDIMENT FILTER DEVICE WILL BE PLACED ACROSS THE CWA AT THE WETLAND'S EDGE.
- 3: A SEDIMENT FILTER DEVICE WILL BE PLACED AT THE EDGE OF THE CWA AND AROUND TOPSOIL AND SUBSOIL PILES AS NECESSARY.

Attachment F
Phase I Cultural Resource Study

**PHASE I CULTURAL RESOURCES SURVEY
FOR THE BRUNSTETTER CONNECTOR
IN WARREN TOWNSHIP, TRUMBULL COUNTY, OHIO**

Lead Agency:

U.S. Army Corps of Engineers

Submitted to:

The East Ohio Gas Company
320 Springside Drive, Suite 320
Akron, Ohio 44333

Prepared by:

Norman A. Haywood, M.A., R.P.A.
Archaeological Principal Investigator

December 2012



This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

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in

Case No(s). 13-0203-GA-BNR

Summary: Correspondence Transmitting for Filing Staff Requested Documents - Part 5
electronically filed by Teresa Orahod on behalf of Dominion East Ohio Gas