Large Filing Separator Sheet

Case Number: 06-1357-EL-BTX

File Date: 10/31/07

Section: 2 of 2

Number of Pages: 134

Description of Document: Application for certificate

APPENDIX 07-1

WETLAND DELINEATION, STREAM ASSESSMENT, AND THREATENED AND ENDANGERED SPECIES HABITAT SURVEY

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ADDENDUM WETLAND DELINEATION, STREAM ASSESSMENT, AND THREATENED AND ENDANGERED SPECIES HABITAT SURVEY

345 kV ELECTRIC TRANSMISSION LINE FOR THE PROPOSED 1,000 MW GENERATION FACILITY, LETART FALLS, MEIGS COUNTY, OHIO

Prepared for:
AMERICAN MUNICIPAL POWER-OHIO, INC.

JOB NO: 14946376
SEPTEMBER 2006

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Appendix

EXECUTIVE SUMMARY

This addendum jurisdictional wetland delineation, stream assessment, and threatened and endangered species survey was conducted along a five-mile long, two hundred foot wide project corridor, and an approximately six-acre proposed switchyard located in Meigs County, Ohio. American Municipal Power-Ohio, Inc. (AMP-Ohio) is proposing construction of a 345 kV electric transmission line from its proposed 1,000-MW pulverized coal fired power plant in the Letart Falls area of Meigs County, Ohio. Delineation and assessment work was conducted in August 2006.

Two wetlands, totaling 1.82 acres, of two different Cowardin wetland types were identified along the corridor, including one palustrine emergent wetland and one palustrine emergent/scrub-shrub/forested wetland. Identified wetlands were evaluated utilizing the Ohio Rapid Assessment Method (ORAM) v5.0 for categorizing wetlands. The ORAM scores for the wetlands indicated the following: one Category 2 palustrine emergent wetland and one Category 2 palustrine wetland with emergent/scrub-shrub/forested components. Both of the wetlands are considered non-isolated and jurisdictional. No Category 3 wetlands were identified during the August field investigation.

Thirty three primary headwater habitat evaluations (HHEI) and one qualitative habitat evaluations (QHEI) were conducted on the streams identified along the project corridor. The survey identified the following HHEI stream classes: 14 Class I streams, 1 Modified Class I streams, 10 Class II streams, and 8 Class III streams. The survey also identified one stream with a QHEI score of 64/100.

The USFWS literature review indicated that the proposed project is located within the range of the federally endangered Indiana bat (*Myotis sodalis*) and three federally endangered species of mussels. These mussel species include the pink mucket pearly mussel (*Lampsilis orbiculata*), the fanshell mussel (*Cyprogenia stegaria*), and the sheepnose mussel (*Plethobasus cyphyus*). No species of concern were identified during the August field investigation. However, potential habitat for the Indiana bat was identified during the field investigation. A mussel survey is being conducted in the Ohio River in the fall of 2006. AMP-Ohio has been coordinating with USFWS about an Indiana bat survey proposed for the spring of 2007.

EXECUTIVE SUMMARY TABLE OF WETLANDS LOCATED IN THE AMP PROPOSED ELECTRIC TRANSMISSION LINE CORRIDOR

Wetland Identifier	Cowardian Wetland Type	Wetland Area (acres)	ORAM Score (Category)	Mapped Soil*	Observed Soil	Photograph Number (Appendix D)	Figure Number	Impacted Acreage
W1	PEM/PSS/PFO	1.81	58.5 (2)	UgE	silty clay	1,2	3A	0
W2	PEM	0.01	54 (2)	UgE	silty clay	3	3B	0
Total Wetland Acreage**		1.82						

* *soil mapped at wetland location*

***total is combined acreage of each wetland type: 0.01 (PEM) and 1.81 acres (PEM/PSS/PFO)*

EXECUTIVE SUMMARY TABLE OF STREAMS LOCATED IN THE AMP PROPOSED ELECTRIC TRANSMISSION LINE CORRIDOR

Stream Identifier	HHEI Score	HHEI Class	Observed Biota
S1	56	Class II	None
S2	19	Class I	None
S3	39	Class II	None
S4	24	Class I	None
S5	54	Class II	None
S6	37	Class II	None
S7	19	Class I	None
S8	27	Class I	None
S9	39	Class II	None
S10	55	Class III*	Southern two-lined salamander larvae
S11	34	Class II	None
S12	45	Class III*	Southern two-lined salamander larvae
S13	26	Class I	None
S14	64	Class III*	Southern two-lined salamander adults & larvae
S15	62	Class III*	Southern two-lined salamander larvae
S16	54	Class III*	Southern two-lined salamander larvae, Green Frog, Crayfish
S17	18	Class I	None
S18	41	Class II	None

S19	82	Class III	Southern and Northern two-lined salamander larvae, Crayfish
S20	30	Class II	None
S21	62	Class III*	Southern two-lined salamander larvae, Green Frog
S22	9	Class I	None
S23	9	Class I	None
S24	25	Class I	None
S25	35	Class II	None
S26	18	Class I	None
S27	71	Class III	Southern two-lined salamander larvae, Green Frog
S28	16	Class I	None
S29	9	Class I	None
S30	9	Class I	None
S32	21	Class I	None
S33	52	Class II	None
S34	26	Class I	None

* *Class III category designation was determined by observed biota*

Addendum Wetland Delineation, Stream Assessment, and Threatened and Endangered Species Habitat Survey, Proposed AMP-Ohio 345 kV Electric Transmission Line, Letart Falls, Meigs County, Ohio

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1.0 INTRODUCTION

American Municipal Power-Ohio, Inc. (AMP-Ohio) is considering construction of a 345 kV electric transmission line extension from its proposed 1,000-MW pulverized coal fired power plant in the Letart Falls area of Meigs County, Ohio. The proposed project will connect the proposed power plant to the existing Sporn-Muskingum River 345 kV transmission line, located approximately five miles to the north, with a new 345 kV line. A project vicinity map is provided as Figure 1. AMP-Ohio retained URS to conduct wetland delineation, stream assessment, and a threatened and endangered species habitat survey along the proposed transmission line corridor. This field work was conducted between August 1, 2006 and August 24, 2006. Data from this report will be used to support an Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need, address U.S. Army Corps of Engineers (ACOE) 404 permitting, and Ohio Environmental Protection Agency (Ohio EPA) 401 Water Quality Certification permitting.

2.0 METHODS

The project corridor was investigated for the presence of wetlands using the procedures outlined in the *1987 U.S. Army Corps of Engineers (ACOE) Wetlands Delineation Manual* (Environmental Laboratory, 1987. URS biologist walked the entire 200-foot wide study corridor of the proposed transmission line. Completed ACOE wetland delineation forms are provided in Appendix A. In addition, URS prepared a functional wetland analysis for each delineated wetland in the corridor using the regionally specific *Ohio Rapid Assessment Method (ORAM) version 5.0 (ORAM v5.0 Manual, 2001)* qualitative wetland evaluation forms. Completed ORAM forms are provided in Appendix B.

The perennial, intermittent, and ephemeral stream channels within the study corridor were assessed based upon the Ohio EPA's Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods, and Application, 1989 and the Headwater Habitat Evaluation Index

(HHEI) procedure as detailed in *Field Evaluation Manual for Ohio's Primary Headwater Habitat Streams, version 1, 2001*. The QHEI and HHEI provide methods for assessing streams, in a manner similar to the ORAM forms for wetlands, under the same Section 401 regulatory program. Completed HHEI and QHEI forms are included in Appendix C.

The project corridor was investigated for the presence of threatened and endangered species habitat by qualified URS biologists with appropriate knowledge of habitat requirements for species of concern likely to be found within the project corridor. The survey was conducted primarily for identification of species potentially present within the project corridor listed as special concern by the United States Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR).

Details of each specific methodology are provided in the preceding wetland delineation, stream assessment, and endangered species habitat survey conducted by URS in March, 2006. The same methods and procedures were used for this work.

3.0 RESULTS

3.1 U.S. ARMY CORPS OF ENGINEERS WETLAND DELINEATION PROCEDURE

The extent and locations of wetlands in the study area generally correlated with predictions based upon the preliminary soils evaluation, a review of USGS topographic contours for the site vicinity, aerial photography, and the NWI map review. The field wetland delineation, conducted after the preliminary literature review, identified two wetlands within the project corridor.

3.1.1 Preliminary Soils Evaluation

According the *Soil Survey of Meigs County, Ohio,* (Natural Resource Conservation Service, 2000), and the National and Meigs County hydric soils list, no mapped hydric units are within the property boundaries of the project site. Fifteen soils from eight soil series are mapped within the limits of the study area and include Chagrin silt loam (Cg), Cidermill silt loam (CkA, CkB), Conotton gravelly loam (CnC, CnE), Gilpin silt loam (GhC2), Lakin loamy fine sand (LaB, LaC, LaD), Licking silt loam (LkC2), Omulga silt loam (OmB, OmC), Upshur-Gilpin complex (UgC2, UgD, UgE). None of these soils are

listed as hydric on the National, State, or County lists. Details of soil types are discussed as follows:

Chagrin silt loam; frequently flooded (Cg)

Chagrin silt loam is a deep, well-drained, level soil commonly found in flood plains. The soil surface is friable silt loam. The upper section of the subsoil is a mix of friable silt loam and sandy loam; the lower section is friable silt loam and loam. The substratum is deep, friable to very friable, mottled, and consists of fine sand and silt loam. This soil has a high available water capacity, moderate permeability, and is subject to flooding. Chagrin silt loam is well suited for use as pasture.

Cidermill silt loam; 0-2 and 2-6 percent slopes (CkA, CkB)

The Cidermill series consists of very deep, well-drained soils that formed on stream terraces along the Ohio River. The surface layer of Cidermill silt loam is friable silt loam. The upper section of the subsoil is friable to firm silt loam; the lower section is friable to very friable loam and sandy loam. The substratum is loose very gravelly loamy coarse sand and very gravelly sand. Permeability is moderate in the subsoil and rapid in the substratum. Slope ranges from 0 to 6 percent. Cidermill soils are typically used for cultivated crops, pasture, or hay.

Conotton gravelly loam; 6-12 and 18-24 percent slopes (CnC, CnE)

The Conotton series consists of very deep, well-drained soils formed on terraces along the Ohio River. The surface layer of Conotton gravelly loam is friable gravelly loam. The upper section of the subsoil is friable very gravelly loam and very friable very gravelly coarse sandy loam; the lower section is very friable very gravelly loamy coarse sand and friable extremely gravelly loamy coarse sand. The substratum is loose extremely gravelly coarse sand. This soil has a low available water capacity and rapid permeability. Slope ranges from 6 to 24 percent. Conotton gravelly loam is widely used for cultivated crops or pasture.

Gilpin silt loam; 8-15 percent slopes (GhC2)

The Gilpin series consists of moderately deep, well-drained soils formed on strongly sloping to very steep hillsides and narrow ridgetops. The surface layer is friable silt loam. The upper section of the subsoil is friable and firm silt loam; the lower section is firm

channery loam. The substratum is sandstone and the soil has a low available water capacity and moderate permeability. Gilpin silt loam is mostly used for woodland.

Lakin loamy fine sand; 1-6, 6-12, and 12-18 percent slopes (LaB, LaC, LaD)

The Lakin series consists of very deep, excessively drained soils formed in coarse textured eolian or water-laid materials. Lakin soils are located dominantly on the leeward side of major stream valleys. The surface and subsoil layers of these soils have very weak fine granular structures; and are very friable. These soils are excessively drained and the potential for surface runoff is negligible to low. Permeability is rapid. Slope ranges from 1 to 18 percent.

Licking silt loam; 6-12 percent slopes, eroded (LkC2)

The Licking series consists of deep, moderately well drained soils found on terraces prone to erosion. The surface layer of Licking silt loam is friable silt loam. The upper section of the subsoil is mottled, firm silty clay loam; the lower section is mottled, firm silty clay. The substratum of this soil is mottled firm silty clay. This soil has a moderate available water capacity and slow permeability. Slopes range from 6 to 12 percent. Areas of Licking silt loam are commonly used for pasture or hay. This soil is ill suited for most agriculture due to erosion.

Omulga silt loam; 2-6 and 6-12 percent slopes (OmB, OmC)

The Omulga series consists of very deep, moderately well drained soils formed in loess, colluvium, or old alluvium, and in most areas by underlying lacustrine sediments. These soils are on valley fills in abandoned preglacial drainage systems in the Allegheny Plateau. Permeability is moderate above the fragipan and slow in the fragipan. Slopes range from 2 to 12 percent. Soils are friable within the surface layer and have a weak, fine granular structure. The structure of the subsoil layer is weak, fine, subangular, and blocky. These soils are best suited to be used as pasture.

Upshur-Gilpin complex; 8-15 percent slopes, eroded; 15-25 and 25-50 percent slopes (UgC2, UgD, UgE)

The Upshur-Gilpin complex series consists of very deep to moderately deep, well-drained soils formed in residium derived from siltstone, sandstone, and shale. They are typically located on strongly sloping or steep uplands (ridgetops and hillsides). The Upshur soil

portion has a friable, surface layer and moderate-fine, granular structure. The subsoil has moderate-medium subangular blocky structure and is firm. The surface layer of the Gilpin soil portion has a weak-fine granular structure and is friable. The subsoil has weak-fine and medium subangular blocky structure and is friable. Slopes range from 8 to 50 percent.

3.1.2 National Wetland Inventory (NWI) Map Review

NWI wetlands are areas of potential wetland that have been identified from USFWS aerial photograph interpretation which have typically not been confirmed by field investigation. Forested and heavy scrub/shrub wetlands are often not shown on NWI maps as foliage effectively hides the visual signature that indicates the presence of standing water and moist soils from an aerial view. As a result NWI maps may not show all the wetlands found in a particular area nor do they necessarily provide accurate wetland boundaries. NWI maps are useful for providing indications of potential wetland areas, which are often supported by soil mapping and hydrologic predictions, based upon topographical analysis using USGS topographic maps.

According to the National Wetlands Inventory (NWI) map of the New Haven, West Virginia-Ohio quadrangle, six NWI wetlands are located within close proximity of the project transmission line corridor, as shown on Figure 2. Four of these NWI wetlands are identified as Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded (PUBHh). One area was designated as Palustrine, Scrub Shrub, Broad Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched (PSS1Cd), and was designated Palustrine, Emergent, Seasonally Flooded, Partially Drained/Ditched (PEMCd) (U.S. Fish & Wildlife Service).

The following describes the NWI Wetland classification of the NWI wetlands located within the project corridor. The naming system can be found in: *Classification of Wetlands and Deepwater Habitats of the United States*, 1979, by Cowardin, Lewis M. et al.

(P) Palustrine - The Palustrine System includes all non-tidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5%. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics:

1. Are less than 8 hectares (20 acres);

2. Do not have an active wave-formed or bedrock shoreline feature;
3. Have at low water a depth less than 2 meters (6.6 feet) in the deepest part of the basin;
4. Have salinity, due to ocean-derived salts, of less than 0.5%.

The limitation of a Palustrine System is that they are bounded by upland or by any of the other systems.

Class - Class describes the general appearance of the habitat in terms of either the dominant life form of the vegetation or the physiography and composition of the substrate. Life forms (e.g. trees, shrubs, emergents) are used to define classes because they are easily recognizable, do not change distribution rapidly, and have traditionally been used to classify wetlands.

(UB) Unconsolidated Bottom - Unconsolidated Bottom wetlands include all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 6-7 cm), and a vegetative cover less than 30%.

(SS) Scrub Shrub – Scrub Shrub wetlands include areas dominated by woody vegetation less than 6 m (20 ft) tall. The species include tree shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. All water regimes are included except subtidal.

(C) Seasonally Flooded – Surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.

(H) Permanently Flooded - Permanently Flooded indicates that water covers the land surface throughout the year in all years.

(d) Partly Drained / Ditched – The water level has been artificially lowered, but the area is still classified as a wetland because soil moisture is sufficient to support hydrophytes. Drained areas are no longer considered wetlands if they cannot support hydrophytes.

(h) Diked / Impounded - Diked / Impounded indicates that the wetland was created or modified by a man-made barrier or dam which obstructs the inflow or outflow of water.

3.1.3 Delineated Wetlands

The field wetland delineation conducted for this project identified two wetlands, totaling 1.82 acres, within the project study area. The location and approximate extents of these wetlands are shown on Figures 3A through 3C. Copies of the ACOE wetland delineation data sheets for these wetlands are provided in Appendix A. Selected color photographs are provided in Appendix D. A comprehensive list of wetland and upland plant species in the vicinity of the study site is shown in Table 2.

By definition, the hydrologic regime of a wetland ranges from irregularly inundated or saturated (5 percent to 12.5 percent of the growing season) to seasonally inundated or saturated (>12.5 percent to 25 percent of the growing season) (Environmental Laboratory, 1987). As quantitative data were not available for any of the delineated wetlands, URS utilized the method described in the *1987 Manual* that consists of a pedestrian site reconnaissance including identifying the vegetation communities, soils identification, a geomorphologic assessment of hydrology, and notation of disturbance. To determine the wetland boundaries, the site vegetation, soils and hydrology were closely examined. Summary information for each delineated wetland is presented below.

Wetland 1: This 1.81-acre palustrine emergent/scrub-shrub/forested (PEM/PSS/PFO) was identified in the southern portion of the study area and is dissected by stream 1 and 2 (Figure 3A). The ORAM score for this wetland was 58.5/100, which is indicative of a Category 2. Despite being of relatively high quality this wetland was not classed as a category 3 because the hydrological regime has been modified and is recovering. The wetland appears to have formerly been a stock pond that was created by a man-made dike at the northern end.

Vegetation in this wetland consisted of the deertongue (*Dichanthelium clandestinum*), jewelweed (*Impatiens capensis*), broadleaf cattail (*Typha* latifolia), narrowleaf cattail (*Typha angustifolia*), common boneset (*Eupatorium perfoliatum*), silver maple (*Acer saccharinum*), Devil's beggartick (*Bidens* frondosa), arrowleaf tearthumb (*Polygonum* saggitatum), sedges (*Carex spp.*), halberd-leaved rosemallow (*Hibiscus leavis*), Pennsylvania smartweed (*Polygonum pensylvanicum*), Eastern sycamore (*Platanus occidentalis*), black willow (*Salix nigra*), Allegheny blackberry (*Rubus alleheniensis*), and soft rush (*Juncus effusus*).

Primary hydrology indicators observed within this wetland were saturation in the upper 12 inches of the soil profile and drainage patterns. A secondary indicator was the positive FAC-neutral test along with oxidized root channels in the upper 12" of the soil profile.

Soils were observed to be a silty clay of 7.5YR 5/2 matrix color with 7.5YR 3/4 matrix color mottles in the A horizon (0-5 inches) and a silty clay of 7.5YR 4/1 matrix color in the B horizon (5-14 inches). Hydric soil indicators for this wetland were reducing conditions and gleyed or low-chroma colors.

Wetland 2: This 0.01-acre palustrine emergent wetland (PEM) was identified near stream 12 (S12) and 13 (S13) in the central portion of the project corridor (Figure 3B). The ORAM score for this wetland was 54/100, which is indicative of a Category 2, or moderate quality wetland.

The vegetation of this wetland consisted of jewelweed (*Impatiens capensis*), Pennsylvania smartweed (*Polygonum pensylvanicum*), deer-tongue grass (*Panicum clandestinum)*, poison ivy (*Toxicadendron radicans*), false nettle (*Boehmeria cylidrica*), and yellow nustedge (*Cyperus esculentus*).

Primary hydrology indicators within this wetland were inundation and saturation in the upper 12 inches of the soil. Secondary indicators within the wetland were a positive FAC-neutral test and water stained leaves.

Soils were observed to be a silty clay of 10YR 2/1 matrix color in the A horizon (0-1 inches) and a silty clay of 10YR 4/1 matrix color in the B horizon (1-6 inches). Hydric soil indicators for this wetland were reducing conditions and gleyed or low-chroma colors.

3.1.4 Wetland Habitat Description

Wetland Habitat Descriptions: The wetlands identified within the project corridor are classified as one of the following types (per the classification system developed by Cowardin *et al.*, [1979]):

- Palustrine Emergent (PEM): 1 wetlands, 0.01 acres
- Palustrine Emergent/Scrub-Shrub/Forested (PEM/PSS/PFO): 1 wetland, 1.81 acres

Each identified wetland habitat is discussed below. The wetland habitat description given below identifies the dominant observed species by common name with Region 1 indicator status (Reed, 1988) following in parentheses. The scientific names of these species are given above in Section 3.1.3. Also described is the observed hydrologic regime. Individual wetland and upland test plot data forms given in Appendix A provide the field support for the wetland/upland boundary determinations.

Palustrine Emergent Habitat (PEM): Wetlands identified as palustrine emergent are characterized by grasslike plants, true grasses, rushes and broad-leaved plants (Cowardin *et al.*, 1979). These areas are dominated by persistent herbaceous wetland vegetation such as narrow-leaf cattail (OBL), woolgrass (FACW+), three-way sedge (OBL), reed canarygrass (FACW), soft rush (FACW), purple-leaf willowherb (OBL), seedbox (FACW), ironweed (FAC), swamp dock (OBL), whitegrass (FACW), and yellow nutsedge (FACW). The hydrologic regime of these wetlands ranges from irregularly inundated or saturated (≥5 percent-12.5 percent of the growing season) to seasonally inundated or saturated (>12.5 percent-25 percent of the growing season) (Environmental Laboratory, 1987).

Wetland 2 was classified as PEM. This wetland occurs on soil that meets the hydric soil criterion, while also revealing primary and/or secondary hydrology indicators and a dominance of hydrophytic vegetation.

Palustrine Emergent/Scrub-Shrub/Forested (PEM/PSS/PFO): Wetlands classified as palustrine emergent/scrub-shrub/forested are characterized by grasslike plants, broad-leaved plants, rushes, and woody vegetation and a dominance of woody vegetation 20 feet tall or taller with an understory of young trees or shrubs (Cowardin *et al.*, 1979). These areas are dominated by wetland plants such as: creeping jenny (OBL), green bulrush (OBL), arrowhead tearthumb (OBL), fall panicgrass (OBL), rice cutgrass (OBL), *Carex* species (FAC-OBL), reed canarygrass (FACW+), black willow (FACW+), soft rush (FACW+), green ash (FACW), riverbank grape (FACW), jewelweed (FACW), sensitive fern (FACW), silver maple (FACW), and red maple (FAC). The hydrologic regime of this wetland ranges from irregularly inundated or saturated (5 percent to 12.5 percent of the growing season) to seasonally inundated or saturated (>12.5 percent to 25 percent of the growing season) (Environmental Laboratory, 1987).

Wetland 1, totaling 1.81 acres, was classified as PEM/PSS/PFO. The location of this wetland is shown in Figure 3A. This wetland occurs on soil that meet the hydric soil criterion, while also revealing primary and/or secondary hydrology indicators and a dominance of hydrophytic vegetation.

3.1.5 U.S. Army Corps of Engineers Section 404 Requirements

Section 404 of the Clean Water Act requires authorization from the Secretary of the Army, acting through the ACOE, for the discharge of dredged or fill material into all waters of the United States. As a consequence of direct connection or adjacency to surface drainageways to the Ohio River, all wetlands delineated at the project site are considered non-isolated, and therefore subject to ACOE jurisdiction as waters of the United States.

3.2 OEPA ORAM V5.0 WETLAND EVALUATION

The ORAM scores for the wetlands identified within the limits of the project corridor ranged from a low of 54/100 (Wetland 2) to a high of 58.5/100 (Wetland 1). These wetlands typically formed along surface drainageways, in areas of surface water retention, at the base of slopes, and adjacent to roadways. Copies of the ORAM scoring sheets for each delineated wetland are provided in Appendix B.

The two category 2 wetlands have a range in size from 0.01 to 1.81 acres. These exhibited moderate to high quality plant communities with few invasives, moderate to good plant community interspersion, low to high intensity anthropogenic impact of surrounding land (i.e. farming, residential use, urban infrastructure, etc.), and recovered and/or no modification to natural hydrology and habitat.

No Category 1 or Category 3 wetlands were identified within the project corridor.

3.3 OEPA QHEI AND HHEI STREAM EVALUATIONS

One qualitative habitat evaluations (QHEI) and thirty three primary headwater habitat evaluations (HHEI) were conducted on the streams identified within the project corridor. The evaluations were conducted at or near the proposed transmission line crossing of each stream. These streams were identified using USGS topographic maps, aerial photography, *The Soil Survey of Meigs County, Ohio*, and field reconnaissance. The

locations of the evaluation areas are shown on Figures 3A through 3C. Copies of the QHEI and HHEI data sheets are provided in Appendix C. Selected color photographs are provided in Appendix D.

QHEI: Based on the QHEI methods, the survey identified one crossing of a warmwater habitat (WWH) stream. It should be noted that ultimately the Ohio EPA decides the aquatic life use designation for particular surface water.

QHEI SUMMARY TABLE

Stream Identifier	QHEI Score	QHEI Habitat Designation
S31	63	WWH

HHEI: The survey identified the following HHEI stream classes: 14 Class I streams, 1 Modified Class I streams, 10 Class II streams, and 8 Class III streams.

HHEI SUMMARY TABLE

Stream Identifier	HHEI Score	HHEI Class	Observed Biota
S1	56	Class II	None
S2	19	Class I	None
S3	39	Class II	None
S4	24	Class I	None
S5	54	Class II	None
S6	37	Class II	None
S7	19	Class I	None
S8	27	Class I	None
S9	39	Class II	None
S10	55	Class III*	Southern two-lined salamander larvae
S11	34	Class II	None
S12	45	Class III*	Southern two-lined salamander larvae
S13	26	Class I	None
S14	64	Class III*	Southern two-lined salamander adults & larvae
S15	62	Class III*	Southern two-lined salamander larvae
S16	54	Class III*	Southern two-lined salamander larvae, Green Frog, Crayfish

S17	18	Class I	None
S18	41	Class II	None
S19	82	Class III	Southern and Northern two-lined salamander larvae, Crayfish
S20	30	Class II	None
S21	62	Class III*	Southern two-lined salamander larvae, Green Frog
S22	9	Class I	None
S23	9	Class I	None
S24	25	Class I	None
S25	35	Class II	None
S26	18	Class I	None
S27	71	Class III	Southern two-lined salamander larvae, Green Frog
S28	16	Class I	None
S29	9	Class I	None
S30	9	Class I	None
S32	21	Class I	None
S33	52	Class II	None
S34	26	Class I	None

** Class III category designation was determined by observed biota*

Class I Headwater Streams –Fourteen Class I headwater streams were identified during August field investigation with scores ranging from a low of 9 to a high of 27. The substrate composition of these streams is generally limited to sand, silt, clay, leaf pack/woody debris and gravel. The maximum pool depth is less than 10 centimeters and the bank full width generally does not exceed 1.0 meter.

Modified Class I Headwater Streams – One Modified Class I headwater streams were identified during the August field investigation with a score of 26. This stream shows evidence of stream channel modifications including channelization and culverting. This modification results in this stream scoring a Modified Class I designation. Similar to a Class I headwater stream, the substrate of this stream is silt, sand, and leaf pack or woody debris. The maximum depth is less than 5 centimeters with a bank full width not exceeding 1.5 meter.

Class II Headwater Streams – Ten Class II headwater streams were identified during the August field investigation with scores ranging from a low of 30 to a high of 56. The substrate composition of these streams is generally dominated by sand and gravel. Leaf pack, silt, clay, cobble, boulder, and boulder slabs are also noted as less dominant

substrate types in this Class of stream. The maximum pool depth is less than 22.5 centimeters. The bank full width for this group of streams is generally less than 3 meters.

Class III Headwater Streams – Eight Class III headwater streams were evaluated during the August field investigation with scores ranging from a low of 45 to a high of 82. Some of the streams in this category were elevated from Class II due to evidence of aquatic salamander larvae and adults. The main features of these streams that distinguish them from the Class I and II streams include a natural channel (i.e. no indication of stream channel modification), generally high percentages of boulder, boulder slab, cobble, and gravel, maximum pool depths ranging from 5 to approximately 30 centimeters, and a bank full width generally between 1.5 and 3 meters.

3.4 NON-JURISDICTIONAL ROADSIDE DITCHES

Several non-jurisdictional roadside ditches were identified during the field investigation. Although these upland ditches satisfy the three mandatory USACOE requirements to be considered a jurisdictional wetland (i.e. hydric soils, wetland hydrology, and a predominance of hydrophytic vegetation), these areas do not exhibit an ordinary high water mark (i.e. hydrophytic vegetation is generally restricted to the designed configuration of the constructed ditch), a defined bed and bank, or stream flow. In addition, all ditches were constructed through upland and do not connect two "Waters of the U.S." According to the *Soil Survey of Meigs County, Ohio*, the mapped soil units for the roadside ditches identified along the project route are generally non-hydric. Periodic and routine maintenance, including mowing, was noted for each of the upland ditches. The field determination regarding the potential regulation of ditches identified along the length of the project route was based upon the U.S. Army Corps of Engineers Standard Operating Procedures and Ohio Department of Transportation's (ODOT) Technical Guidance Document.

3.5 THREATENED AND ENDANGERED SPECIES HABITAT SURVEY

The Ohio Department of Natural Resources – Division of Natural Areas and Preserves (ODNR-DNAP) was contacted regarding the potential for occurrence of rare, threatened, and endangered species within the project study area. URS also performed a literature review of available USFWS resources regarding species of concern in the project vicinity.

In a letter response dated May 10, 2004, the ODNR-DNAP reported 10 records of rare or endangered species within the vicinity of the project study area. These ten species include:

Scientific Name	Common Name	State Status
Cicindela marginipennis	Cobblestone Tiger Beetle	Threatened
Heteranthera reniformis	Mud-plantain	Endangered
Hiodon alosoides	Goldeye	Endangered
Macrhybopsis aestivalis	Speckled Chub	Endangered
Obliquaria reflexa	Threehorn Wartyback	Threatened
Obliquaria reflexa	Threehorn Wartyback	Threatened
Opuntia humifusa	Common Prickly Pear	Potentially Threatened
Percina copelandi	Channel Darter	Threatened
Scaphiopus holbrookii	Eastern Spadefoot Toad	Endangered
Spermacoce glabra	Smooth Buttonweed	Potentially Threatened

The USFWS literature review indicated that the proposed project is located within the range of the federally endangered Indiana bat (*Myotis sodalis*) and three federally endangered species of mussels. These mussel species include the pink mucket pearly mussel (*Lampsilis orbiculata*), the fanshell mussel (*Cyprogenia stegaria*), and the sheepnose mussel (*Plethobasus cyphyus*).

A discussion of each state and federally listed species will be presented in the following sections. A list of animal species identified or likely to occur in the vicinity of the study site is shown in Table 1. A comprehensive list of plant species in the vicinity of the study site is shown in Table 2.

3.5.1 Plants

Three records of plant species of concern were identified within the vicinity of the project study area and include the mud-plantain (*Heteranthera reniformis*), the common prickly pear (*Opuntia humifusa*), and the smooth buttonweed (*Spermacoce glabra*).

Mud-plantain *(Heteranthera reniformis)*: This perennial aquatic herb is known to occur submersed or floating in ponds, ditches or rivers, or creeping along muddy river margins. The potential hazard to this species of concern is generally limited to impacts or disturbances to the aquatic habitat. There are no habitat areas along the study corridor that matched the habitat of this species. This plant species of concern was also not identified during the August field investigation.

Common Prickly Pear *(Opuntia humifusa)*: This hardy cactus with oblong, flattened pads was previously recorded south of the study area, in the vicinity of the Letart Falls cemetery. This species of concern prefers areas of full sun on well- drained soils, such as sandy fields and hillsides. The primary hazard to this species of concern is overgrowth by woody species as a consequence of succession. Since most of the study corridor was covered in mature second growth forest, there were no potential habitats found. This plant species of concern was not identified during the August field investigation.

Smooth Buttonbush *(Spermacoce glabra)*: This perennial herb is most commonly found on the muddy shores and low banks of the Ohio River, but is also found in swamps and wet woods. Suitable conditions for the herb did not exist anywhere along the study corridor due to very sandy soils and steep hillsides. This plant was not identified during the August field investigation.

3.5.2 Aquatic species

Habitats for aquatic species of concern including fish, crustaceans, and mussels were not assessed during this survey. ODNR-DNAP reported records of one threatened mussel species and three fish species of concern within the vicinity of the project study area. These species include the Threehorn Wartyback mussel (*Obliquaria reflexa*), the Channel Darter (*Percina copelandi*), the Goldeye (*Hiodon alosoides*), and the Speckled Chub (*Macrhybopsis aestivalis*). In addition, URS also conducted a literature review of available USFWS resources regarding species of concern in the project vicinity. The USFWS identified the study site to be in the historic range of three state and federally endangered species of mussels. These species include the pink mucket pearly mussel (*Lampsilis orbiculata*), the fanshell mussel (*Cyprogenia stegaria*), and the sheepnose mussel (*Plethobasus cyphyus*).

3.5.3 Amphibians

The Eastern Spadefoot Toad *(Scaphiopus holbrooki)*, the only toad identified on Ohio's endangered species list, was previously recorded by ODNR to be in the vicinity of the project study area. This amphibian typically occurs in brush-covered, forested, and/or cultivated areas that consist of loose sediments such as gravel, sand, and sandy loam. With the exception of emerging from the soil to eat or possibly reproduce, the Eastern

Spadefoot generally remains burrowed underground. Potential habitat for this species of concern exists on the lower river terraces of the site.

3.5.4 Reptiles

No reptile species of concern were identified in any agency correspondence. No suitable habitat for reptile species of concern was observed within the project study area.

3.5.5 Birds

No bird species of concern were identified in any agency correspondence. No suitable habitat for bird species of concern was observed within the project study area.

3.5.6 Mammals

Indiana bat (*Myotis sodalis*): The Indiana bat is considered to be an endangered species by the federal government and the State of Ohio. This species is a possible inhabitant of Meigs County. The Indiana bat is a migratory species, wintering in a few limestone cave hibernacula principally located in Indiana, Kentucky and Missouri. Summer roosting and foraging areas are typically farther north in the glaciated regions of Indiana, Illinois, and Ohio. Males and gravid females may arrive in northern regions in April and remain until October. The bat typically roosts under the exfoliating (loose) bark of live or dead trees of various rough-barked tree species. The 8- to 10-inch size classes of several species of hickory (*Carya* spp.), oak (*Quercus* spp.), ash (*Fraxinus* spp.), and elm (*Ulmus* spp.) are utilized in live form as roost trees. These tree species and many others may be used when dead, if there are adequately sized patches of loosely adhering bark or open cavities. The structural configuration of forest stands favored for roosting includes; (1) a mixture of favored loose-barked trees with 60 to 80 percent canopy closure and (2) a low density sub-canopy (less than 30 percent between about 6 feet high and the base canopy).

The vegetation along most of the study corridor consists of mature, second growth tree species. This general area contains many oaks (*Quercus* spp.) and elms (*Ulmus* spp.) of an appropriate class size along with exfoliating American sycamore (*Plantanus occidentalis*) and black cherry (*Prunus serotina*) individuals. Additional Indiana bat habitat advantages in this area include snags, numerous tree cavities or hollow portions of tree boles and limbs, a generally open subcanopy, and close proximity to several mapped streams.

There are several areas along the study corridor not suitable as habitats for Indiana bats due to either no forest cover or a thick subcanopy. These are located between the proposed power plant and the first proposed pole at the southern end of the route, to the west of wetland 1 (W1) and stream 1 (S1), in between streams 4 (S4) and 5 (S5), and also south of stream 15 (S15) for about 1500 feet.

Specific Indiana Bat surveys were not performed during the field reconnaissance, as it was not in the scope of this work.

3.5.7 Insects

Cobblestone Tiger Beetle (*Cicindela marginipennis):* ODNR-DNAP reported previous records of this arthropod within the vicinity of the project study area. This rare beetle is typically restricted to cobblestone islands and deltas in large rivers. Suitable habitat for this species of concern was not observed within the immediate project area. This insect was not identified during the August field investigation.

4.0 SUMMARY

This addendum jurisdictional wetland delineation, stream assessment, and threatened and endangered species survey was conducted along a five-mile long, two hundred foot wide project corridor and an approximately six-acre proposed switchyard area located in Meigs County, Ohio. American Municipal Power-Ohio, Inc. (AMP-Ohio) is proposing construction of a 345 kV electric transmission line extension from its proposed 1,000-MW pulverized coal fired power plant in the Letart Falls area of Meigs County, Ohio. Delineation and assessment work was conducted in August 2006.

Two wetlands, totaling 1.82 acres, of two different Cowardin wetland types were identified within the project study area, including one palustrine emergent wetland and one palustrine emergent/scrub-shrub/forested wetland. Identified wetlands were evaluated utilizing ORAM v5.0 qualitative evaluation method for categorizing wetlands. The ORAM scores for the wetlands indicated that both wetlands were category 2 wetlands, which indicate moderate quality levels. Both of the wetlands are considered non-isolated and jurisdictional.

Thirty three primary headwater habitat evaluations (HHEI) were conducted on the streams identified within the limits of the project corridor. The survey identified the following HHEI stream classes: 14 Class I streams, 1 Modified Class I stream, 10 Class II streams, and 8 Class III streams. The survey also identified one stream with a QHEI score of 64/100.

The ODNR-DOW indicated that the proposed project is located within the range of the federally endangered Indiana bat (*Myotis sodalis*) and three federally endangered species of mussels. These mussel species include the pink mucket pearly mussel (*Lampsilis orbiculata*), the fanshell mussel (*Cyprogenia stegaria*), and the sheepnose mussel (*Plethobasus cyphyus*). No species of concern were identified in the field survey. A mussel survey is being conducted in the Ohio River in the fall of 2006. AMP has been coordinating with USFWS about an Indiana bat survey proposed for the spring of 2007.

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Acronyms

ACOE	U.S. Army Corp of Engineers
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPS	Global Positioning System
HHEI	Headwater Habitat Evaluation Index (for streams)
NWI	National Wetland Inventory
OBL	Obligate
ODNR-DNAP	Ohio Department of Natural Resources - Division of Natural Areas and Preserves
OEPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Method (for wetlands)
OWI	Ohio Wetland Inventory
PEM	Palustrine Emergent Wetland
PEM/PFO	Palustrine Emergent/Forested Wetland
PEM/PSS	Palustrine Emergent/Scrub-Shrub Wetland
PHWH	Primary Headwater Habitat
POW	Palustrine Open Water Wetland
POW/PEM	Palustrine Open Water/Emergent Wetland
QHEI	Qualitative Habitat Evaulation Index (for streams)
UPL	Upland
USFWS	U.S. Fish and Wildlife Service

Glossary

FAC-neutral test - The FAC-neutral test results in a positive secondary indicator of hydrology for a wetland determination when more of the dominant plant species have a wetland indicator category that is wetter than facultative (FAC). The FAC-neutral test considers FAC species (FAC, FAC-, or FAC+) as neutral and does not utilize them. Rather, the abundance of OBL, FACW+, FACW, and FACW- species are weighed against the abundance of UPL, FACU-, FACU, and FACU+ species (OBL + FACW species > FACU + UPL species) to determine whether the vegetation meets the FAC-neutral test.

Mottles - Spots or streaks of contrasting soil colors which indicate the presence of a seasonal water table zone.

Oxidized Rhizospheres (Root Channels) - A zone around a plant root system in hydric soils that shows staining from oxidation ("rust" stains).

Cowardin Wetland Classification System - The Cowardin system is hierarchical and includes several layers of detail for wetland classification including: a subsystem of water flow; classes of substrate types; subclasses of vegetation types and dominant species; as well as flooding regimes and salinity levels for each system. This system is appropriate for an ecologically based understanding of wetland definition.

Palustrine Wetland System – This system includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ‰. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m at low water; and (4) salinity due to ocean-derived salts less than 0.5 ‰.

Palustrine Emergent Habitat (PEM) - Wetlands identified as palustrine emergent are characterized by grasslike plants, true grasses, rushes and broad-leaved plants (Cowardin *et al.*, 1979).

Palustrine Emergent/Scrub-Shrub (PEM/PSS) - Wetlands classified as palustrine emergent/scrub-shrub are characterized by grass-like plants, broad-leaved plants, rushes and woody vegetation less than 20 feet high (Cowardin *et al.*, 1979).

Palustrine Emergent/Forested (PEM/PFO) - Wetlands classified as palustrine emergent/forested are characterized by grasslike plants, broad-leaved plants, rushes, and woody vegetation 20 feet tall or taller (Cowardin *et al.*, 1979).

Palustrine Open Water (POW) - Wetlands classified as palustrine open water are shallow, open water plant communities that generally have water depths of less than 6.6 feet (2 meters). Submergent, floating and floating-leaved aquatic vegetation including

pondweeds, water-lilies, water milfoil, coontail, and duckweeds characterize this wetland type.

Palustrine Open Water/Emergent (POW/PEM) - Wetlands identified as palustrine open water/emergent are shallow, mixed emergent/open water plant communities that generally have water depths of less than 6.6 feet (2 meters).

Ohio Rapid Assessment Method (ORAM) – ORAM is a wetland functional assessment that was developed by the Ohio Environmental Protection Agency (OEPA) to determine the ecological "quality" and level of function of a particular wetland in order to meet requirement under Section 401 of the Clean Water Act.

- *Category 1 Wetlands* - Category 1 wetlands support minimal wildlife habitat, and minimal hydrological and recreational functions, and as wetlands that do not provide critical habitats for, or contain, threatened or endangered species. In addition, Category 1 wetlands are often hydrologically isolated and have some or all of the following characteristics; low species diversity, no significant habitat or wildlife use, limited potential to achieve wetland functions, and/or a predominance of non-native species. These limited quality wetlands are considered to be a resource that has been severely degraded or has a limited potential for restoration, or to be of low ecological functionality.

- *Category 2 Wetlands* - Category 2 wetlands "...support moderate wildlife habitat, or hydrological or recreational functions," and as wetlands which are "...dominated by native species but generally without the presence of, or habitat for, rare, threatened or endangered species; and wetlands which are degraded but have a reasonable potential for reestablishing lost wetland functions." Category 2 wetlands constitute the broad middle category of "good" quality wetlands, they are equivalent to "warmwater habitat" streams, and can be considered a functioning, diverse, healthy water resource that has ecological integrity and human value. Some Category 2 wetlands are lacking in human disturbance and considered to be naturally of moderate quality; others may have been Category 3 wetlands in the past, but have been disturbed "down to" Category 2 status.

- *Category 3 Wetlands* - Category 3 have "...superior habitat, or superior hydrological or recreational functions." They are typified by high levels of diversity, a high proportion of native species, and/or high functional values. Category 3 wetlands include wetlands which contain or provide habitat for threatened or endangered species, are high quality mature forested wetlands, vernal pools, bogs, fens, or which are scarce regionally and/or statewide. It is important to stress that a wetland may be a Category 3 wetland because it exhibits one or all of the above characteristics. For example, a forested wetland located in the flood plain of a river may exhibit "superior" hydrologic functions (e.g. flood

retention, nutrient removal), but not contain mature trees or high levels of plant species diversity.

Headwater Habitat Evaluation Index (HHEI) – HHEI is a rapid field assessment method for physical habitat that was developed by the OEPA and can be used to predict the biological potential of primary headwater habitat (PHWH) streams.

- *Class I PHWH Streams* - Class I PHWH Streams are those that have "normally dry channels with little or no aquatic life present" (Davic, 2001). These waterways are usually ephemeral, with water present for short periods of time due to infiltration from snowmelts or rainwater runoff.

- *Class II PHWH Streams* - Class II PHWH Streams are equivalent to "warm-water habitat" streams. This stream class has a "moderately diverse community of warm-water adapted native fauna either present seasonally or on an annual basis" (Davic, 2001). These species communities are composed of vertebrates (fish and salamanders) and/or benthic macroinvertebrates that are considered pioneering, headwater temporary, and/or temperature facultative species.

- *Class III PHWH Streams* - Class III PHWH Streams usually have perennial water flow with cool-cold water adapted native fauna. The community of Class III PHWH Streams is comprised of vertebrates (either cold water adapted species of headwater fish and or obligate aquatic species of salamanders, with larval stages present), and/or a diverse community of benthic cool water adapted macroinvertebrates present in the stream continuously (on an annual basis).

TABLE 1
ANIMAL SPECIES IDENTIFIED OR LIKELY TO OCCUR IN THE STUDY AREA

Amphibians	Reptiles	Birds	Mammals
American toad	Black rat snake	American crow	Big brown bat
Bullfrog	Broad-headed skink	American kestrel	Coyote
Dusky salamander	Copperhead	American redstart	Deer mouse
Fowler's toad	Eastern box turtle	American robin	Eastern chipmunk
Gray treefrog	Eastern garter snake	American woodcock	Eastern cottontail rabbit
Green frog	Eastern hognose snake	Baltimore oriole	Eastern gray squirrel
Jefferson salamander	Eastern milk snake	Belted kingfisher	Eastern mole
Longtail salamander	Eastern worm snake	Blue jay	Eastern pipistrel
Marbled salamander	Five-lined skink	Broad-winged hawk	Fox squirrel
Mountain chorus frog	Ground skink	Brown thrasher	Gray fox
Northern leopard frog	Midland painted turtle	Brown-headed cowbird	Hairytail mole
Northern red salamander	Northern black racer	Carolina chickadee	Hoary bat
Northern slimy salamander	Northern brown snake	Carolina wren	House mouse
Northern spring peeper	Northern fence lizard	Common flicker	Least weasel
Northern spring salamander	Northern ring-necked snake	Downy woodpecker	Little brown bat
Pickeral frog	Northern water snake	Eastern bluebird	Long-tailed weasel
Ravine salamander	Rough green snake	Eastern kingbird	Meadow jumping mouse
Redback salamander	Timber rattlesnake	Eastern meadowlark	Meadow vole
Red-spotted newt		European starling	Opossum
Southern tow-lined salamander		Hairy woodpecker	Pine vole
Spotted salamander		House sparrow	Pygmy shrew
Wood frog		Indigo bunting	Raccoon
		Kentucky warbler	Red bat
		Killdeer	Red fox
		Mockingbird	Red squirrel
		Mourning dove	Short-tailed shrew
		Northern cardinal	Silver-haired bat
		Osprey	Southern flying squirrel
		Pileated woodpecker	Striped skunk
		Red-eyed vireo	White-footed mouse
		Red-tailed hawk	White-tailed deer
		Red-winged blackbird	Woodchuck
		Rock dove	
		Ruffed grouse	
		Tufted titmouse	
		Turkey vulture	
		Whip-poor-will	
		White-breasted nuthatch	
		Wild turkey	
		Wood thrush	
		Yellow warbler	
		Yellow-throated vireo	

TABLE 2

WETLAND VEGETATION AND INDIVIDUAL SPECIES WETLAND DESIGNATION

Scientific Name	Common Name	Wetland Status	Upland	Wetland
Acer negundo	Box elder	FAC+	X	X
Acer rubrum	Red maple	FAC	X	X
Acer saccharinum	Silver maple	FACW	X	X
Achillea millefolium	Yarrow	FACU	X	
Acorus calamus	Calamus	OBL		X
Agrimonia parviflora	Small-flowered agrimony	FAC	X	X
Agrostis alba (gigantea)	Redtop	FACW	X	X
Ailanthus altissima	Tree of heaven	NI	X	
Alliaria petiolata	Garlic mustard	FACU-	X	
Allium canadense	Wild onion	FACU	X	
Amaranthus retroflexus	Redroot amaranth	FACU	X	
Ambrosia artemisiifolia	Common ragweed	FACU	X	
Ambrosia trifida	Giant ragweed	FAC	X	X
Andropogon virginicus	Broomsedge	FACU	X	
Aristida spp.	Wiregrass	NO	X	X
Artemisia vulgaris	Wormwood	UPL	X	
Asclepias incarnata	Swamp milkweed	OBL		X
Asclepias syriaca	Common milkweed	FACU-	X	
Aster spp.	Heath aster	NI	X	
Bidens frondosa	Devil's beggartick	FACW	X	X
Boehmeria cylindrica	False nettle	FACW+	X	X
Brassica rapa	Field mustard	NI	X	
Calamagrostis canadensis	Bluejoint	FACW+	X	X
Carex blanda	Eastern woodland sedge	FAC	X	
Carex comosa	Longhair sedge	FACW		X
Carex frankii	Frank's sedge	OBL		X
Carex lurida	Shallow sedge	OBL		X
Carex spp.	Sedges	FAC-OBL		X
Carex stricta	Upright sedge	OBL		X
Carya cordiformis	Bitternut hickory	FACU+	X	
Carya glabra	Pignut hickory	FACU-	X	
Carya ovata	Shagbark hickory	FACU-	X	
Celtis occidentalis	Hackberry	FACU	X	
Centaurea maculosa	Spotted knapweed	NI	X	
Cephalanthus occidentalis	Buttonbush	OBL		X
Cercis canadensis	Redbud	FACU-	X	
Chelone glabra	White turtlehead	OBL		X
Chenopodium album	Lambsquarter	FACU+	X	
Chrysanthemum leucanthemum	Oxeye daisy	NI	X	
Cichorium intybus	Chicory	NI	X	
Cirsium arvense	Canada thistle	FACU	X	
Cirsium vulgare	Bull thistle	FACU-	X	
Convolvulus sepium	Hedge bindweed	FAC	X	X
Cornus stolinifera	Flowering dogwood	NI	X	
Cyperus esculentus	Yellow nutsedge	FACW	X	X
Dactylis glomerata	Orchardgrass	FACU	X	
Daucus carota	Queen Anne's lace	NI	X	
Dipsacus sylvestris	Teasel	NI	X	
Elaeagnus umbellata	Autumn olive	NI	X	
Eleocharis acicularis	Needle spikerush	OBL		X

TABLE 2 - CONTINUED

WETLAND VEGETATION AND INDIVIDUAL SPECIES WETLAND DESIGNATION

Scientific Name	Common Name	Wetland Status	Upland	Wetland
Eleocharis obtusa	Blunt spikerush	OBL		X
Epilobium coloratum	Purple leaf willowherb	OBL		X
Erigeron annuus	Fleabane	FACU	X	
Eupatorium maculatum	Spotted joepyeweed	FACW	X	X
Eupatorium perfoliatum	Common boneset	FACW+	X	X
Eupatorium purpureum	Sweetscented joepyeweed	FAC	X	X
Eupatorium sessilifolium	Upland boneset	NO	X	
Fagus grandifolia	American beech	FACU	X	
Festuca arundinacea	Tall fescue	FACU	X	
Festuca pratensis	Meadow ryegrass	FACU	X	
Festuca subverticillata	Nodding fescue	FACU	X	
Fragaria virginiana	Virginia strawberry	FACU	X	
Fraxinus pennsylvanica	Green ash	FACW	X	X
Galium aparine	Catchweed bebstraw	FACU	X	
Geum candadense	White avens	FACU	X	
Glechoma hederacea	Ground ivy	FACU	X	
Gleditsia triacanthos	Honeylocust	FAC-	X	
Glycine max	Soybean	NI	X	
Impatiens capensis	Jewelweed	FACW	X	X
Juglans nigra	Black walnut	FACU	X	
Juncus effusus	Soft rush	FACW+	X	X
Juncus tenuis	Path rush	FAC-	X	
Leersia oryzoides	Ricecut grass	OBL		X
Leersia virginica	White grass	FACW	X	X
Lemna minor	Common duckweed	OBL		X
Ligustrum vulgare	Privet	FACU	X	
Lindera benzoin	Northern spicebush	FACW-	X	X
Liriodendron tulipifera	Tuliptree	FACU	X	
Lolium multiflorum	Italian ryegrass	FACU-	X	
Lolium perenne	Perennial ryegrass	FACU-	X	
Lonicera japonica	Japanese honeysuckle	FAC-	X	
Lonicera spp.	Honeysuckle	FAC to FACU	X	
Ludwigia alternifolia	Seedbox	FACW+	X	X
Ludwigia palustris	Marsh seedbox	OBL		X
Lysimachia nummularia	Creeping jenny	OBL		X
Lythrum salicaria	Purple loosestife	FACW+	X	X
Malva neglecta	Common mallow	NI	X	
Medicago sativa	Alfalfa	NO	X	
Melilotus officinalis	Yellow sweetclover	FACU	X	
Mentha spicata	Spearmint	FACW+	X	X
Nymphaea odorata	American white waterlily	OBL		X
Oenthera biennis	Common evening primrose	FACU-	X	
Onoclea sensibilis	Sensitive fern	FACW	X	X
Panicum dichotomiflorum	Fall panicgrass	FACW-	X	X
Panicum spp.				
Panicum virgatum	Switchgrass	FAC	X	X
Parthenocissus quinquefolia	Virginia creeper	FACU	X	
Penthorum sedoides	Ditch stonecrop	OBL		X
Phalaris arundinacea	Reed canary grass	FACW+	X	X

TABLE 2 - CONTINUED

WETLAND VEGETATION AND INDIVIDUAL SPECIES WETLAND DESIGNATION

Scientific Name	Common Name	Wetland Status	Upland	Wetland
Phleum pratense	Timothy	FACU	X	
Phytolacca americana	Common pokeweed	FACU+	X	
Plantago lanceolata	Common plantain	UPL	X	
Plantago major	Broadleaf plantain	FACU	X	
Platanus occidentalis	Eastern sycamore	FACW-	X	X
Poa pratensis	Kentucky bluegrass	FACU	X	
Polygonum hydropiperoides	Swamp smartweed	OBL		X
Polygonum pensylvanicum	Pennsylvania smartweed	FACW	X	X
Polygonum persicaria	Spotted ladysthumb	FACW	X	X
Polygonum sagittatum	Arrowleaf tearthumb	OBL		X
Populus deltoides	Cottonwood	FAC	X	X
Potamogeton spp.		OBL		X
Prunus serotina	Black cherry	FACU	X	
Quercus alba	White oak	FACU-	X	
Quercus macrocarpa	Bur oak	FAC-	X	
Quercus palustris	Pin oak	FACW	X	X
Quercus rubra	Northern red oak	FACW-	X	X
Rhus radicans	Poison Ivy	FAC	X	X
Robinia pseudoacacia	Black locust	FACW-	X	X
Rosa carolina	Pasture rose	UPL	X	
Rosa multiflora	Multiflora rose	FACU	X	
Rubus allegheniensis	Allegheny blackberry	FACU-	X	
Rumex acetosella	Sheep sorrel	UPL	X	
Rumex crispis	Yellow curlydock	FACU	X	X
Rumex obtusifolius	Bitter Dock	FACU-	X	
Salix nigra	Black willow	FACW+	X	X
Sambucus canadensis	Elderberry	FACW-	X	X
Scirpus atrovirens	Green bulrush	OBL		X
Scirpus cyperinus	Woolgrass	FACW+	X	X
Scirpus validus	Softstem bulrush	OBL		X
Setaria glauca	Pearl millet (foxtail)	FAC	X	X
Setaria spp.	Foxtail	FAC	X	X
Sisyrinchium angustifolium	Narrowleaf blue-eyed grass	FACW-	X	X
Smilax rotundifolia	Roundleaf greenbriar	FAC	X	X
Solidago altissima	Shorthair goldenrod	FACU-	X	
Solidago canadensis	Canada goldenrod	FACU	X	
Solidago nitida	Flat-topped goldenrod	FAC	X	X
Solidago spp.	Goldenrod	FACU	X	
Sorghum halepense	Johnsongrass	FACU	X	
Taraxaci, pffoconiaze	Common dandelion	FACU-	X	
Toxicodendron radicans	Poison ivy	FAC	X	
Trifolium hybridum	Alsike clover	FACU-	X	
Trifolium pratense	Red clover	FACU-	X	
Typha angustifolia	Narrow leaf cattail	OBL		X
Typha latifolia	Broad leaf cattail	OBL		X
Ulmus rubra	Slippery elm	FAC	X	X
Urtica dioica	Stinging nettle	FACU	X	
Verbascum thapus	Common mullein	NI	X	
Verbesina alternifolia	Wingstem	FAC	X	X
Vernonia gigantea	Giant ironweed	FAC	X	X

TABLE 2 - CONTINUED

WETLAND VEGETATION AND INDIVIDUAL SPECIES WETLAND DESIGNATION

Scientific Name	Common Name	Wetland Status	Upland	Wetland
Vicia cracca tenuifolia	Cow vetch	NO	X	
Viola papilionacea	Common blue violet	FAC	X	X
Vitis aestivalis	Summer grape	FACU	X	
Vitis riparia	River grape	FACW	X	X
Vitis labrusca	Fox grape	FACU	X	
Xanthium strumarium	Common cocklebur	FAC	X	X
Zea Mays	Corn	NI	X	

Obl = Occurs in wetlands almost always (>99 percent) under favorable conditions
Facw = Usually occurs in wetlands (67 - 99 percent) but occasionally found in non-wetlands
Fac = Equally likely to occur in wetlands and non-wetlands (34 - 66 percent)
Facu = Usually occurs in non-wetlands (67 - 99 percent) but occasionally found in wetlands
Upl = Occurs in uplands almost always (>99 percent) under favorable conditions
NI = Not indicated (no agreement as to designation)
NO = No listings

National Wetlands Inventory, U.S. Fish and Wildlife Service, Biological Report 88(24) Region 1 listings

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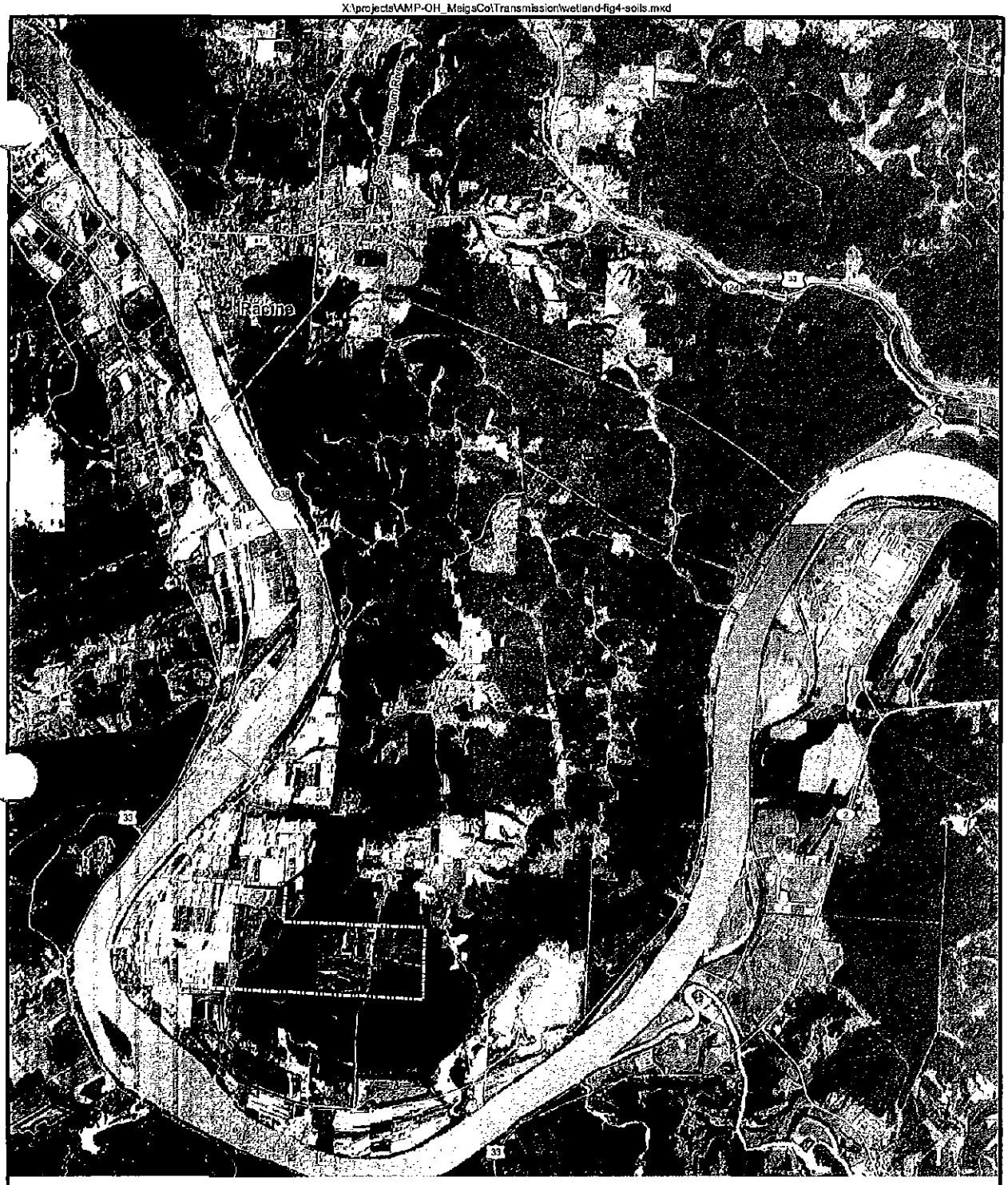

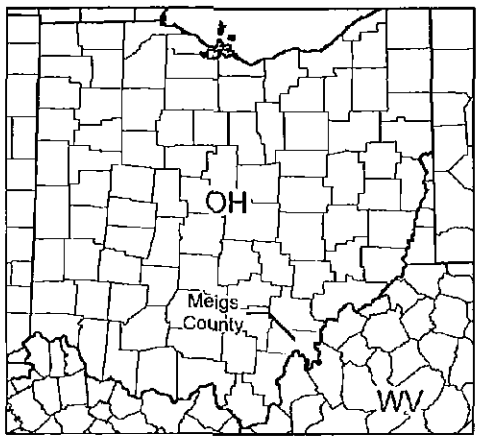

LEGEND:

- Proposed Transmission Line Route
- Proposed Switchyard
- Proposed Plant Boundary

N

0 2,500 5,000 10,000

Scale in Feet

BASE MAP SOURCE:
National Agricultural Imagery Program
USDA Farm Service Agency, 2004

AMP - OHIO
BASELOAD GENERATING FACILITY

FIGURE 1
ROUTE VICINITY MAP

JOB NO. 14946376

URS

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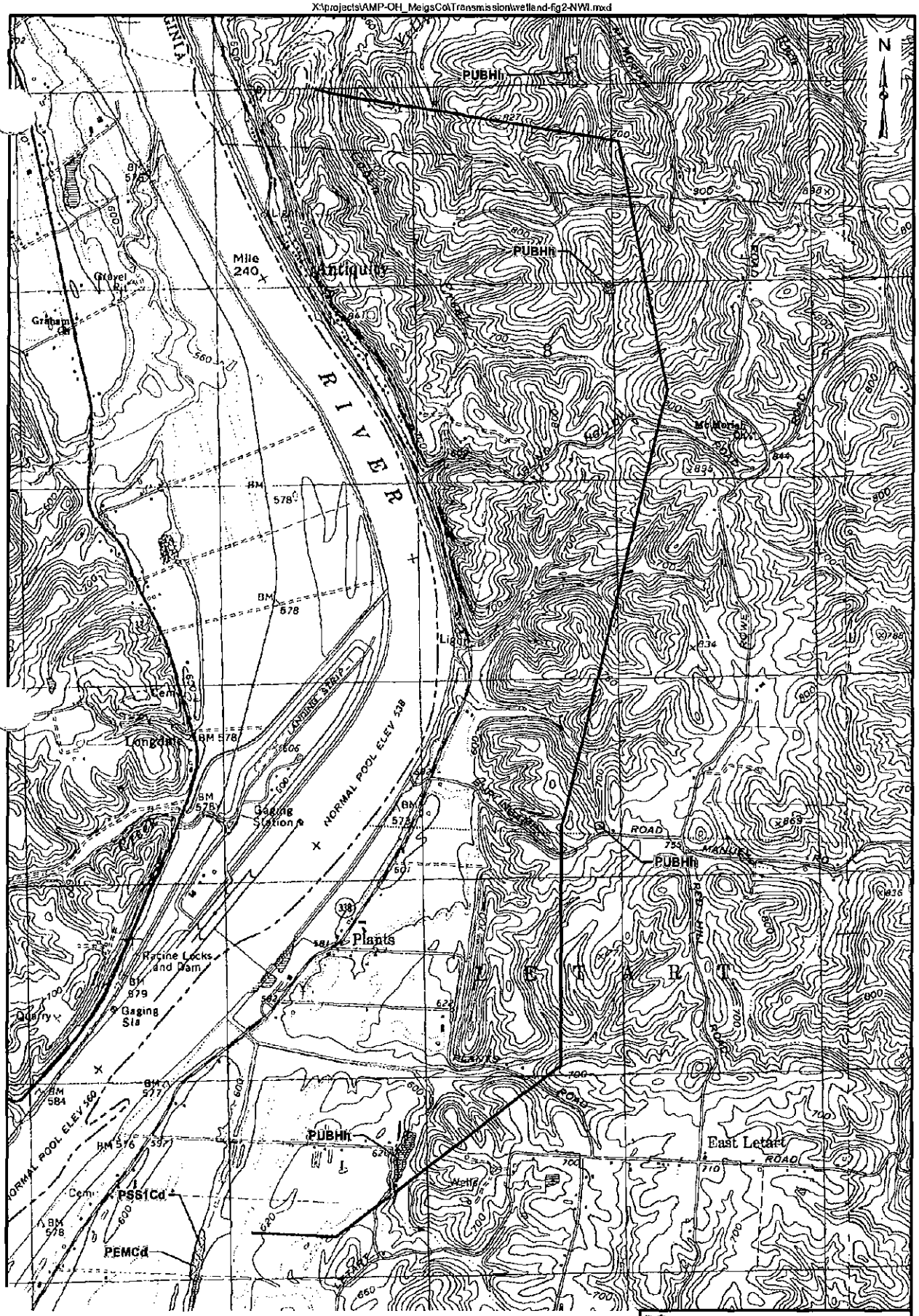

LEGEND:

- Proposed Transmission Line Route
- Proposed Switchyard
- NWI Designation

0 1,000 2,000 4,000

Scale in Feet

BASE MAP SOURCE:
USGS 7.5-minute topographic quadrangles
New Haven, WV-OH (1968, photorevised 1987) and
Ravenswood, OH-WV (1960, photorevised 1987).

AMP - OHIO
BASELOAD GENERATING FACILITY

FIGURE 2
NATIONAL WETLAND INVENTORY MAP

JOB NO. 14946376

URS

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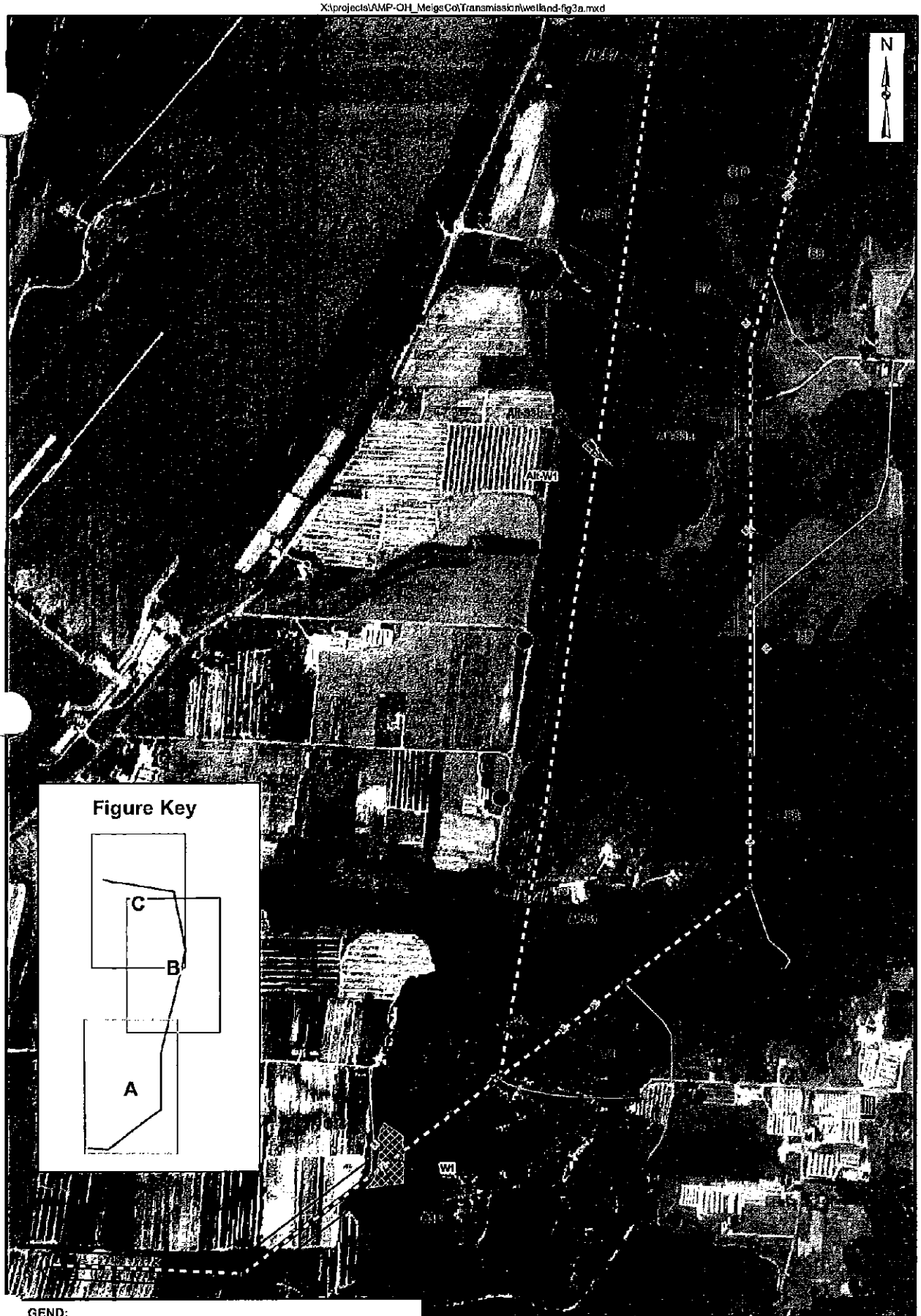

GEND:

- Spadefoot Toads
- Wetlands
- HHEI
- QHEI
- Proposed Pole Location
- Proposed Switchyard
- Proposed Access Roads
- Streams
- Proposed Transmission Line Route
- Alternate Transmission Line Route
- 200-foot Project Corridor

0 250 500 1,000

Scale in Feet

BASE MAP SOURCE:
National Agricultural Imagery Program
USDA Farm Service Agency, 2006

AMP - OHIO
BASELOAD GENERATING FACILITY

FIGURE 3A (REVISED)
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

JOB NO. 14946376

URS

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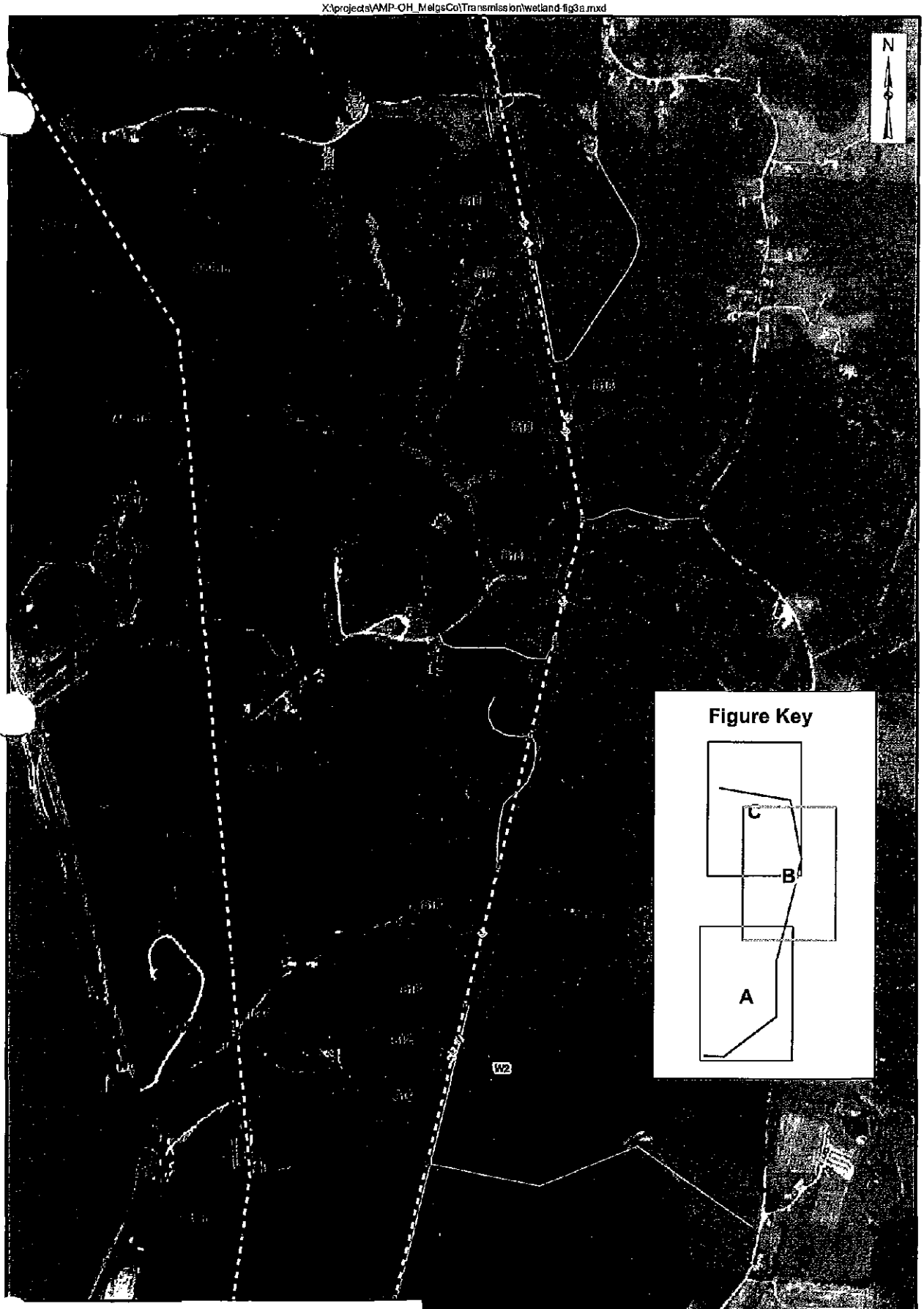

Figure Key

LEGEND:

- Spadefoot Toads
- Wetlands
- HHEI
- QHEI
- Proposed Pole Location
- Proposed Switchyard
- Proposed Access Roads
- Streams
- Proposed Transmission Line Route
- Alternate Transmission Line Route
- 200-foot Project Corridor

0 250 500 1,000

Scale in Feet

BASE MAP SOURCE:
National Agricultural Imagery Program
USDA Farm Service Agency, 2006

AMP - OHIO
BASELOAD GENERATING FACILITY

FIGURE 3B (REVISED)
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

JOB NO. 14946376

URS

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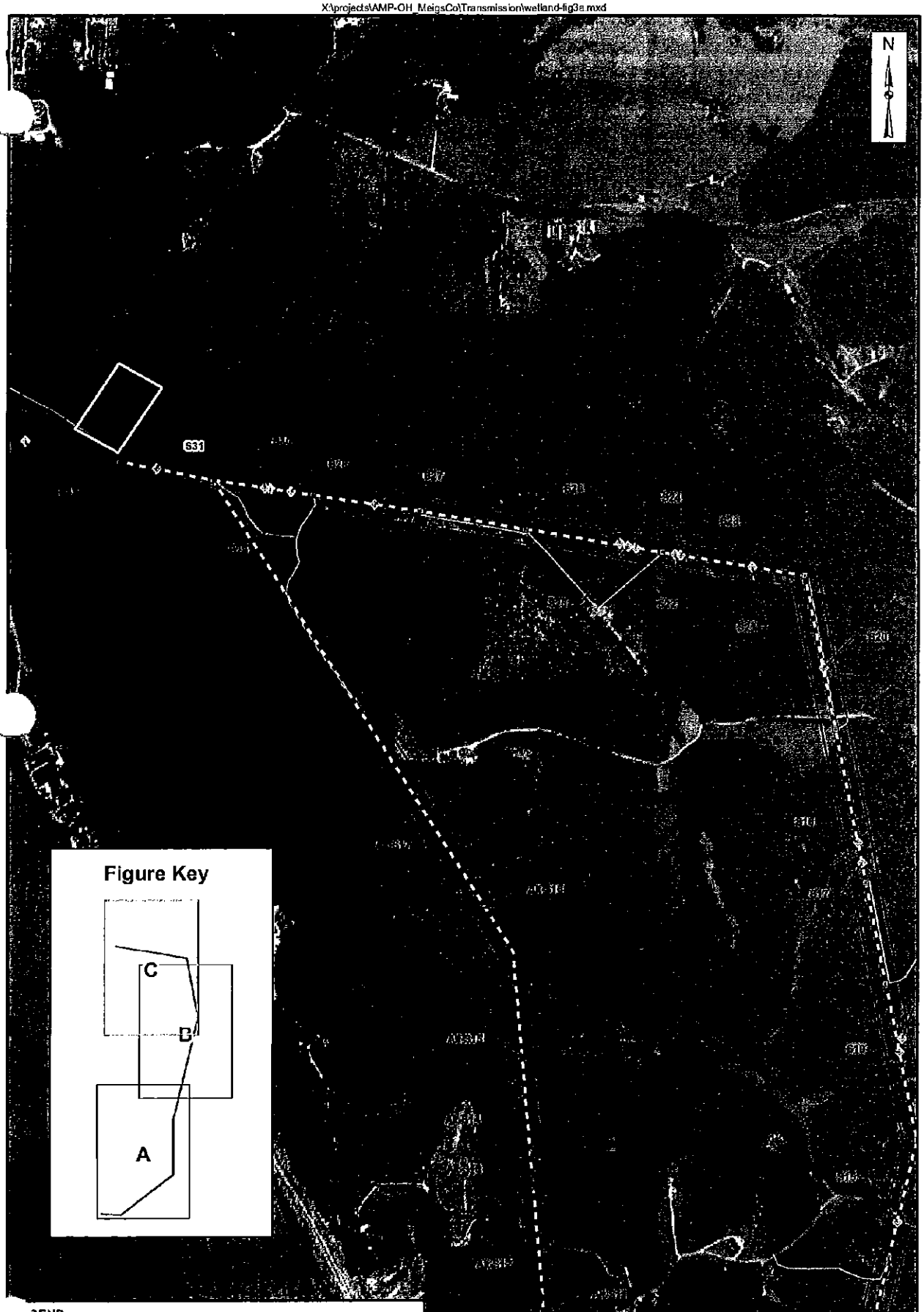

GEND:

- Spadefoot Toads
- Wetlands
- HHEI
- QHEI
- Proposed Pole Location
- Proposed Switchyard
- Proposed Access Roads
- Streams
- Proposed Transmission Line Route
- Alternate Transmission Line Route
- 200-foot Project Corridor

0 250 500 1,000

Scale in Feet

BASE MAP SOURCE:
National Agricultural Imagery Program
USDA Farm Service Agency, 2008

AMP - OHIO
BASELOAD GENERATING FACILITY

FIGURE 3C (REVISED)
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

JOB NO. 14946376

URS

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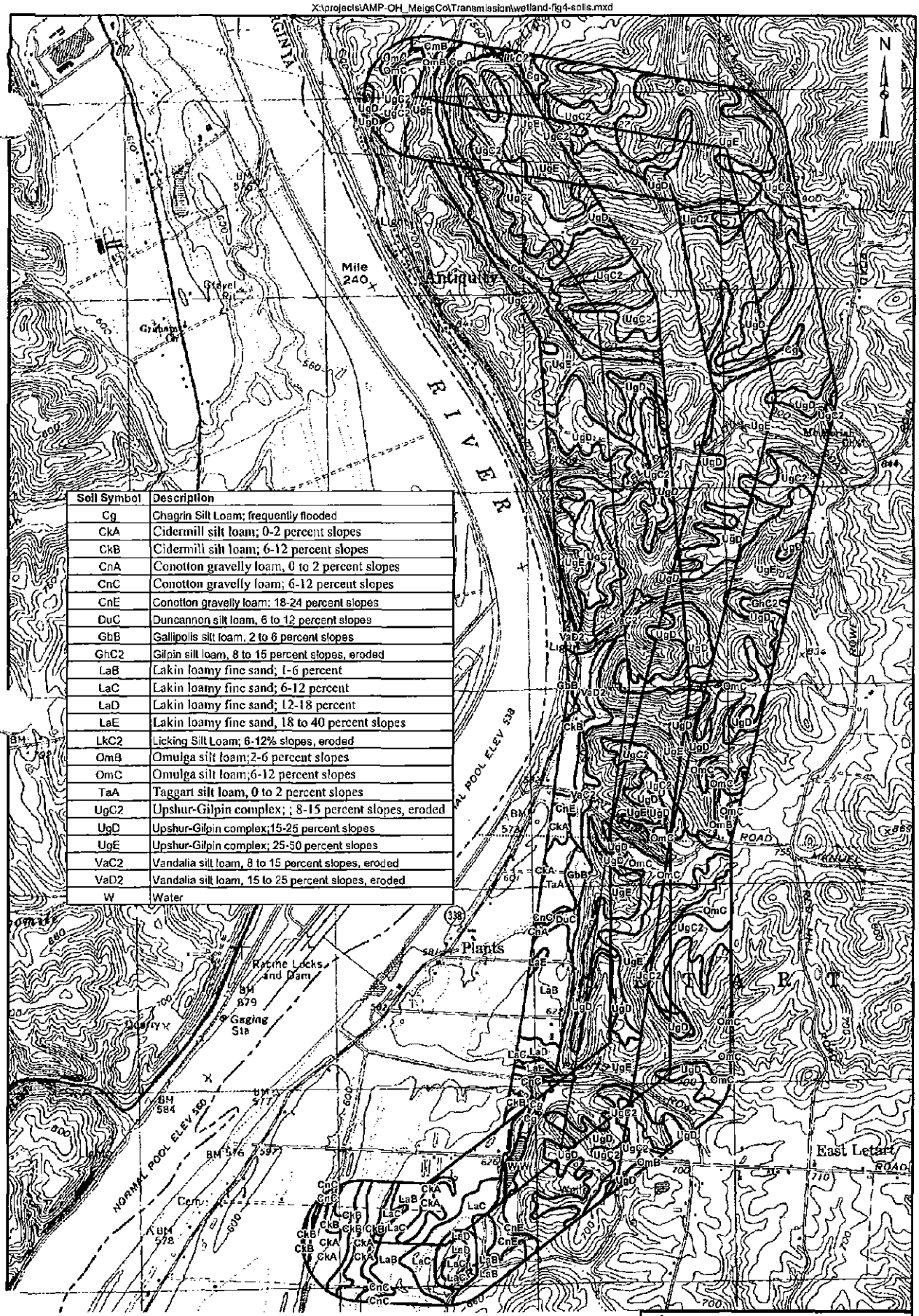


Soil Symbol	Description
Cg	Chagrin Silt Loam; frequently flooded
CkA	Cidermill silt loam; 0-2 percent slopes
CkB	Cidermill silt loam; 6-12 percent slopes
CnA	Conotton gravelly loam, 0 to 2 percent slopes
CnC	Conotton gravelly loam; 6-12 percent slopes
CnE	Conotton gravelly loam; 18-24 percent slopes
DuC	Duncannon silt loam, 6 to 12 percent slopes
GbB	Gallipolis silt loam, 2 to 6 percent slopes
GhC2	Gilpin silt loam, 8 to 15 percent slopes, eroded
LaB	Lakin loamy fine sand; 1-6 percent
LaC	Lakin loamy fine sand; 6-12 percent
LaD	Lakin loamy fine sand; 12-18 percent
LaE	Lakin loamy fine sand, 18 to 40 percent slopes
LkC2	Licking Silt Loam; 6-12% slopes, eroded
OmB	Omulga silt loam;2-6 percent slopes
OmC	Omulga silt loam;6-12 percent slopes
TaA	Taggart silt loam, 0 to 2 percent slopes
UgC2	Upshur-Gilpin complex; ; 8-15 percent slopes, eroded
UgD	Upshur-Gilpin complex;15-25 percent slopes
UgE	Upshur-Gilpin complex; 25-50 percent slopes
VaC2	Vandalia silt loam, 8 to 15 percent slopes, eroded
VaD2	Vandalia silt loam, 15 to 25 percent slopes, eroded
W	Water

LEGEND:

- Soils within 1000-foot Corridor
- Proposed Transmission Line Route
- Proposed Alternate Route

0 1,000 2,000 4,000

Scale in Feet

BASE MAP SOURCE:
USGS 7.5-minute topographic quadrangles
New Haven, WV-OH (1968, photorevised 1987) and
Ravenswood, OH-WV (1960, photorevised 1987).

AMP - OHIO
BASELOAD GENERATING FACILITY

FIGURE 4 (REVISED)
SOILS MAP

JOB NO. 14946376

URS

APPENDIX A

U.S. ARMY CORPS OF ENGINEERS
WETLAND DELINEATION FORMS

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: AMP-Ohio Transmission
Applicant/Owner: AMP-Ohio
Investigator: JAV (URS)
Date: 8/1/06
County: Meigs
State:

Do Normal Circumstances Exist on the site? (Yes) No
Is the site significantly disturbed (Atypical Situation)? Yes (No)
Is the area a potential Problem Area? Yes (No)
(If needed, explain on reverse.)

Community ID: PEM/ASS w/ PFO component
Transect ID: —
Plot ID: W1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Dichanthelium clandestinum	H	FAC+	9. Polygonum sagittatum	H	OBL
2. Impatiens capensis	H	FACW	10. Carex sp.	H	FAC-OBL
3. Juncus effusus	H	FACW+	11. Viburnum laevis	H	OBL
4. Typha latifolia	H	OBL	12. Polygonum pensylvanicum	H	FACW
5. Typha angustifolia	H	OBL	13. Rantanus occidentalis	S/T	FACW-
6. Eupatorium fistulosum	H	FACW+	14. Salix nigra / rubra	S	FACW-
7. Acer saccharinum	S/T	FACW	15. alnus rugosa	S	FACW-
8. Rubus frondosa	H	FACW	16. Verbena hastata	H	FACW+

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): ~95-100%

Remarks: other observed plants include american water plantain, sensitive fern, and nutsedge grass

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
___ No Recorded Data Available

Field Observations:
Depth of Surface Water: — (in.)
Depth to Free Water in Pit: — (in.)
Depth to Saturated Soil: surface (in.)

Wetland hydrology Indicators:
Primary Indicators:
___ Inundated
✓ Saturated in Upper 12 Inches
___ Water Marks
___ Drift Lines
___ Sediment Deposits
✓ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
✓ Oxidized Root Channels in Upper 12"
___ Water-Stained Leaves
✓ Local Soil Survey Data
✓ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks: strong wetland hydrology, stream bisects wetland

SOILS

Map Unit Name
(Series and Phase): _____
Drainage Class: _____
Field Observations
Confirm Mapped Type? Yes No
Taxonomy (Subgroup): _____

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-5"	A	10YR 5/2	7.5 YR 4/4	many/prominent	silty clay
5-14"	B	10YR 4/1	—	—	silty clay

Hydric Soil Indicators:
___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
✓ Aquic Moisture Regime
✓ Reducing Conditions
✓ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

Is this Sampling Point Within a Wetland? (Yes) No (Circle)

Remarks:

Approved by HQUSACE 3/92

DATA FORM

ROUTINE WETLAND DETERMINATION

(1987 COE Wetlands Delineations Manual)

Project/Site: AMP			Date: 8/23/06
Applicant/Owner: AMP			County: Meigs
Investigator(s): Brooke McCloskey			State: OH
Do Normal Circumstances exist on the site?	☑ Yes	☐ No	Community ID: PEM
Is the site significantly disturbed (Atypical Situation)?	☐ Yes	☑ No	Transect ID: WET
Is the area a potential Problem Area? (If needed, explain on reverse)	☐ Yes	☑ No	Plot ID: 2
			GPS Coordinates:

VEGETATION

Dominant Plant Species	% Cover	Stratum	Indicator	Dominant Plant Species	% Cover	Stratum	Indicator
1. Impatiens capensis	20	He	FACW	9.			
2. Toxicodendron radicans	10	He	FAC	10.			
3. Panicum clandestinum	35	He	FAC+	11.			
4. Polygonum pensylvanicum	5	He	FACW	12.			
5. Boehmeria cylindrica	25	He	FACW	13.			
6. Cyperus esculentus	5	He	FACW	14.			
7.				15.			
8.				16.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-):

Remarks: *Hydrophytic vegetation criterion has been met.*

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:

Depth of Surface Water: 2 (in.)

Depth to Free Water in Pit: 8 (in.)

Depth to Saturated Soil: surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☑ Inundated
- ☑ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 inches
- ☑ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☑ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: Wetland hydrology criterion has been met.

DATA FORM

ROUTINE WETLAND DETERMINATION

(1987 COE Wetlands Delineations Manual)

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup):	Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle (Abundance/Contrast)	Texture, Concretions, Structure, etc.
0-1	A	10YR 2/1	NA		
1-6	B	10YR 4/1	NA		

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Hydric soils criterion met.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☑ Yes	☐ No	
Wetland Hydrology Present?	☑ Yes	☐ No	Is this Sampling Point Within a Wetland?
Hydric Soils Present?	☑ Yes	☐ No	☑ Yes ☐ No

Remarks: All three wetland criteria have been met, therefore, this area is considered a wetland.

DATA FORM

ROUTINE WETLAND DETERMINATION

(1987 COE Wetlands Delineations Manual)

Project/Site: AMP		Date: 8/23/05
Applicant/Owner: AMP		County: Meigs
Investigator(s): Brooke McCloskey		State: OH
Do Normal Circumstances exist on the site?	☑ Yes ☐ No	Community ID: PEM
Is the site significantly disturbed (Atypical Situation)?	☐ Yes ☑ No	Transect ID: UPL
Is the area a potential Problem Area? (If needed, explain on reverse)	☐ Yes ☑ No	Plot ID: 2
		GPS Coordinates:

VEGETATION

Dominant Plant Species	% Cover	Stratum	Indicator	Dominant Plant Species	% Cover	Stratum	Indicator
1. Impatiens capensis		He	FACW	9. Ambrosia artemisiifolia		He	FACU
2. Lonicera japonica		He	FAC-	10.			
3. Erigeron anuus		He	FACU	11.			
4. Rubus allegheniensis		He	FACU	12.			
5. Boehmeria cylindrica		He	FACW	13.			
6. Oxalis stricta		He	UPL	14.			
7. Polygonum virginianum		He	FAC	15.			
8. Commelina communis		He	FAC	16.			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 4/9=44%

Remarks: Hydrophytic vegetation criterion has not been met.

HYDROLOGY

☐ Recorded Data (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 0 (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more Required):
- ☐ Oxidized Root Channels in Upper 12 inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: Wetland hydrology criterion has not been met.

DATA FORM

ROUTINE WETLAND DETERMINATION

(1987 COE Wetlands Delineations Manual)

SOILS

Map Unit Name (Series and Phase): Drainage Class:

Taxonomy (Subgroup): Field Observations Confirm Mapped Type? ☐ Yes ☐ No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle (Abundance/Contrast)	Texture, Concretions, Structure, etc.
0-3	A	7.5Y 2/1	NA		
3-9	B	7.5Y 4/1	NA		

Hydric Soil Indicators:
- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Hydric soils criterion not met.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☐ Yes	☑ No	
Wetland Hydrology Present?	☐ Yes	☑ No	Is this Sampling Point Within a Wetland?
Hydric Soils Present?	☐ Yes	☑ No	☐ Yes ☑ No

Remarks: None of the three wetland criteria have been met, therefore, this area is not considered a wetland.

ROUTINE WETLAND DETERMINATION-DATA FORM 1987 MANUAL

Project: Alt. Trans Route
Applicant/Owner: Amp - OH
Investigator(s): Repasky, L. Breuer, Caudill
Date: 6-18-02 Community ID: FO
County: Meigs Transect ID:
State: OH Plot ID: W-1-upl

Do Normal Circumstances exist on the site? YES NO
Is the site significantly & recently disturbed? (Atypical Situation) YES NO
Is the area a potential Problem Area? (Explain in final remarks) YES NO

VEGETATION

Dominant Plant Species	Stratum	Indicator
1 Liriodendron tulipifera	T	FACU
2 Lindera benzoin	S	FACW-
3 Polystichum acrostichoides	H	FACU-
4 Rosa multiflora	S	FACU
5		
6		
7		
8		
9		
10		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 25 %

Hydrophytic Vegetation Present? Yes (No)
REMARKS

HYDROLOGY

RECORDED DATA (Describe in Remarks)
☐ Stream, Lake or Tide Gauge
☐ Aerial Photographs
☐ Other
☐ None Available

FIELD OBSERVATIONS
Depth of Surface Water: ______ (in.)
Depth to Free Water in Pit: ______ (in.)
Depth to Saturated Soil: ______ (in.)

Wetland Hydrology Present? Yes (No)

PRIMARY Indicators
☐ Inundated
☐ Saturated in Upper 12"
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☐ Drainage Patterns in Wetlands

SECONDARY Indicators
☐ Oxidized Root Channels in UPPER 12"
☐ Water Stained leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (Explain in Remarks)

REMARKS

SOILS

Map Unit Name (Series and Phase): ______ Drainage Class: ______
Taxonomy (Subgroup): ______ Field Observations Confirm Mapped Type? Yes No

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4	A-B	10YR 4/?			

HYDRIC SOIL INDICATORS
☐ Histosol
☐ Histic Epipedon
☐ Sulfidic Odor
☐ Aquic Moisture Regime
☐ Reducing Conditions
☐ Gleyed or Low-Chroma Colors
☐ Concretions
☐ High Organic Content in Surface Layer in Sandy Soils
☐ Organic Streaking in Sandy Soils
☐ Listed on Local Hydric Soils List
☐ Listed on National Hydric Soils List
☐ Other (Explain in Remarks)

Hydric Soil Present? Yes (No)
REMARKS

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes (No)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)
Is this sampling point a Wetland? Yes (No)
REMARKS

ROUTINE WETLAND DETERMINATION-DATA FORM 1987 MANUAL

Project: Alt Trans Route
Applicant/Owner: Amp-OH
Investigator(s): Repasky, L. Breuer, Caudill
Date: 6-18-02 Community ID: PEM
County: Meigs Transect ID:
State: OH Plot ID: W-1

Do Normal Circumstances exist on the site? YES (NO)*
Is the site significantly & recently disturbed? (Atypical Situation) YES (NO)
Is the area a potential Problem Area? (Explain in final remarks) YES (NO)

VEGETATION

Dominant Plant Species	Stratum	Indicator
1 Bidens connata	H	OBL
2 Impatiens capensis	H	FACW
3 Glyceria striata	H	OBL
4 Leersia oryzoides	H	OBL
5		
6		
7		
8		
9		
10		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100 %

Hydrophytic Vegetation Present? (Yes) No
REMARKS

HYDROLOGY

RECORDED DATA (Describe in Remarks)
☒ Stream, Lake or Tide Gauge
☐ Aerial Photographs
☐ Other
☐ None Available

FIELD OBSERVATIONS
Depth of Surface Water: — (in.)
Depth to Free Water in Pit: 6 (in.)
Depth to Saturated Soil: 6 (in.)

Wetland Hydrology Present? (Yes) No

PRIMARY Indicators
☐ Inundated
☒ Saturated in Upper 12"
☐ Water Marks
☐ Drift Lines
☐ Sediment Deposits
☒ Drainage Patterns in Wetlands

SECONDARY Indicators
☐ Oxidized Root Channels in UPPER 12"
☐ Water Stained leaves
☐ Local Soil Survey Data
☐ FAC-Neutral Test
☐ Other (Explain in Remarks)

REMARKS

*Pond is man-made.

SOILS

Map Unit Name (Series and Phase): ______ Drainage Class: ______
Taxonomy (Subgroup): ______ Field Observations Confirm Mapped Type? Yes No

PROFILE DESCRIPTION

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 3/4			sandy muck
6-12	B	10YR 4/1			silty sand

HYDRIC SOIL INDICATORS
☐ Histosol
☒ Histic Epipedon
☐ Sulfidic Odor
☐ Aquic Moisture Regime
☐ Reducing Conditions
☒ Gleyed or Low-Chroma Colors
☐ Concretions
☐ High Organic Content in Surface Layer in Sandy Soils
☐ Organic Streaking in Sandy Soils
☐ Listed on Local Hydric Soils List
☐ Listed on National Hydric Soils List
☐ Other (Explain in Remarks)

Hydric Soil Present? (Yes) No
REMARKS

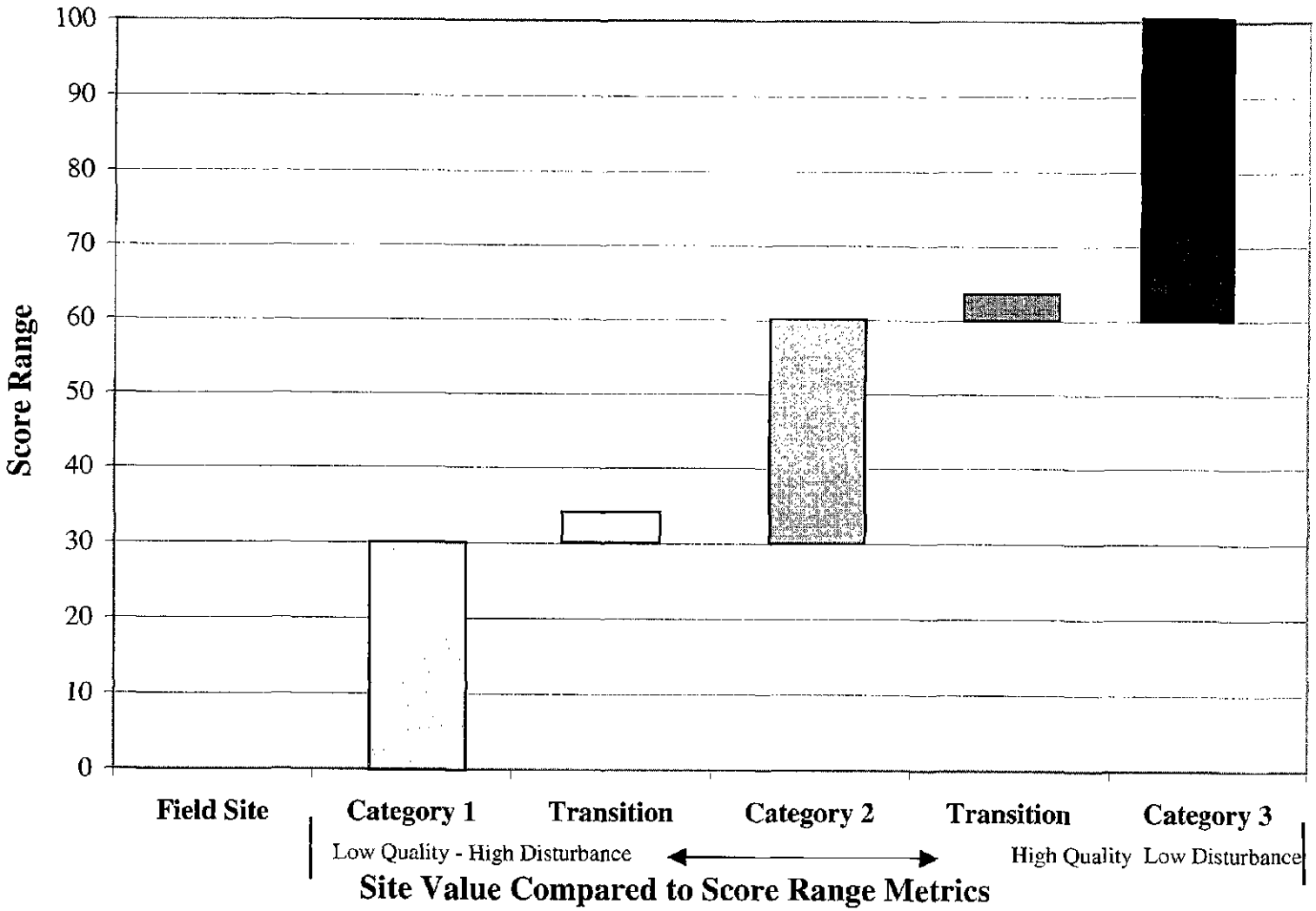
WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No
Is this sampling point a Wetland? (Yes) No
REMARKS

APPENDIX B

OHIO EPA OHIO RAPID ASSESSMENT METHOD (ORAM) FOR WETLANDS V5.0 FORMS AND GRAPH

Ohio Rapid Assessment Method



Site: W1	Rater(s): JAV (UBS)	Date: 3/1/06

5 | 5 (max 6 pts. | subtotal)

Metric 1. Wetland Area (size).

Select one size class and assign score. — 5

- [ ] >50 acres (>20.2ha) (6 pts)
- [x] 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 | 12 (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. — 4

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] 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. — 3

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

17.5 | 29.5 (max 30 pts. | subtotal)

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply. — 4

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

3b. Connectivity. Score all that apply. — 2

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

3c. Maximum water depth. Select only one and assign score. — 1

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

3d. Duration inundation/saturation. Score one or dbl check. — 3.5

- [x] Semi- to permanently inundated/saturated (4)
- [x] 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. — 7

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

Check all disturbances observed

- [x] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [x] other man made dam at northern end

19 | 48.5 (max 20 pts. | subtotal)

Metric 4. Habitat Alteration and Development.

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

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

4b. Habitat development. Select only one and assign score. — 6

- [ ] Excellent (7)
- [x] 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. — 9

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

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [x] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [x] nutrient enrichment

↳ these disturbances were noted in the surrounding vicinity but do not appear to have affected wetland

48.5 subtotal this page

Site:	Rater(s):	Date:

48.5 subtotal first page

Ø | 48.5 (max 10 pts. | subtotal)

Metric 5. Special Wetlands.

Check all that apply and score as indicated. — Ø

- [ ] 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 Praires (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)

10 | 58.5 (max 20 pts. | subtotal)

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities. Score all present using 0 to 3 scale. — 5

Score	Community
0	Aquatic bed
3	Emergent
1	Shrub
1	Forest
0	Mudflats
0	Open water
	Other

6b. horizontal (plan view) Interspersion. Select only one. — 2

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [x] 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 — Ø

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

Phalaris arundinacea and Typha angustifolia constitutes less than 5% coverage

6d. Microtopography. Score all present using 0 to 3 scale. — 3

Score	Feature
1	Vegetated hummucks/tussucks
1	Coarse woody debris >15cm (6in)
1	Standing dead >25cm (10in) dbh
0	Amphibian breeding pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

58.5 GRAND TOTAL(max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Category 2

ORAM v. 5.0 Field Form Quantitative Rating

Site: W1	Rater(s): JAV (JBS)	Date: 8/1/06

5 (max 6 pts.) | **5** (subtotal)

Metric 1. Wetland Area (size).

Select one size class and assign score. — 5
- [ ] >50 acres (>20.2ha) (6 pts)
- [X] 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 (max 14 pts.) | **12** (subtotal)

Metric 2. Upland buffers and surrounding land use.

2a. Calculate average buffer width. Select only one and assign score. Do not double check. — 4
- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [X] 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. — 3
- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [X] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [X] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

17.5 (max 30 pts.) | **29.5** (subtotal)

Metric 3. Hydrology.

3a. Sources of Water. Score all that apply. — 4
- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [X] Precipitation (1)
- [X] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply. — 2
- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [X] Part of wetland/upland (e.g. forest), complex (1)
- [X] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score. — 1
- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [X] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check. — 3.5
- [X] Semi- to permanently inundated/saturated (4)
- [X] 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. — 7
- [ ] None or none apparent (12)
- [X] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed:
- [X] ditch
- [X] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [X] other man made dam at northern end

19 (max 20 pts.) | **48.5** (subtotal)

Metric 4. Habitat Alteration and Development.

4a. Substrate disturbance. Score one or double check and average. — 4
- [X] None or none apparent (4)
- [ ] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score. — 6
- [ ] Excellent (7)
- [X] 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. — 9
- [X] None or none apparent (9)
- [ ] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed:
- [ ] mowing
- [ ] grazing
- [X] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [X] farming
- [X] nutrient enrichment

→ these disturbances were noted in the surrounding vicinity but do not appear to have affected wetland

48.5 subtotal this page

last revised 1 February 2001 jjm

ORAM v. 5.0 Field Form Quantitative Rating

Site:	Rater(s):	Date:

48.5 subtotal this page

Ø (max 10 pts.) | **48.5** (subtotal)

Metric 5. Special Wetlands.

Check all that apply and score as indicated. — Ø
- [ ] 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 Praires (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)

10 (max 20 pts.) | **58.5** (subtotal)

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities. Score all present using 0 to 3 scale. — 5
- 0 Aquatic bed
- 3 Emergent
- 1 Shrub
- 1 Forest
- 0 Mudflats
- 0 Open water
- [ ] Other ______

6b. horizontal (plan view) Interspersion. Select only one. — 2
- [ ] High (5)
- [ ] Moderately high (4)
- [ ] Moderate (3)
- [X] 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 — Ø
- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [X] Nearly absent <5% cover (0)
- [ ] Absent (1)

Phalaris arundinacea and Typha angustifolia constitutes less than 5% coverage

6d. Microtopography. Score all present using 0 to 3 scale. — 3
- 1 Vegetated hummucks/tussucks
- 1 Coarse woody debris >15cm (6in)
- 1 Standing dead >25cm (10in) dbh
- 0 Amphibian breeding pools

Vegetation Community Cover Scale

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

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

58.5 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

last revised 1 February 2001 jjm

Category 2

ORAM v. 5.0 Field Form Quantitative Rating

Site: W-1 Rater(s): [illegible] Date: 6-18

Metric 1. Wetland Area (size).

0 | 0 (max pts | subscore)

Select one size class and assign score
- [ ] >50 acres (>20.2ha) (8 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

14 | 14 (max 14 pts | subscore)

2a Calculate average buffer width. Select only one and assign score. Do not double check.
- [x] 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.
- [x] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

15 | 29 (max 30 pts | subscore)

3a Sources of Water. Score all that apply.
- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [x] Seasonal/intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b Connectivity. Score all that apply.
- [ ] 100 year floodplain (1)
- [x] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest) complex (1)
- [x] Part of riparian or upland corridor (1)

3c Maximum water depth. Select only one and assign score.
- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d Duration inundation/saturation. Score one or dbl check.
- [x] 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)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed
- [ ] ditch
- [ ] tile
- [ ] dike
- [x] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

9 | 38 (max 20 pts | subscore)

4a Substrate disturbance. Score one or double check and average.
- [ ] None or none apparent (4)
- [x] 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)
- [x] 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)
- [x] 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
- [x] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

31 (subtotal this page)

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ORAM v. 5.0 Field Form Quantitative Rating

Site: W-1 Rater(s): [illegible] Date: 6-18

31 (subtotal this page)

0 | 38 (max 10 pts | subscore)

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 | 42 (max 20 pts | subtotal)

Metric 6. Plant communities, interspersion, microtopography.

6a Wetland Vegetation Communities.
Score all present using 0 to 3 scale.
- [ ] Aquatic bed
- [2] 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)
- [D] 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)
- [X] Absent (1)

6d Microtopography.
Score all present using 0 to 3 scale.
- [ ] Vegetated hummocks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [ ] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.247 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

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

Mudflat and Open Water Class Quality

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

Microtopography Cover Scale

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

42 GRAND TOTAL (max 100 pts)

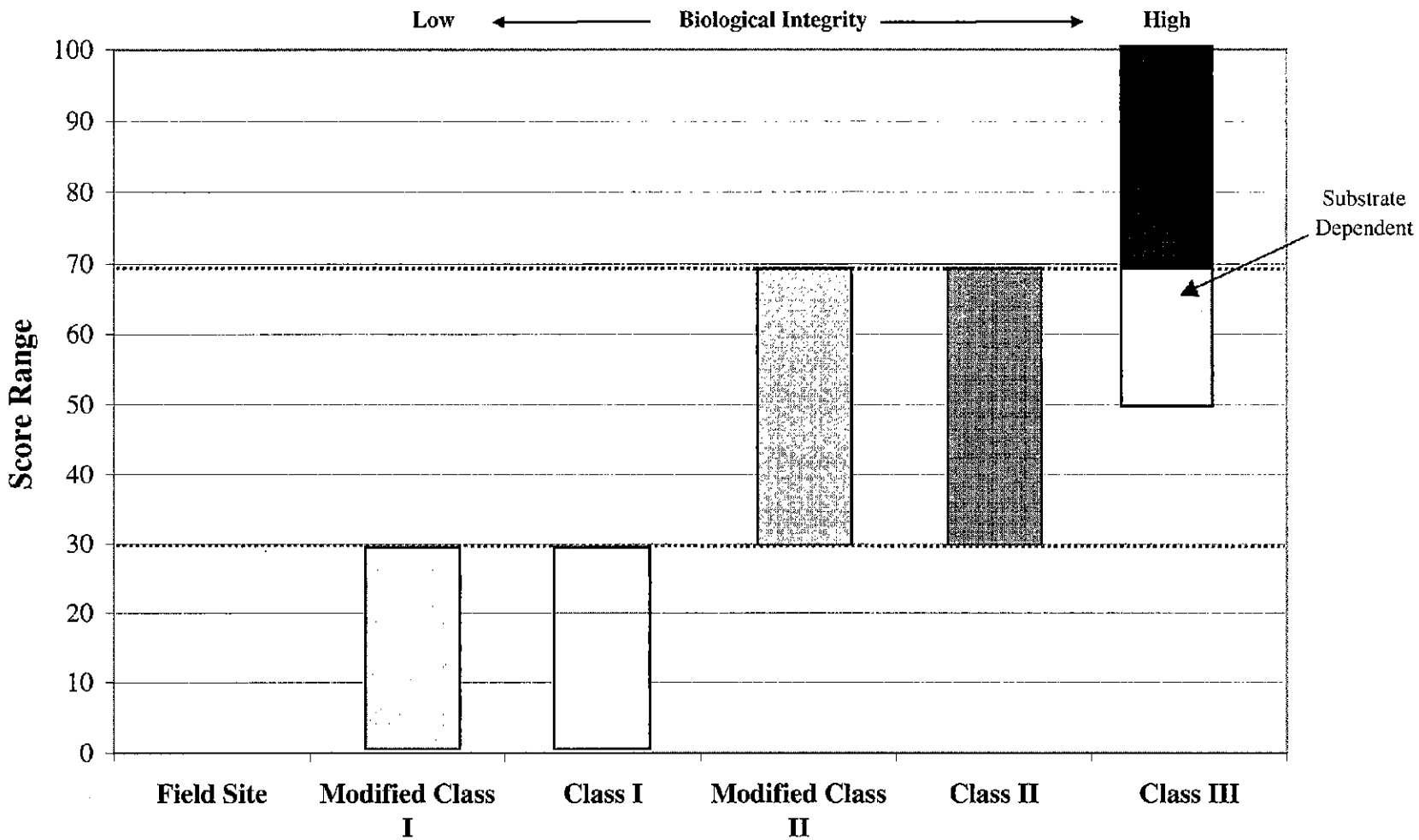
Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

last revised 1 February 2001 jjm

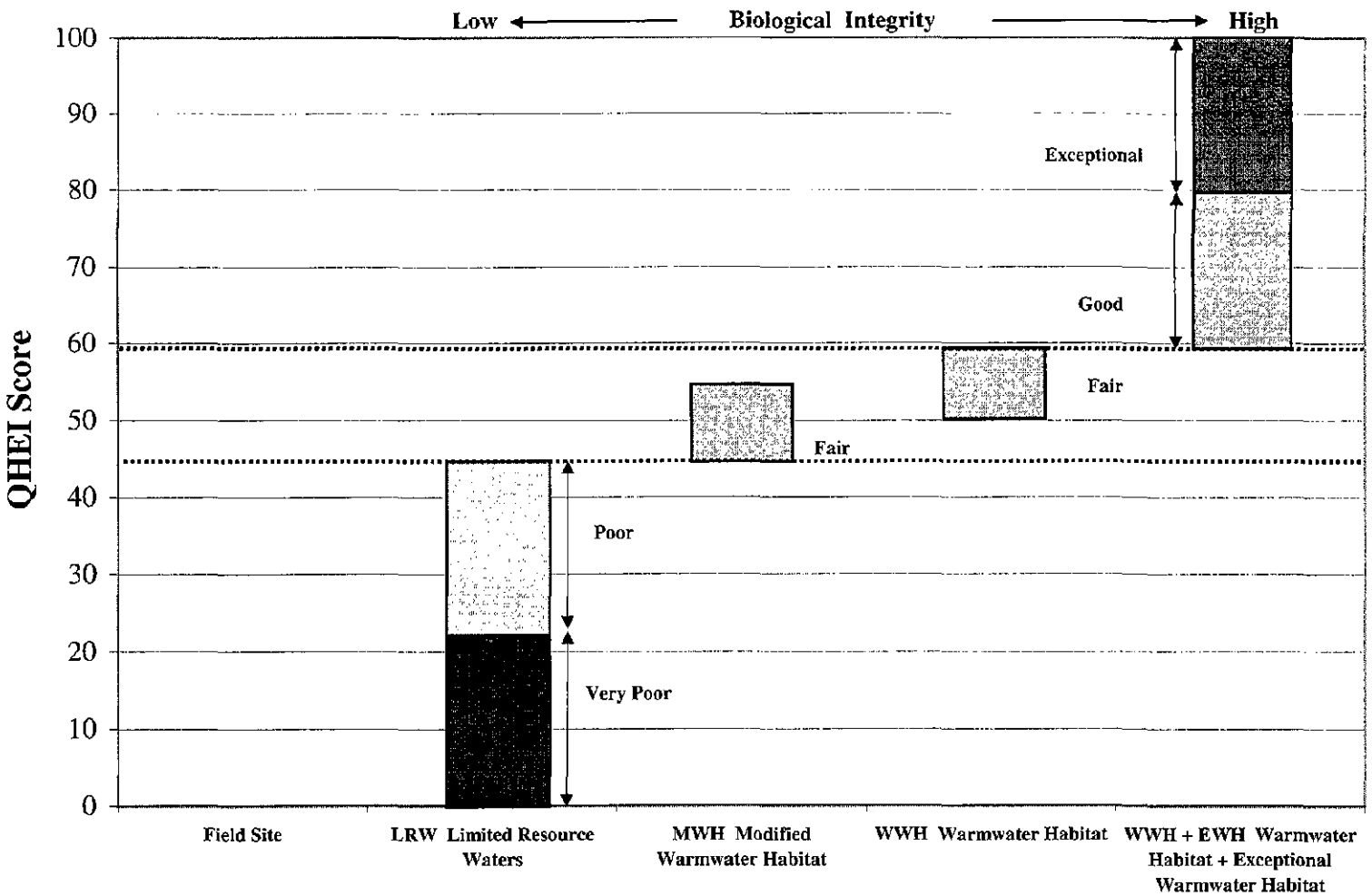
APPENDIX C

OHIO EPA HEADWATER HABITAT EVALUATION INDEX (HHEI) AND QUALITY HABITAT EVALUATION (QHEI) STREAM CHANNEL ASSESSMENT FORMS AND GRAPH

Headwater Habitat Evaluation Index



Qualitative Habitat Evaluation Index



Site Value Compared to QHEI Score Metrics

Class II

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 50

SITE NAME/LOCATION AMP SITE NUMBER S1 RIVER BASIN _____ DRAINAGE AREA (mi²) 2 mi²

LENGTH OF STREAM REACH (ft) 200ft LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/22/02 SCORER BFM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	☒ BLDR SLABS [16 pts]		☐	SILT [3 pt]	
☐	☐ BOULDER (>256 mm) [16 pts]	20%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐	☐ BEDROCK [16 pt]	5%	☐	FINE DETRITUS [3 pts]	
☐	☐ COBBLE (65-256 mm) [12 pts]	15%	☐	CLAY or HARDPAN [0 pt]	
☐	☐ GRAVEL (2-64 mm) [9 pts]		☐	MUCK [0 pts]	
☐	☒ SAND (<2 mm) [6 pts]	60%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 40% (A) 26 (B) 4

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

HHEI Metric Points — Substrate Max = 40: 26

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

☐ > 30 centimeters [20 pts] ☒ > 5 cm - 10 cm [15 pts]
☐ > 22.5 - 30 cm [30 pts] ☐ < 5 cm [6 pts]
☐ > 10 - 22.5 cm [25 pts] ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 12cm

Pool Depth Max = 30: 15

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

☐ > 4.0 meters (> 13') [30 pts] ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [18 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ☐ ≤ 1.0 m (≤ 3' 3") [6 pts]
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 4.36

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

☒ Stream Flowing ☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Subsurface flow with isolated pools (Interstitial) ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☐ None ☐ 1.0 ☒ 2.0 ☐ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ??

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

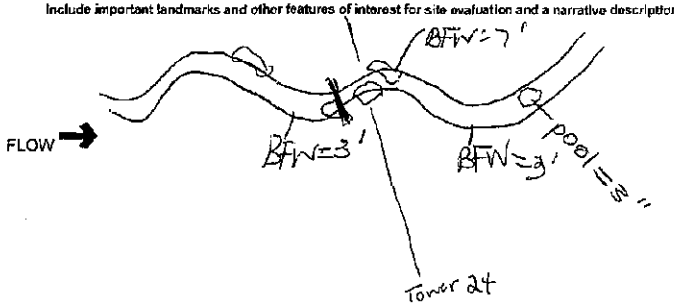
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Ohio EPA Primary Headwater Habitat Evaluation Form

Class I

HHEI Score (sum of metrics 1, 2, 3) : 19

SITE NAME/LOCATION MMP SITE NUMBER S2 RIVER BASIN _____ DRAINAGE AREA (mi^2) <1mi^2

LENGTH OF STREAM REACH (ft) 200ft LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/22/08 SCORER BEM COMMENTS _____

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

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

MODIFICATIONS: _____

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of *significant substrate types* found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☐☒	LEAF PACK/WOODY DEBRIS [3 pts]	40%
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☒	GRAVEL (2-64 mm) [9 pts]	20	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0% (A) 12 (B) 2

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

HHEI Metric Points

Substrate Max = 40: 14

A + B

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] 0

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [26 pts]
- ☐ > 1.5 m - 3.0 m (> 5' 7" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [16 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 1.3ft

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 51 m (200 ft) of channel) (Check *ONLY* one box):

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

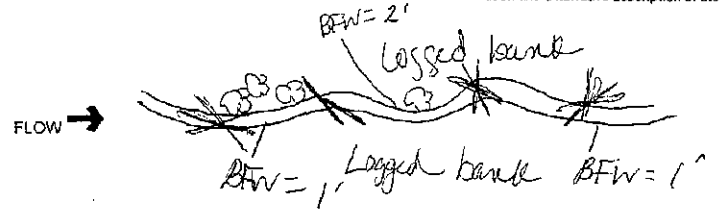
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class II

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 39

SITE NAME/LOCATION Amp SITE NUMBER S3 RIVER BASIN _____ DRAINAGE AREA (mi²) .1 mi 2

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 9/22/04 SCORER BTM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pt]	
☐	BOULDER (>256 mm) [15 pts]		☐	LEAF PACK/WOODY DEBRIS [3 pts]	50
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]	15%	☐	CLAY or HARDPAN [0 pt]	
☐	GRAVEL (2-64 mm) [9 pts]	20%	☐	MUCK [0 pts]	
☐	SAND (<2 mm) [6 pts]	50%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 15% (A) 15 (B) 4

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

HHEI Metric Points

Substrate Max = 40: 19

A + B

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ >5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 7.2 cm

Pool Depth Max = 30: 15

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 6") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): .93 m

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☒ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ??

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 80%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

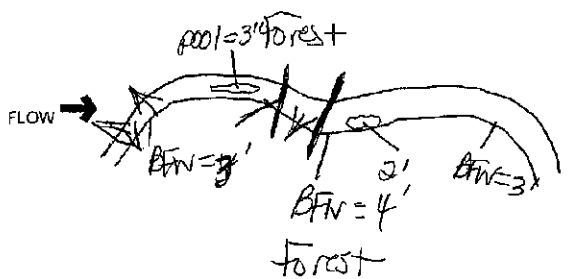
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 27

SITE NAME/LOCATION Pimp SITE NUMBER S4 RIVER BASIN _____ DRAINAGE AREA (mi²) .1 mi²

LENGTH OF STREAM REACH (ft) _____ LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/22/01 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: [X] NONE / NATURAL CHANNEL [ ] RECOVERED [ ] RECOVERING [ ] RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
[ ][ ]	BLDR SLABS [16 pts]		[ ][ ]	SILT [3 pt]	
[ ][ ]	BOULDER (>256 mm) [16 pts]	5%	[ ][ ]	LEAF PACK/WOODY DEBRIS [3 pts]	
[ ][ ]	BEDROCK [16 pt]		[ ][ ]	FINE DETRITUS [3 pts]	
[ ][ ]	COBBLE (65-256 mm) [12 pts]	15%	[ ][ ]	CLAY or HARDPAN [0 pt]	
[ ][X]	GRAVEL (2-64 mm) [8 pts]	30%	[ ][ ]	MUCK [0 pts]	
[ ][X]	SAND (<2 mm) [6 pts]	50%	[ ][ ]	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20% (A) 5 (B) 4

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

HHEI Metric Points

Substrate Max = 40: 19

A + B

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

- [ ] > 30 centimeters [20 pts]
- [ ] > 22.5 - 30 cm [30 pts]
- [ ] > 10 - 22.5 cm [25 pts]
- [ ] > 5 cm - 10 cm [15 pts]
- [ ] ≤ 5 cm [5 pts]
- [X] NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- [ ] > 4.0 meters (> 13') [30 pts]
- [ ] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- [ ] > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- [ ] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- [X] ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 5

Bankfull Width Max=30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: *River Left (L) and Right (R) as looking downstream*☆

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

COMMENTS _____

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

- [ ] Stream Flowing
- [ ] Subsurface flow with isolated pools (Interstitial)
- [ ] Moist Channel, isolated pools, no flow (Intermittent)
- [X] Dry channel, no water (Ephemeral)

COMMENTS _____

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

[X] None	[ ] 1.0	[ ] 2.0	[ ] 3.0
[ ] 0.5	[ ] 1.5	[ ] 2.5	[ ] >3

STREAM GRADIENT ESTIMATE

[ ] Flat (0.5 ft/100 ft) [ ] Flat to Moderate [ ] Moderate (2 ft/100 ft) [ ] Moderate to Severe [X] Severe (10 ft/100 ft)

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

QHEI PERFORMED? - [ ] Yes [X] No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- [ ] WWH Name: _____ Distance from Evaluated Stream _____
- [ ] CWH Name: _____ Distance from Evaluated Stream _____
- [ ] EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): _____

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

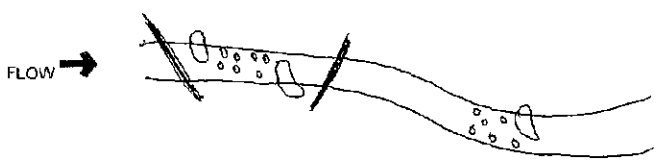
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class II

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 54

SITE NAME/LOCATION AmP SITE NUMBER S5 RIVER BASIN _____ DRAINAGE AREA (mi²) 2 1mi2

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/22/00 SCORER BEM COMMENTS _____

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

STREAM CHANNEL: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

MODIFICATIONS:

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pts]	
☐	BOULDER (>256 mm) [15 pts]		☐	LEAF PACK/WOODY DEBR [3 pts]	5%
☐	BEDROCK [15 pts]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]	10%	☐	CLAY or HARDPAN [0 pts]	
☒	GRAVEL (2-64 mm) [9 pts]	25%	☐	MUCK [0 pts]	
☒	SAND (<2 mm) [6 pts]	60%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10% (A) 15 (B) 4

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

HHEI Metric Points — Substrate Max = 40: 19 — A + B

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

- ☐ > 30 centimeters [20 pts]
- ☐ >22.5 - 30 cm [30 pts]
- ☐ >15 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 12 cm

Pool Depth Max = 30: 15

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

- ☐ > 3.0 meters (> 13') [30 pts]
- ☐ >2.0 m - 3.0 m (> 9' 7" - 13') [25 pts]
- ☒ >1.0 m - 2.0 m (> 3' 3" - 6' 6") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 5") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 5ft

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, Isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☐ None	☒ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

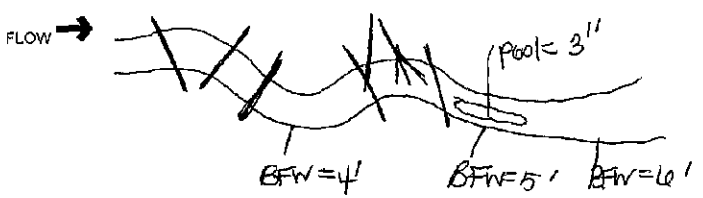
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

Class II

HHEI Score (sum of metrics 1, 2, 3): 37

SITE NAME/LOCATION: BMP SITE NUMBER: Ste RIVER BASIN: _____ DRAINAGE AREA (mi²): .4 mi²

LENGTH OF STREAM REACH (ft): 200 LAT.: _____ LONG.: _____ RIVER CODE: _____ RIVER MILE: _____

DATE: 8/22/12 SCORER: BEM COMMENTS: _____

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

STREAM CHANNEL MODIFICATIONS: [X] NONE / NATURAL CHANNEL [ ] RECOVERED [ ] RECOVERING [ ] RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
[ ][ ]	BLDR SLABS [16 pts]		[ ][ ]	SILT [3 pt]	
[ ][ ]	BOULDER (>256 mm) [16 pts]		[ ][ ]	LEAF PACK/WOODY DEBRIS [3 pts]	
[ ][ ]	BEDROCK [16 pt]		[ ][ ]	FINE DETRITUS [3 pts]	
[ ][ ]	COBBLE (65-256 mm) [12 pts]		[ ][ ]	CLAY or HARDPAN [0 pt]	
[ ][X]	GRAVEL (2-64 mm) [8 pts]	70%	[ ][ ]	MUCK [0 pts]	
[ ][X]	SAND (<2 mm) [6 pts]	30%	[ ][ ]	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0% (A): 5 (B): 2

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

HHEI Metric Points — Substrate Max = 40: 7 — A + B

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

- [ ] > 30 centimeters [20 pts]
- [ ] > 22.5 - 30 cm [30 pts]
- [ ] > 10 - 22.5 cm [25 pts]
- [ ] > 5 cm - 10 cm [15 pts]
- [ ] < 5 cm [5 pts]
- [X] NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- [ ] > 4.0 meters (> 13') [30 pts]
- [ ] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- [X] > 1.5 m - 3.0 m (> 5' 7" - 9' 7") [20 pts]
- [ ] > 1.0 m - 1.5 m (> 3' 3" - 4' 6") [15 pts]
- [ ] ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: _____ AVERAGE BANKFULL WIDTH (meters): 7ft

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY *NOTE: River Left (L) and Right (R) as looking downstream*

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

COMMENTS: _____

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

- [ ] Stream Flowing
- [ ] Subsurface flow with isolated pools (Interstitial)
- [ ] Moist Channel, isolated pools, no flow (Intermittent)
- [X] Dry channel, no water (Ephemeral)

COMMENTS: _____

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

[ ] None	[ ] 1.0	[X] 2.0	[ ] 3.0
[ ] 0.5	[ ] 1.5	[ ] 2.5	[ ] >3

STREAM GRADIENT ESTIMATE

[ ] Flat (0.5 ft/100 ft) [ ] Flat to Moderate [X] Moderate (2 ft/100 ft) [ ] Moderate to Severe [ ] Severe (10 ft/100 ft)

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

QHEI PERFORMED? - [ ] Yes [X] No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- [ ] WWH Name: _____ Distance from Evaluated Stream _____
- [ ] CWH Name: _____ Distance from Evaluated Stream _____
- [ ] EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

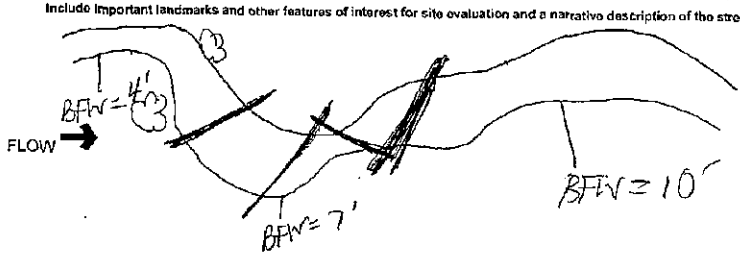
Fish Observed? (Y/N) N Voucher? (Y/N) ___ Salamanders Observed? (Y/N) N Voucher? (Y/N) ___

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) ___

Comments Regarding Biology: _____

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

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



Class I

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 19

SITE NAME/LOCATION AMP SITE NUMBER 57 RIVER BASIN _____ DRAINAGE AREA (mi²) .41 mi²

LENGTH OF STREAM REACH (ft) 150 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/23/06 SCORER BSM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☒☒	LEAF PACK/WOODY DEBRIS [3 pts]	90%
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☒☐	GRAVEL (2-64 mm) [9 pts]	10%	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0% (A) 12 (B) 2

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

HHEI Metric Points — Substrate Max = 40: 14 — A + B

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [26 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 0

Pool Depth Max = 30: 0

3. **BANK FULL WIDTH (Measured as the average of 3-6 measurements)** (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 3Ft

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ??

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

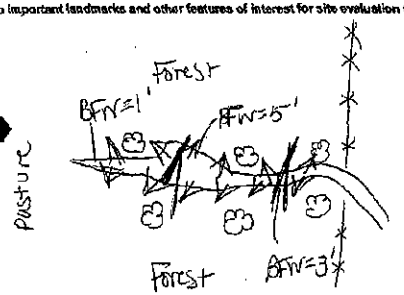
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class I

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 27

SITE NAME/LOCATION _____

Amp SITE NUMBER SB RIVER BASIN _____ DRAINAGE AREA (mi²) .1mi²

LENGTH OF STREAM REACH (ft) 350 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/23/01 SCORER BEM COMMENTS during visit Stream 9

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes *(Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.*

HHEI Metric Points

TYPE		PERCENT	TYPE		PERCENT
☐ ☒	BLDR SLABS [16 pts]		☐ ☐	SILT [3 pt]	
☐ ☐	BOULDER (>256 mm) [15 pts]	35%	☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	60%
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	*COBBLE (65-256 mm) [12 pts]*		☐ ☐	CLAY or HARDPAN [0 pt]	
☐ ☒	GRAVEL (2-64 mm) [9 pts]	5%	☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Substrate Max = 40: 22

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 35% (A) 19 (B) 3 A + B

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 19 TOTAL NUMBER OF SUBSTRATE TYPES: 3

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

Pool Depth Max = 30: 0

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ *NO WATER OR MOIST CHANNEL [0 pts]*

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

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

Bankfull Width Max=30: 5

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (< 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (metres) 3.3

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☒ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation unknown Quantity: ??

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

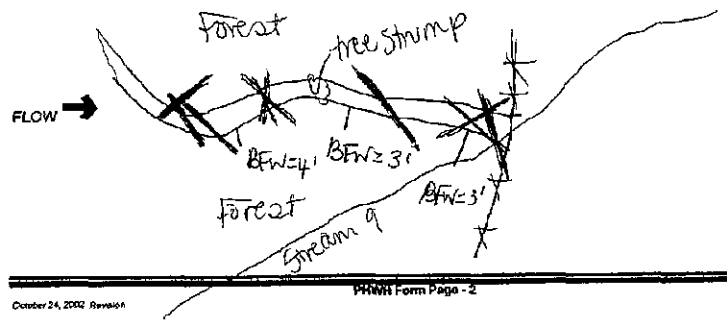
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class II

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 39

SITE NAME/LOCATION: Amp SITE NUMBER: 39 RIVER BASIN: _____ DRAINAGE AREA (mi^2): .21 mi^2

LENGTH OF STREAM REACH (ft): 300 LAT.: _____ LONG.: _____ RIVER CODE: _____ RIVER MILE: _____

DATE: 8/23/01 SCORER: BEM COMMENTS: drains into Stream 10

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

STREAM CHANNEL MODIFICATIONS: [X] NONE / NATURAL CHANNEL [ ] RECOVERED [ ] RECOVERING [ ] RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
[ ]	BLDR SLABS [16 pts]		[ ]	SILT [3 pt]	
[ ]	BOULDER (>256 mm) [16 pts]		[ ]	LEAF PACK/WOODY DEBRIS [3 pts]	5%
[ ]	BEDROCK [16 pt]		[ ]	FINE DETRITUS [3 pts]	
[ ]	COBBLE (65-256 mm) [12 pts]	20%	[ ]	CLAY or HARDPAN [0 pt]	
[X]	GRAVEL (2-64 mm) [9 pts]	35%	[ ]	MUCK [0 pts]	
[X]	SAND (<2 mm) [6 pts]	40%	[ ]	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 20% (A): 15 (B): 4

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

HHEI Metric Points — Substrate Max = 40: 19 — A + B

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

- [ ] > 30 centimeters [20 pts]
- [ ] > 22.5 - 30 cm [30 pts]
- [ ] > 10 - 22.5 cm [25 pts]
- [ ] > 5 cm - 10 cm [15 pts]
- [ ] < 5 cm [5 pts]
- [X] NO WATER OR MOIST CHANNEL [0 pts]: 0

COMMENTS: _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- [ ] > 4.0 meters (> 13') [30 pts]
- [ ] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- [X] > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- [ ] > 1.0 m - 1.5 m (> 3' 3" - 4' 6") [15 pts]
- [ ] ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS: _____ AVERAGE BANKFULL WIDTH (meters): 6.25 ft

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS: _____

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

- [ ] Stream Flowing
- [ ] Subsurface flow with isolated pools (Interstitial)
- [ ] Moist Channel, isolated pools, no flow (Intermittent)
- [X] Dry channel, no water (Ephemeral)

COMMENTS: _____

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

- [ ] None
- [ ] 0.5
- [ ] 1.0
- [ ] 1.5
- [X] 2.0
- [ ] 2.5
- [ ] 3.0
- [ ] >3

STREAM GRADIENT ESTIMATE

- [ ] Flat (0.5 ft/100 ft)
- [X] Flat to Moderate
- [ ] Moderate (2 ft/100 ft)
- [ ] Moderate to Severe
- [ ] Severe (10 ft/100 ft)

October 24, 2002 Revision

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

QHEI PERFORMED? - [ ] Yes [X] No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- [ ] WWH Name: _____ Distance from Evaluated Stream _____
- [ ] CWH Name: _____ Distance from Evaluated Stream _____
- [ ] EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ??

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

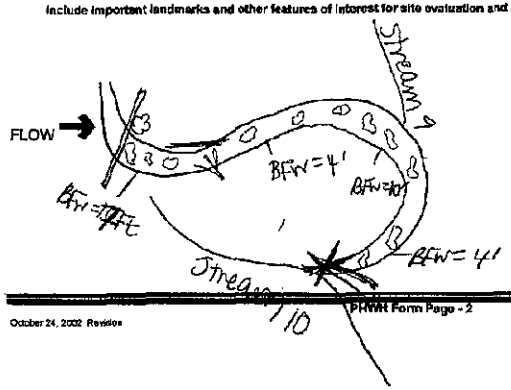
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



October 24, 2002 Revision

Class III

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 56

SITE NAME/LOCATION Amp SITE NUMBER 5.10 RIVER BASIN _____ DRAINAGE AREA (mi²) 2 mi²

LENGTH OF STREAM REACH (ft) 300ft AT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/23/01 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

HHEI Metric Points

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	*LEAF PACK/WOODY DEBRIS [3 pts]*	10%
☐☐	BEDROCK [16 pt]	15%	☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	25%	☐☐	CLAY or HARDPAN [0 pt]	
☐☒	GRAVEL (2-64 mm) [9 pts]	20%	☐☐	MUCK [0 pts]	
☐☒	SAND (<2 mm) [6 pts]	40%	☐☐	*ARTIFICIAL [3 pts]*	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30% (A) 15 (B) 5 A+B

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **TOTAL NUMBER OF SUBSTRATE TYPES:**

Substrate Max = 40: 20

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

☐	> 30 centimeters [20 pts]	☒	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30: 15

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 5.6 cm

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

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 6") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	< 1.0 m (≤ 3' 3") [5 pts]
☒	> 1.5 m - 3.0 m (> 9' 7" - 4' 6") [20 pts]		

Bankfull Width Max=30: 20

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters):** 7.6

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

☐	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☒	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

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

☐	None	☐	1.0	☐	2.0	☒	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (1 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven 07 NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: unknown Quantity: ??

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 5%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

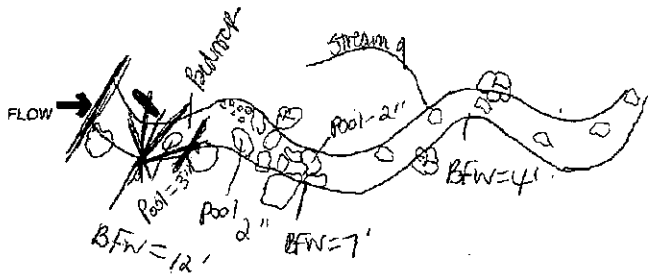
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) Y Voucher? (Y/N) N Southern two-lined

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) Y Voucher? (Y/N) N larval

Comments Regarding Biology: _____

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

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



Class II

Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 34

SITE NAME/LOCATION Amp SITE NUMBER 311 RIVER BASIN _____ DRAINAGE AREA (mi²) .41mi²

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/23/07 SCORER BSm COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	☒ BLDR SLABS [16 pts]	40%	☐	☒ SILT [3 pts]	35%
☐	☐ BOULDER (>256 mm) [16 pts]		☐	☐ LEAF PACK/WOODY DEBRIS [3 pts]	10%
☐	☐ BEDROCK [16 pt]		☐	☐ FINE DETRITUS [3 pts]	
☐	☐ COBBLE (65-256 mm) [12 pts]	5%	☐	☐ CLAY or HARDPAN [0 pt]	
☐	☐ GRAVEL (2-64 mm) [9 pts]	10%	☐	☐ MUCK [0 pts]	
☐	☐ SAND (<2 mm) [6 pts]		☐	☐ ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 45% (A) 19 (B) 5

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

HHEI Metric Points — Substrate Max = 40: 24 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☒ ≤ 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 4.8cm

Pool Depth Max = 30: 5

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 2.3m

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: unknown Quantity: ??

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

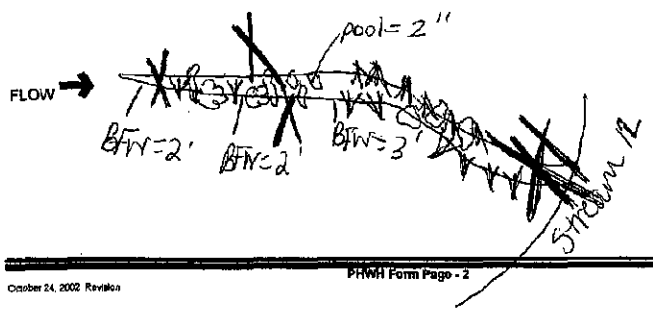
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class III

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 45

SITE NAME/LOCATION Am P

SITE NUMBER S12 RIVER BASIN ______ DRAINAGE AREA (mi²) 2/mi²

LENGTH OF STREAM REACH (ft) 200 LAT ______ LONG. ______ RIVER CODE ______ RIVER MILE ______

DATE 8/23/06 SCORER BEm COMMENTS ______

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☒	SILT [3 pt]	75%
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	10%
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☒	GRAVEL (2-64 mm) [9 pts]	15%	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 12

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points — Substrate Max = 40: 15 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): 20.8 cm

Pool Depth Max = 30: 25

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters) 2.6 ft

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

- ☐ Stream Flowing
- ☒ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS ______

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

☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☒ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- ☐ WWH Name ______ Distance from Evaluated Stream ______
- ☐ CWH Name ______ Distance from Evaluated Stream ______
- ☐ EWH Name ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: ______ NRCS Soil Map Stream Order ______

County: Meigs Township / City: ______

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 5%

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

Field Measures: Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______

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

Additional comments/description of pollution impacts: ______

BIOTIC EVALUATION

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

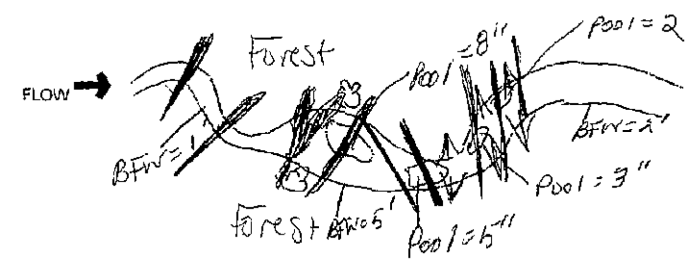
Fish Observed? (Y/N) N Voucher? (Y/N) ______ Salamanders Observed? (Y/N) Y — Southern two-lined larvae Voucher? (Y/N) ______

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) ______ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) ______

Comments Regarding Biology: ______

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

Class I

HHEI Score (sum of metrics 1, 2, 3): 26

SITE NAME/LOCATION: Am P SITE NUMBER: 513 RIVER BASIN: _____ DRAINAGE AREA (mi²): .21 mi²

LENGTH OF STREAM REACH (ft): 100 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE: 8/23/04 SCORER: BEM COMMENTS: Flows around wetland + into Stream 12

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☐☒	LEAF PACK/WOODY DEBRIS [3 pts]	20%
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	10%
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☒	MUCK [0 pts]	70%
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

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

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

HHEI Metric Points — Substrate Max = 40: 6 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

7.2 cm

COMMENTS: _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 15

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

2.5 m

COMMENTS: _____ AVERAGE BANKFULL WIDTH (meters)

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R
☒	☒	☒	☒	Mature Forest, Wetland	☐	☐ Conservation Tillage
☐	☐	☒	☒	Immature Forest, Shrub or Old Field	☐	☐ Urban or Industrial
☐	☐	☐	☐	Residential, Park, New Field	☐	☐ Open Pasture, Row Crop
☐	☐	☐	☐	Fenced Pasture	☐	☐ Mining or Construction

Moderate 5-10m; Narrow <5m; None

COMMENTS: _____

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

- ☒ Stream Flowing
- ☐ Subsurface flow with Isolated pools (Interstitial)
- ☐ Moist Channel, Isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS: _____

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

☐ None	☐ 1.0	☒ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: ? Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 20%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

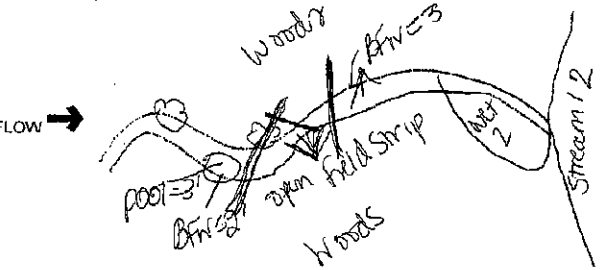
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



October 24, 2002 Revision

Class III

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 64

SITE NAME/LOCATION AmP SITE NUMBER S14 RIVER BASIN _____ DRAINAGE AREA (mi²) .4 mi²

LENGTH OF STREAM REACH (ft) 200 LAT _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/23/06 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pts]	
☐☐	BOULDER (>256 mm) [15 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	5%
☐☐	BEDROCK [15 pts]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	20%	☐☐	CLAY or HARDPAN [0 pts]	
☐☒	GRAVEL (2-64 mm) [9 pts]	30%	☐☐	MUCK [0 pts]	
☐☒	SAND (<2 mm) [6 pts]	45%	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20% (A) 15 (B) 4

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

HHEI Metric Points — Substrate Max = 40: 19 — A + B

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☒ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

10.3 cm

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 25

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9.7' - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

5.1 m

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters)

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☒ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

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

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

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 5%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

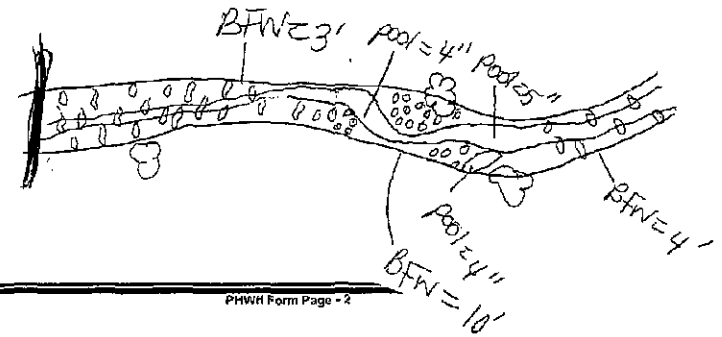
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) X - Adult Southern two-lined + larvae Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



October 24, 2002 Revision

Class III

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 62

SITE NAME/LOCATION ANNP SITE NUMBER 515 RIVER BASIN _____ DRAINAGE AREA (mi²) .41mi2

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/23/06 SCORER BENN COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of *every* type of substrate present. Check *ONLY two* predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pts]	
☒	BOULDER (>256 mm) [16 pts]	20%	☐	LEAF PACK/WOODY DEBRIS [5 pts]	20%
☐	BEDROCK [16 pts]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]	10%	☐	CLAY, or HARDPAN [0 pts]	
☐	GRAVEL (2-64 mm) [9 pts]	15%	☐	MUCK [0 pts]	
☒	SAND (<2 mm) [6 pts]	35%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 30% (A) 22 (B) 5

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

HHEI Metric Points — Substrate Max = 40: 27 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [20 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 5.4 m

Pool Depth Max = 30: 15

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9'7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 4'9" - 9'7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3'3" - 4'9") [15 pts]
- ☐ ≤ 1.0 m (≤ 3'3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 2.34 m

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven QH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): _____

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

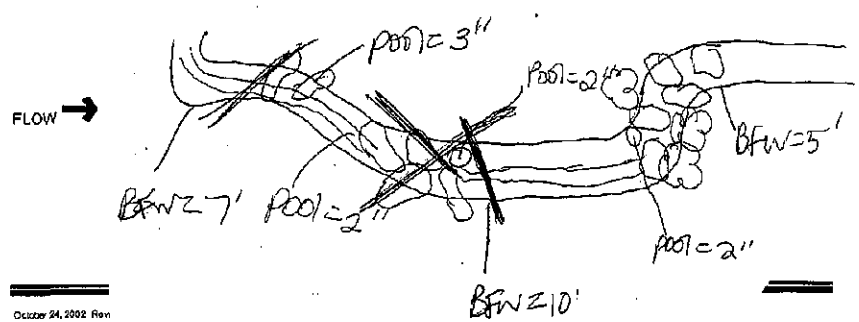
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) Y Voucher? (Y/N) N — Southern two-lined larval

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class III

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 54

SITE NAME/LOCATION: Ame
SITE NUMBER: S 16 RIVER BASIN: ____ DRAINAGE AREA (mi²): <1 mi²
LENGTH OF STREAM REACH (ft): 200 LAT ____ LONG ____ RIVER CODE ____ RIVER MILE ____
DATE: 8/23/06 SCORER: BSm COMMENTS ____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]	10%	☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	15%	☐☐	CLAY or HARDPAN [0 pt]	
☐☒	GRAVEL (2-64 mm) [9 pts]	30%	☐☐	MUCK [0 pts]	
☐☒	SAND (<2 mm) [6 pts]	45%	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 25%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 15 TOTAL NUMBER OF SUBSTRATE TYPES: (B) 4

HHEI Metric Points — Substrate Max = 40: 19 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☒ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ MAXIMUM POOL DEPTH (centimeters): 7.2 cm

Pool Depth Max = 30: 15

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ____ AVERAGE BANKFULL WIDTH (meters): 5.3 ft

Bankfull Width Max=30: 20

This information **must** also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ____

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

- ☐ Stream Flowing
- ☒ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS ____

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

☐ None ☒ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

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

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score ____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: ____ Distance from Evaluated Stream ____
☐ CWH Name: ____ Distance from Evaluated Stream ____
☐ EWH Name: ____ Distance from Evaluated Stream ____

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: ____ NRCS Soil Map Stream Order ____

County: Meigs Township / City: ____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 5%

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

Field Measures: Temp (°C) ____ Dissolved Oxygen (mg/l) ____ pH (S.U.) ____ Conductivity (µmhos/cm) ____

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

Additional comments/description of pollution impacts: ____

BIOTIC EVALUATION

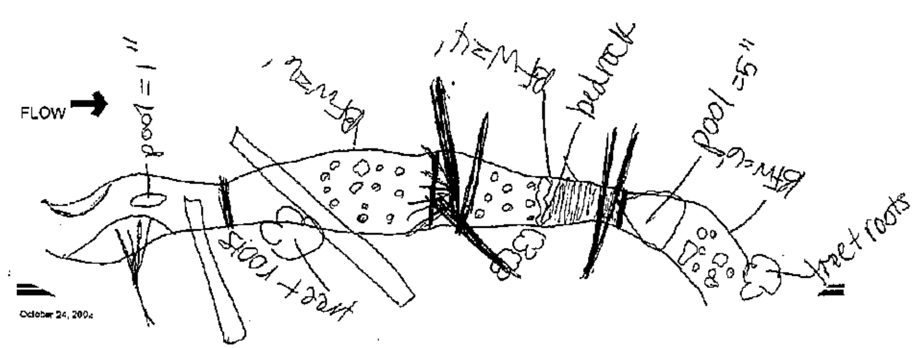
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) ____ Salamanders Observed? (Y/N) Y - Southern two-lined larvae Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) Y Voucher? (Y/N) ____

Comments Regarding Biology: green frog, also saw crayfish

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

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



October 24, 2002

Class I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 18

SITE NAME/LOCATION AMP SITE NUMBER S17 RIVER BASIN _____ DRAINAGE AREA (mi²) <1mi2

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/23/07 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☐☒	LEAF PACK/WOODY DEBRIS [3 pts]	40%
☐☐	BEDROCK [16 pts]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	20%	☐☐	MUCK [0 pts]	
☐☒	SAND (<2 mm) [6 pts]	30%	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 10% (A) 9 (B) 4

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

HHEI Metric Points — Substrate Max = 40: 13 (A + B)

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

- ☐ >30 centimeters [20 pts]
- ☐ >22.5 - 30 cm [30 pts]
- ☐ >15 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] 0

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

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

- ☐ ≥ 4.0 meters (> 13') [30 pts]
- ☐ 3.0 m - 4.0 m (> 9.7' - 13') [25 pts]
- ☐ 1.5 m - 3.0 m (> 4.8' - 9.7') [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 3.4

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

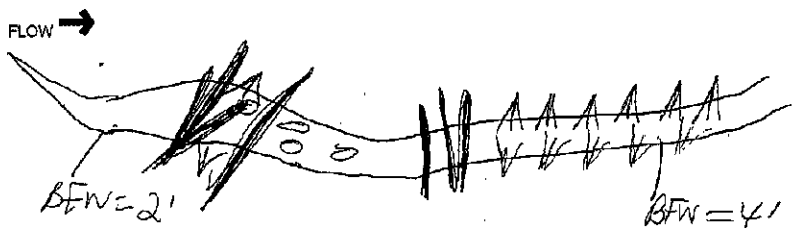
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class II

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 41

SITE NAME/LOCATION ANP SITE NUMBER S18 RIVER BASIN _____ DRAINAGE AREA (mi²) 2/mi,2

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/23/02 SCORER BEM COMMENTS flows into 19

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐ ☒	BLDR SLABS [16 pts]	25%	☐ ☐	SILT [3 pts]	
☐ ☒	BOULDER (>256 mm) [15 pts]	30%	☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	20%
☐ ☐	BEDROCK [16 pts]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]		☐ ☐	CLAY or HARDPAN [0 pts]	
☐ ☐	GRAVEL (2-64 mm) [9 pts]	25%	☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]		☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 55% (A) 32 (B) 4

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

HHEI Metric Points — Substrate Max = 40: 36 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 25

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

- ☐ WWH Name _____ Distance from Evaluated Stream _____
- ☐ CWH Name _____ Distance from Evaluated Stream _____
- ☐ EWH Name _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven DH NRCS Soil Map Page _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City _____

MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of last precipitation: Unknown Quantity: ?

Photograph Information Y

Elevated Turbidity? (Y/N) N Canopy (% open): 50%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

Fish Observed? (Y/N) N Voucher? (Y/N) ___ Salamanders Observed? (Y/N) N Voucher? (Y/N) ___

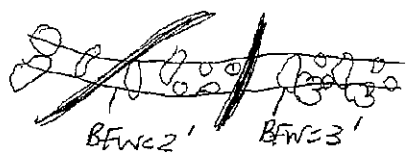
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) ___

Comments Regarding Biology: _____

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

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

FLOW →



Class III

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 82

SITE NAME/LOCATION AMP SITE NUMBER 519 RIVER BASIN _____ DRAINAGE AREA (mi²) .2/mi²

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/24/01 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS (16 pts)		☐☐	SILT (3 pt)	
☐☐	BOULDER (>256 mm) (15 pts)		☐☐	LEAF PACK/WOODY DEBRIS (3 pts)	
☐☒	BEDROCK (15 pt)	40%	☐☐	FINE DETRITUS (3 pts)	
☒☐	COBBLE (65-256 mm) (12 pts)	30%	☐☐	CLAY or HARDPAN (0 pt)	
☐☐	GRAVEL (2-64 mm) (9 pts)	15%	☐☐	MUCK (0 pts)	
☐☐	SAND (<2 mm) (3 pts)	15%	☐☐	ARTIFICIAL (3 pts)	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 70% (A): 28 (B): 4

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

HHEI Metric Points — Substrate Max = 40: 32 (A + B)

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

- ☐ > 50 centimeters [20 pts]
- ☒ > 22.5 - 50 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 22.8 cm

Pool Depth Max = 30: 30

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m, (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 7.3 ft

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank)	L	R
Wide >10m	☒	☒
Moderate 5-10m	☐	☐
Narrow <5m	☐	☐
None	☐	☐

FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R
Mature Forest, Wetland	☒	☒
Immature Forest, Shrub or Old Field	☒	☒
Residential, Park, New Field	☐	☐
Fenced Pasture	☐	☐

	L	R
Conservation Tillage	☐	☐
Urban or Industrial	☐	☐
Open Pasture, Row Crop	☐	☐
Mining or Construction	☐	☐

COMMENTS _____

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

- ☒ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☒ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

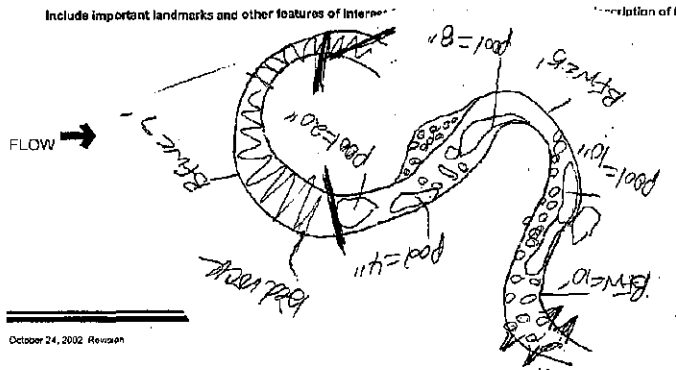
Fish Observed? (Y/N) Y Voucher? (Y/N) _____ Salamanders Observed? (Y/N) Y Voucher? (Y/N) _____ larval two-lined - Southern + Northern -

Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) Y Voucher? (Y/N) _____

Comments Regarding Biology: Crayfish observed

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

Include important landmarks and other features of interest ... description of the stream's location



October 24, 2002 Revision

Class II

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 30

SITE NAME/LOCATION

AMP SITE NUMBER S 20 RIVER BASIN _____ DRAINAGE AREA (mi²) 2.1mi2

LENGTH OF STREAM REACH (ft) _____ LAT _____ LONG _____ RIVER CODE _____ RIVER MILE _____

DATE 8/24/06 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]	15%	☐☒	LEAF PACK/WOODY DEBRIS [3 pts]	60%
☐☐	BEDROCK [15 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☒	GRAVEL (2-64 mm) [9 pts]	25%	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 15% (A) 12 (B) 2

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

HHEI Metric Points — Substrate Max = 40: 15 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- ☐ > 9.0 meters (> 13') [30 pts]
- ☐ > 4.0 m - 9.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 2.5 m - 4.0 m (> 8' 7" - 9' 5") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 4A

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ *Subsurface flow with isolated pools (Interstitial)*
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☒ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 0%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

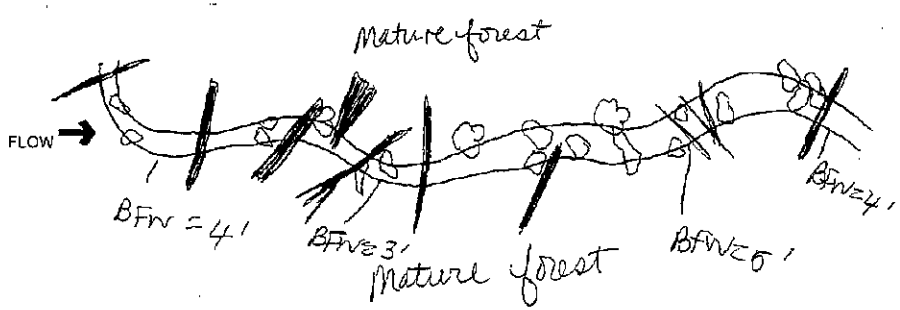
Performed? (Y/N): Y (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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



Class III

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 62

SITE NAME/LOCATION AMP SITE NUMBER S21 RIVER BASIN _____ DRAINAGE AREA (mi²) 2mi 2

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 7/24/02 SCORER BEM COMMENTS _____

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

STREAM CHANNEL: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

MODIFICATIONS:

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]	10%	☐☐	SILT [3 pts]	
☐☐	BOULDER (>250 mm) [16 pts]	10%	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	5%
☐☐	BEDROCK [16 pts]		☐☐	FINE DETRITUS [3 pts]	
☐☒	COBBLE (65-250 mm) [12 pts]	75%	☐☐	CLAY or HARDPAN [0 pts]	
☐☒	GRAVEL (2-64 mm) [8 pts]	50%	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]	20%	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 460% (A) 21 (B) 6

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

HHEI Metric Points

Substrate Max = 40: 27 (A + B)

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

☐ > 50 centimeters [20 pts]	☒ > 5 cm - 10 cm [15 pts]
☐ > 22.5 - 50 cm [30 pts]	☐ < 5 cm [5 pts]
☐ > 10 - 22.5 cm [25 pts]	☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 7a cm

Pool Depth Max = 30: 15

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

☐ > 4.0 meters (> 13') [30 pts]	☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐ ≤ 1.0 m (≤ 3' 3") [5 pts]
☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]	

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 6a cm

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

☐ Stream Flowing	☐ Moist Channel, isolated pools, no flow (Intermittent)
☒ Subsurface flow with isolated pools (Interstitial)	☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☒ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 0%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

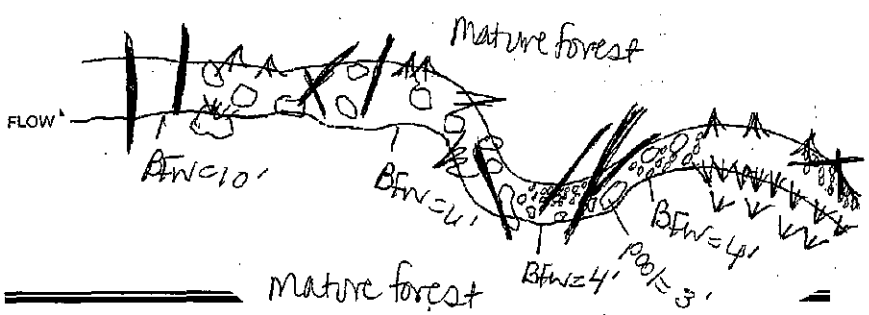
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) Y - Southern two-lined larvae Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) Y Voucher? (Y/N) _____

Comments Regarding Biology: Y - grun frog

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

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



Class I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 9

SITE NAME/LOCATION _____

AMP SITE NUMBER 522 RIVER BASIN _____ DRAINAGE AREA (mi²) 2 1m 2

LENGTH OF STREAM REACH (ft) 200 LAT _____ LONG _____ RIVER CODE _____ RIVER MILE _____

DATE 8/24/06 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). *Final metric score is sum of boxes A & B.*

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [15 pts]		☒☐	LEAF PACK/WOODY DEBRIS [3 pts]	100%
☐☐	BEDROCK [15 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0% (A) 3 (B) 1

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

HHEI Metric Points

Substrate Max = 40: 4

A + B

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

- ☐ >30 centimeters [20 pts]
- ☐ >22.5 - 30 cm [30 pts]
- ☐ >10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ ≤ 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] 0

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

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

- ☐ >4.0 meters (> 13') [30 pts]
- ☐ >3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ >1.5 m - 3.0 m (> 5' - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 3A

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☒ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

- ☐ WWH Name _____ Distance from Evaluated Stream _____
- ☐ CWH Name _____ Distance from Evaluated Stream _____
- ☐ EWH Name _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

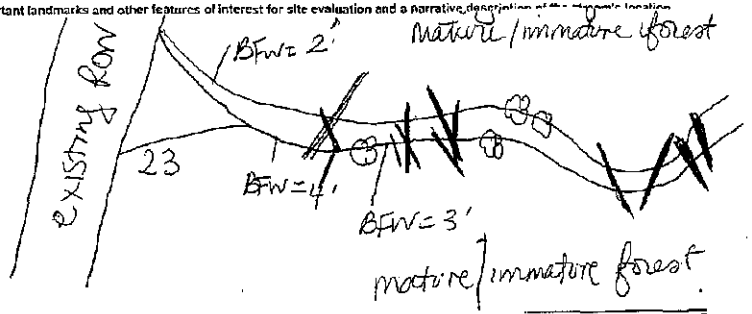
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 9

SITE NAME/LOCATION: AMP SITE NUMBER 523 RIVER BASIN _____ DRAINAGE AREA (mi²) 4mi²

LENGTH OF STREAM REACH (ft) 50 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/24/02 SCORER BEM COMMENTS drains into 22

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

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [15 pts]		☐☐	SILT [3 pts]	
☐☐	BOULDER (>256 mm) [15 pts]		☒☒	LEAF PACK/WOODY DEBRIS [3 pts]	100%
☐☐	BEDROCK [15 pts]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pts]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock _____ (A) 3 (B) 1

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

HHEI Metric Points

Substrate Max = 40: 4 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] → 0

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts] → 2'

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters)

Bankfull Width Max=30: 5

This Information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☒ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

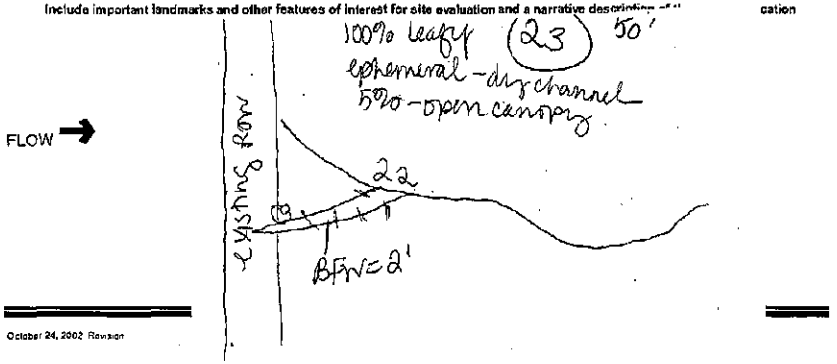
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

Class I

HHEI Score (sum of metrics 1, 2, 3) : 25

SITE NAME/LOCATION AMP SITE NUMBER S24 RIVER BASIN _____ DRAINAGE AREA (mi²) .1mi2

LENGTH OF STREAM REACH (ft) 150 LAT _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/24/04 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pt]	
☐	BOULDER (>256 mm) [16 pts]	5%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	20%
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]	15%	☐	CLAY or HARDPAN [0 pt]	
☒	GRAVEL (2-64 mm) [8 pts]	30%	☐	MUCK [0 pts]	
☒	SAND (<2 mm) [6 pts]	30%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 20% (A) 15 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: *TOTAL NUMBER OF SUBSTRATE TYPES:*

HHEI Metric Points

Substrate Max = 40: 20

A + B

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

- ☐ >100 centimeters [20 pts]
- ☐ > 22.5 - 100 cm [30 pts]
- ☐ >10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] 0

COMMENTS _____ **MAXIMUM POOL DEPTH** (centimeters):

Pool Depth Max = 30: 0

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

- ☐ >4.0 meters (> 15') [30 pts]
- ☐ >3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ >1.5 m - 3.0 m (> 5' - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts] 2.5

COMMENTS _____ **AVERAGE BANKFULL WIDTH** (meters)

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 10%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

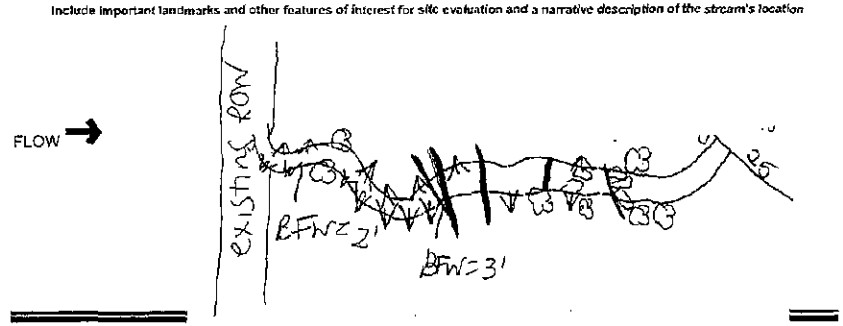
Fish Observed? (Y/N) N Voucher? (Y/N) ____ Salamanders Observed? (Y/N) N Voucher? (Y/N) ____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) ____

Comments Regarding Biology: _____

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

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



Class II

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 35

SITE NAME/LOCATION AMP SITE NUMBER 525 RIVER BASIN _____ DRAINAGE AREA (mi²) <1 mi²

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/24/02 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pt]	
☐	BOULDER (>256 mm) [15 pts]	5%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	10%
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]	20%	☐	CLAY or HARDPAN [0 pt]	
☒	GRAVEL (2-64 mm) [9 pts]	30%	☐	MUCK [0 pts]	
☒	SAND (<2 mm) [6 pts]	30%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 25% (A) 15 (B) 5

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

HHEI Metric Points — Substrate Max = 40: 20 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] 0

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

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

- ☐ > 3.0 meters (> 10') [30 pts]
- ☐ > 2.0m - 3.0 m (> 6' 7" - 10') [25 pts]
- ☐ > 1.5m - 2.0 m (> 5' - 6' 7") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 4'

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☒ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 15%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

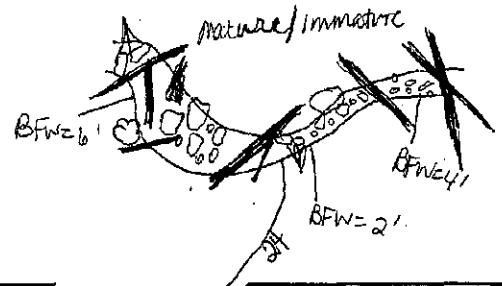
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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

FLOW ➡



October 24, 2002 Revision

Class I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 18

SITE NAME/LOCATION: AMNP SITE NUMBER S26 RIVER BASIN _____ DRAINAGE AREA (mi²) 4 mi²

LENGTH OF STREAM REACH (ft) 200 LAT _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 8/24/09 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pt]	
☐	BOULDER (>256 mm) [16 pts]	5%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	20%
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]		☐	CLAY or HARDPAN [0 pt]	
☐	GRAVEL (2-64 mm) [9 pts]	10%	☐	MUCK [0 pts]	
☐	SAND (<2 mm) [6 pts]	15%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 5% (A) 9 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: _____ TOTAL NUMBER OF SUBSTRATE TYPES: _____

HHEI Metric Points — Substrate Max = 40: 13 — A + B: _____

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] 0

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): _____

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9'7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4'8" - 9'7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3'3" - 4'8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3'3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 2.6

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☒ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

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

DOWNSTREAM DESIGNATED USE(S)

- ☐ WWH Name _____ Distance from Evaluated Stream _____
- ☐ CWH Name _____ Distance from Evaluated Stream _____
- ☐ EWH Name _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name: New Haven DT NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

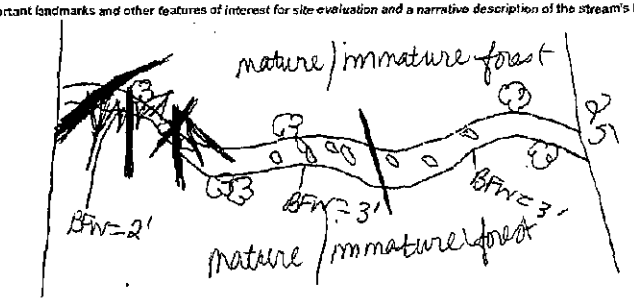
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) N Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



Class III pictures 207 + 208

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 71

SITE NAME/LOCATION Trib

SITE NUMBER S27 RIVER BASIN _____ DRAINAGE AREA (mi²) <1 mi2

LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____

DATE 7/24/02 SCORER BEM COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate **percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BDR SLABS [16 pts]	5%	☐	SILT [3 pt]	
☐	BOULDER (>256 mm) [16 pts]	10%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	5%
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]	15%	☐	CLAY or HARDPAN [0 pt]	
☒	GRAVEL (2-64 mm) [9 pts]	30%	☐	MUCK [0 pts]	
☒	SAND (<2 mm) [6 pts]	35%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30% (A) 15 (B) 6

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

HHEI Metric Points — Substrate Max = 40: 21 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☒ > 22.5 - 30 cm [30 pts]
- ☐ > 30 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 24 cm

Pool Depth Max = 30: 30

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

- ☐ > 5.0 meters (> 16') [30 pts]
- ☐ 4.0 m - 4.9 m (> 13' - 16') [25 pts]
- ☒ 3.0 m - 3.9 m (> 9' 7" - 13') [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [8 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 7.75

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☒ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☒ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

October 24, 2002 Revision

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

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

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven 01 NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 0%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

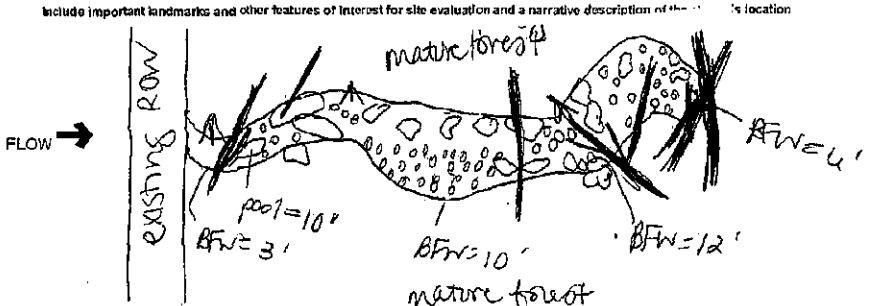
Fish Observed? (Y/N) N Voucher? (Y/N) _____ Salamanders Observed? (Y/N) Y Voucher? (Y/N) _____ Southern + northern two-lined larval

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) _____

Comments Regarding Biology: Green Frog

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

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



October 24, 2002 Revision

Class I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 10

SITE NAME/LOCATION: AMP SITE NUMBER 529 RIVER BASIN ____ DRAINAGE AREA (mi²) < 1 mi²

LENGTH OF STREAM REACH (ft) 200 LAT ____ LONG. ____ RIVER CODE ____ RIVER MILE ____

DATE 8/24/02 SCORER BEM COMMENTS ____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pts]	
☐	BOULDER (>256 mm) [16 pts]	20%	☒	LEAF PACK/WOODY DEBRIS [3 pts]	30%
☐	BEDROCK [16 pts]		☒	FINE DETRITUS [3 pts]	50%
☐	COBBLE (65-256 mm) [12 pts]		☐	CLAY or HARDPAN [0 pts]	
☐	GRAVEL (2-64 mm) [9 pts]	10%	☐	MUCK [0 pts]	
☐	SAND (<2 mm) [6 pts]	3%	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 20% (A) 10 (B) 5

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

HHEI Metric Points — Substrate Max = 40: 11 — A + B

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

- ☐ > 40 centimeters [20 pts]
- ☐ > 22.5 - 40 cm [10 pts]
- ☐ > 10 - 22.5 cm [5 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ ≤ 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] 0

COMMENTS ____ MAXIMUM POOL DEPTH (centimeters): ____

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts] 21

COMMENTS ____ AVERAGE BANKFULL WIDTH (meters): ____

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS ____

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

- ☐ None
- ☐ 0.5
- ☒ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score ____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- ☐ WWH Name: ____ Distance from Evaluated Stream ____
- ☐ CWH Name: ____ Distance from Evaluated Stream ____
- ☐ EWH Name: ____ Distance from Evaluated Stream ____

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

USGS Quadrangle Name: New Haven 07 NRCS Soil Map Page: ____ NRCS Soil Map Stream Order ____

County: Meigs Township / City: ____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

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

Field Measures: Temp (°C) ____ Dissolved Oxygen (mg/l) ____ pH (S.U.) ____ Conductivity (µmhos/cm) ____

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

Additional comments/description of pollution impacts: ____

BIOTIC EVALUATION

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

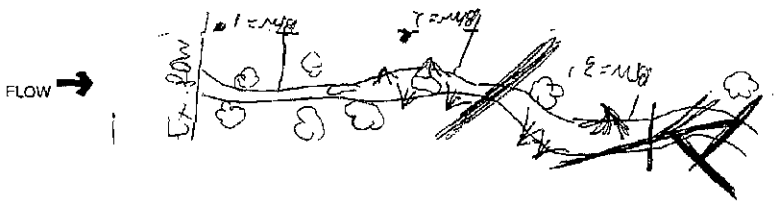
Fish Observed? (Y/N) N Voucher? (Y/N) ____ Salamanders Observed? (Y/N) N Voucher? (Y/N) ____

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) ____

Comments Regarding Biology: ____

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

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



Class I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 9

SITE NAME/LOCATION: Amp
SITE NUMBER: 529 RIVER BASIN ______ DRAINAGE AREA (mi²): <1 mi²
LENGTH OF STREAM REACH (ft): 200 LAT. ______ LONG. ______ RIVER CODE ______ RIVER MILE ______
DATE: 8/24/06 SCORER: BEM COMMENTS ______

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

STREAM CHANNEL MODIFICATIONS: [X] NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☐[X]	LEAF PACK/WOODY DEBRIS [3 pts] (circled)	100%
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0%
SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3
TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points — Substrate Max = 40: 4 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- [X] NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- [X] ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters): 1'

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank):
- L R [X][X] Wide >10m
- ☐☐ Moderate 5-10m
- ☐☐ Narrow <5m
- ☐☐ None

FLOODPLAIN QUALITY (Most Predominant per Bank):
- ☐☐ Mature Forest, Wetland
- [X][X] Immature Forest, Shrub or Old Field
- ☐☐ Residential, Park, New Field
- ☐☐ Fenced Pasture
- ☐☐ Conservation Tillage
- ☐☐ Urban or Industrial
- ☐☐ Open Pasture, Row Crop
- ☐☐ Mining or Construction

COMMENTS ______

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):
- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- [X] Dry channel, no water (Ephemeral)

COMMENTS ______

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):
☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 [X] 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe [X] Severe (10 ft/100 ft)

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

QHEI PERFORMED? - ☐ Yes [X] No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)
- ☐ WWH Name: ______ Distance from Evaluated Stream ______
- ☐ CWH Name: ______ Distance from Evaluated Stream ______
- ☐ EWH Name: ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name: New Haven OH NRCS Soil Map Page: ______ NRCS Soil Map Stream Order ______
County: Mich Township / City: ______

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: ?
Photograph Information: Y
Elevated Turbidity? (Y/N): N Canopy (% open): 5%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: ______
Field Measures: Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: ______

Additional comments/description of pollution impacts: ______

BIOTIC EVALUATION

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

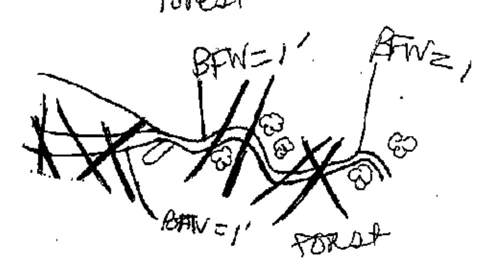
Fish Observed? (Y/N) N Voucher? (Y/N) ______ Salamanders Observed? (Y/N) N Voucher? (Y/N) ______
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) ______ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) ______
Comments Regarding Biology: ______

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

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

Forest

FLOW ➡



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 9

SITE NAME/LOCATION AmP SITE NUMBER S 3D RIVER BASIN ______ DRAINAGE AREA (mi²) <1mi2

LENGTH OF STREAM REACH (ft) ______ LAT. ______ LONG ______ RIVER CODE ______ RIVER MILE ______

DATE 8/24/06 SCORER BEM COMMENTS drains into 29

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pts]	
☐☐	BOULDER (>256 mm) [16 pts]		☐☒	LEAF PACK/WOODY DEBRIS [3 pts]	100%
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock ______

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 1

HHEI Metric Points — Substrate Max = 40: 4 (A + B)

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

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters) ______

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

☐ Stream Flowing
☐ Subsurface flow with isolated pools (interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☒ Dry channel, no water (Ephemeral)

COMMENTS ______

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

☒ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name: ______ Distance from Evaluated Stream ______
☐ CWH Name: ______ Distance from Evaluated Stream ______
☐ EWH Name: ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name: New Haven At NRCS Soil Map Page: ______ NRCS Soil Map Stream Order ______

County: Meigs Township / City: ______

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: unknown Quantity: ?

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 5%

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

Field Measures: Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______

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

Additional comments/description of pollution impacts: ______

BIOTIC EVALUATION

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

Fish Observed? (Y/N) N Voucher? (Y/N) ______ Salamanders Observed? (Y/N) N Voucher? (Y/N) ______

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) ______ Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) ______

Comments Regarding Biology: ______

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

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

FLOW →

WWH

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 63

River Code: ___ RM: ___ Stream: S 31
Date: 8/24/06 Location: Am P
Scorers Full Name: B. McCloskey Affiliation: URS

1] SUBSTRATE (Check ONLY Two Substrate TYPE BOXES; Estimate % present)

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
BLDR/SLBS [10]	5%	5%	GRAVEL [7]		
BOULDER [9]	5%	5%	SAND (6)	25%	35%
COBBLE (8)	20%	5%	BEDROCK [5]	10%	
HARDPAN [4]			DETRITUS [3]	10%	
MUCK [2]	5%		ARTIFICIAL [0]		
SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐ LIMESTONE [1]; ☒ TILLS (1); ☐ WETLANDS [0]; ☐ HARDPAN [0]; ☐ SANDSTONE [0]; ☐ RIP/RAP [0]; ☐ LACUSTRINE [0]; ☐ SHALE [-1]; ☐ COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)):
SILT: ☐ SILT HEAVY [-2]; ☐ SILT MODERATE [-1]; ☒ SILT NORMAL (0); ☐ SILT FREE [1]
EMBEDDEDNESS: ☐ EXTENSIVE [-2]; ☐ MODERATE [-1]; ☒ NORMAL (0); ☐ NONE [1]

NUMBER OF SUBSTRATE TYPES: ☒ 4 or More (2); ☐ 3 or Less [0] (High Quality Only, Score 5 or >)

Substrate: **17** (Max 20)

COMMENTS ___

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)
TYPE: Score All That Occur (Structure)
1 UNDERCUT BANKS [1]
1 OVERHANGING VEGETATION [1]
0 SHALLOWS (IN SLOW WATER) [1]
1 ROOTMATS [1]
0 POOLS > 70 cm [2]
1 ROOTWADS [1]
1 BOULDERS [1]
0 OXBOWS, BACKWATERS [1]
1 AQUATIC MACROPHYTES [1]
1 LOGS OR WOODY DEBRIS [1]
COMMENTS: ___

AMOUNT: (Check ONLY One or check 2 and AVERAGE): ☐ EXTENSIVE > 75% [11]; ☐ MODERATE 25-75% [7]; ☒ SPARSE 5-25% (3); ☐ NEARLY ABSENT < 5% [1]

Cover: **10** (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)
SINUOSITY: ☐ HIGH [4]; ☐ MODERATE [3]; ☒ LOW (2); ☐ NONE [1]
DEVELOPMENT: ☐ EXCELLENT [7]; ☒ GOOD (5); ☐ FAIR [3]; ☐ POOR [1]
CHANNELIZATION: ☒ NONE (6); ☐ RECOVERED [4]; ☐ RECOVERING [3]; ☐ RECENT OR NO RECOVERY [1]
STABILITY: ☐ HIGH [3]; ☒ MODERATE (2); ☐ LOW [1]
MODIFICATIONS/OTHER: ☐ SNAGGING; ☐ RELOCATION; ☐ CANOPY REMOVAL; ☐ DREDGING; ☐ ONE SIDE CHANNEL MODIFICATIONS; ☐ IMPOUND.; ☐ ISLANDS; ☐ LEVEED; ☐ BANK SHAPING

Channel: **15** (Max 20)

COMMENTS: ___

4] RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream
RIPARIAN WIDTH (L R (Per Bank)): ☒☒ WIDE > 50m (4); ☐☐ MODERATE 10-50m [3]; ☐☐ NARROW 5-10 m [2]; ☐☐ VERY NARROW < 5 m [1]; ☐☐ NONE [0]
FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank)): ☒☒ FOREST, SWAMP (3); ☐☐ SHRUB OR OLD FIELD [2]; ☐☐ RESIDENTIAL, PARK, NEW FIELD [1]; ☐☐ FENCED PASTURE [1]; ☐☐ CONSERVATION TILLAGE [1]; ☐☐ URBAN OR INDUSTRIAL [0]; ☐☐ OPEN PASTURE, ROWCROP [0]; ☐☐ MINING/CONSTRUCTION [0]
BANK EROSION (L R (Per Bank)): ☒☒ NONE/LITTLE (3); ☐☐ MODERATE [2]; ☐☐ HEAVY/SEVERE [1]

Riparian: **10** (Max 10)

COMMENTS: ___

5] POOL/GLIDE AND RIFFLE/RUN QUALITY
MAX. DEPTH (Check 1 ONLY!): ☐ > 1m [6]; ☒ 0.7-1m (4); ☐ 0.4-0.7m [2]; ☐ 0.2-0.4m [1]; ☐ < 0.2m [POOL=0]
MORPHOLOGY (Check 1 or 2 & AVERAGE): ☒ POOL WIDTH > RIFFLE WIDTH (2); ☐ POOL WIDTH = RIFFLE WIDTH [1]; ☐ POOL WIDTH < RIFFLE W. [0]
CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply): ☐ EDDIES [1]; ☐ FAST [1]; ☐ MODERATE [1]; ☐ SLOW [1]; ☐ TORRENTIAL [-1]; ☒ INTERSTITIAL (-1); ☐ INTERMITTENT [-2]; ☐ VERY FAST [1]

Pool/Current: **5** (Max 12)

COMMENTS: ___

CHECK ONE OR CHECK 2 AND AVERAGE
RIFFLE DEPTH: ☐ Best Areas > 10 cm [2]; ☐ Best Areas 5-10 cm [1]; ☐ Best Areas < 5 cm [RIFFLE=0]
RUN DEPTH: ☐ MAX > 50 [2]; ☐ MAX < 50 [1]
RIFFLE/RUN SUBSTRATE: ☐ STABLE (e.g., Cobble, Boulder) [2]; ☐ MOD. STABLE (e.g., Large Gravel) [1]; ☐ UNSTABLE (Fine Gravel, Sand) [0]
RIFFLE/RUN EMBEDDEDNESS: ☐ NONE [2]; ☐ LOW [1]; ☐ MODERATE [0]; ☐ EXTENSIVE [-1]
☐ NO RIFFLE [Metric=0]

Riffle/Run: **0** (Max 8)

COMMENTS: interstitial - no riffle, NG, glide present

6] GRADIENT (ft/mi): 10.324 ft/mi DRAINAGE AREA (sq.mi.): ≥ 5 mi²
%POOL: 15 %GLIDE: 0
%RIFFLE: 0 %RUN: 0

Gradient: **6** (Max 10)

*Best areas must be large enough to support a population of riffle-obligate species

EPA 4520 06/24/01

Is Sampling Reach Representative of the Stream (Y/N) Y If Not, Explain: ___

Subjective Rating (1-10)	Aesthetic Rating (1-10)	First Sampling Pass	Gear:	Distance:	Water Clarity:	Water Stage:	Canopy - % Open
8	8						

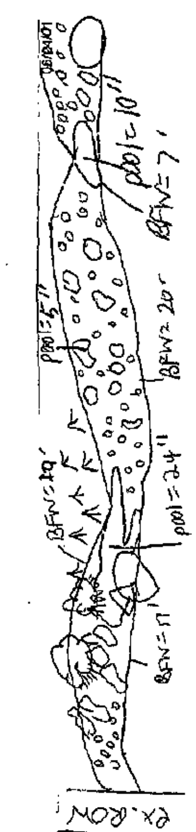
Gradient: ☒ Low, ☐ Moderate, ☐ High

Stream Measurements:

Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Mean Depth	W/D Ratio	Bankfull Max Depth	Floodprone Area Width	Entrench. Ratio

Major Suspected Sources of Impacts (Check All That Apply): ☐ None; ☐ Industrial; ☐ WWTP; ☐ Ag; ☐ Livestock; ☐ Silviculture; ☐ Construction; ☐ Urban Runoff; ☐ CSOs; ☐ Suburban Impacts; ☐ Mining; ☐ Channelization; ☐ Riparian Removal; ☐ Landfills; ☐ Natural; ☐ Dams; ☐ Other Flow Alteration; Other: ___

Stream Drawing:



— Southern + northern two-lined salamanders (larvae) identified in stream.

Yes/No
☐☒ Is Stream Ephemeral (no pools, totally dry or only damp spots)?
☐☒ Is there water upstream? How Far: ___
☐☒ Is There Water Close Downstream? How Far: ___
☒ Is Dry Channel Mostly Natural?

Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Clago I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 21

SITE NAME/LOCATION: Amp SITE NUMBER: S_32 RIVER BASIN: _____ DRAINAGE AREA (mi²): 2 mi²

LENGTH OF STREAM REACH (ft): 200 LAT: _____ LONG: _____ RIVER CODE: _____ RIVER MILE: _____

DATE: 8/24/02 SCORER: BEM COMMENTS: _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pts]	
☐	BOULDER (>256 mm) [15 pts]	5%	☒	LEAF PACK/WOODY DEBRIS [3 pts]	100%
☐	BEDROCK [15 pts]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]	15%	☐	CLAY or HARDPAN [0 pts]	
☒	GRAVEL (2-64 mm) [9 pts]	20%	☐	MUCK [0 pts]	
☐	SAND (<2 mm) [6 pts]		☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 20% (A) 12 (B) 4

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

HHEI Metric Points — Substrate Max = 40: 16 — A + B

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

- ☐ > 90 centimeters [20 pts]
- ☐ > 22.5 - 90 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts] — 0

COMMENTS: _____ MAXIMUM POOL DEPTH (centimeters): _____

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

2'

COMMENTS: _____ *AVERAGE BANKFULL WIDTH (meters)*

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS: _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS: _____

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

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☒ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score: ___ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: New Haven DH NRCS Soil Map Page: _____ NRCS Soil Map Stream Order: _____

County: Meigs Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Unknown Quantity: 2

Photograph Information: Y

Elevated Turbidity? (Y/N): N Canopy (% open): 70%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

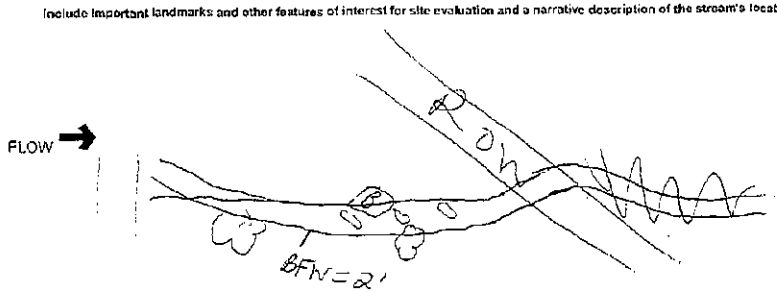
Fish Observed? (Y/N): N Voucher? (Y/N): ___ Salamanders Observed? (Y/N): N Voucher? (Y/N): ___

Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): ___ Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): ___

Comments Regarding Biology: _____

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

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



Class II

OhioEPA Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION AMP - Ohio Transmission

SITE NUMBER 533 RIVER BASIN _____ DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) _____ LAT. _____ LONG _____ RIVER CODE _____ RIVER MILE _____

DATE 8/1/06 SCORER JAV COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☑ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☑☐	SILT [3 pts]	55%
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	17%
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pts]	5%
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☑	MUCK [0 pts]	33%
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

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

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

HHEI Metric Points — Substrate Max = 40: 7 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☑ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 12"

Pool Depth Max = 30: 25

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☑ > 1.5 m - 3.0 m (> 5' 7" - 9' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters): 20

Bankfull Width Max=30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS _____

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

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS _____

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

- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☑ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

QHEI PERFORMED? - ☑ Yes ☐ No QHEI Score 52 (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

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

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

USGS Quadrangle Name: _____ NRCS Soil Map Page _____ NRCS Soil Map Stream Order _____

County: _____ Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: unknown Quantity: unknown

Photograph Information: photos 14-16

Elevated Turbidity? (Y/N): N Canopy (% open): 90%

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

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

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

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

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

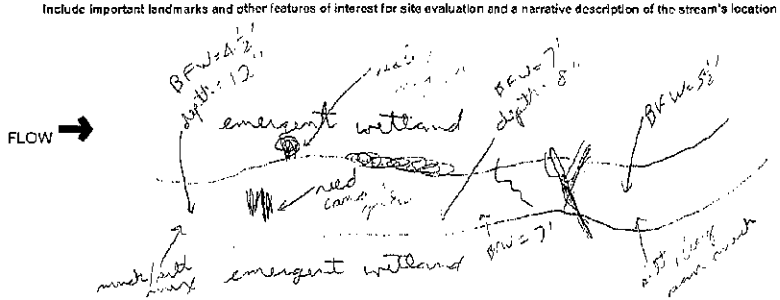
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

Frogs or Tadpoles Observed? (Y/N) _____ Voucher? (Y/N) _____ Aquatic Macroinvertebrates Observed? (Y/N) _____ Voucher? (Y/N) _____

Comments Regarding Biology: _____

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

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



modified class I

OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 26

SITE NAME/LOCATION AMP-Ohio Transmission

SITE NUMBER S34 RIVER BASIN ______ DRAINAGE AREA (mi²) ______

LENGTH OF STREAM REACH (ft) ______ LAT ______ LONG ______ RIVER CODE ______ RIVER MILE ______

DATE 8/1/06 SCORER JAV COMMENTS intermittent dumping large stream reach

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

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☑ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B)

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]		☐☑	LEAF PACK/WOODY DEBRIS [3 pts]	10%
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☑	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	
☑☐	SAND (<2 mm) [6 pts]	50%	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0%

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 9

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 2

HHEI Metric Points — Substrate Max = 40: 11 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☑ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): Ø

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☑ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ < 1.0 m (< 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters) ☐

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☑ Dry channel, no water (Ephemeral)

COMMENTS ______

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

- ☑ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☑ Severe (10 ft/100 ft)

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

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- ☐ WWH Name ______ Distance from Evaluated Stream ______
- ☐ CWH Name ______ Distance from Evaluated Stream ______
- ☐ EWH Name ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name ______ NRCS Soil Map Page ______ NRCS Soil Map Stream Order ______

County ______ Township / City ______

MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of last precipitation unknown Quantity unknown

Photograph Information picture 7-1

Elevated Turbidity? (Y/N) N Canopy (% open) 10%

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

Field Measures. Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______

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

Additional comments/description of pollution impacts ______

BIOTIC EVALUATION

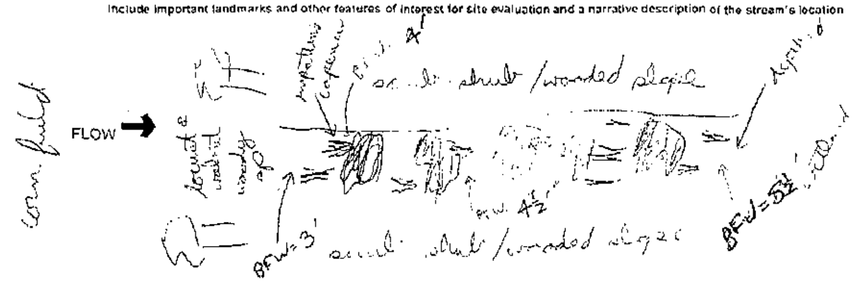
Performed? (Y/N) N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ______ Voucher? (Y/N) ______ Salamanders Observed? (Y/N) ______ Voucher? (Y/N) ______
Frogs or Tadpoles Observed? (Y/N) ______ Voucher? (Y/N) ______ Aquatic Macroinvertebrates Observed? (Y/N) ______ Voucher? (Y/N) ______

Comments Regarding Biology ______

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 11

SITE NAME/LOCATION Alt. Trans Line Amp-OH Nu-Plants Rd
SITE NUMBER Stream 1 RIVER BASIN ____ DRAINAGE AREA (mi²) ____
LENGTH OF STREAM REACH (ft) ____ LAT ____ LONG ____ RIVER CODE ____ RIVER MILE ____
DATE 6-18-07 SCORER Roposky COMMENTS ____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	10
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	56
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	10
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 3

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points — Substrate Max = 40: 6 (A + B)

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

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ MAXIMUM POOL DEPTH (centimeters): ____

Pool Depth Max = 30: 0

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

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ____ AVERAGE BANKFULL WIDTH (meters) ____

Bankfull Width Max=30: 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ____

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

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☒ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS ____

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

☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name ____ Distance from Evaluated Stream ____
☐ CWH Name ____ Distance from Evaluated Stream ____
☐ EWH Name ____ Distance from Evaluated Stream ____

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

USGS Quadrangle Name New Haven NRCS Soil Map Page ____ NRCS Soil Map Stream Order ____

County Meigs Township / City Lefort

MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of last precipitation 6-4-07 Quantity 1/3"

Photograph Information ____

Elevated Turbidity? (Y/N) — Canopy (% open) 10

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

Field Measures Temp (°C) ____ Dissolved Oxygen (mg/l) ____ pH (S.U.) ____ Conductivity (µmhos/cm) ____

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

Additional comments/description of pollution impacts ____

BIOTIC EVALUATION

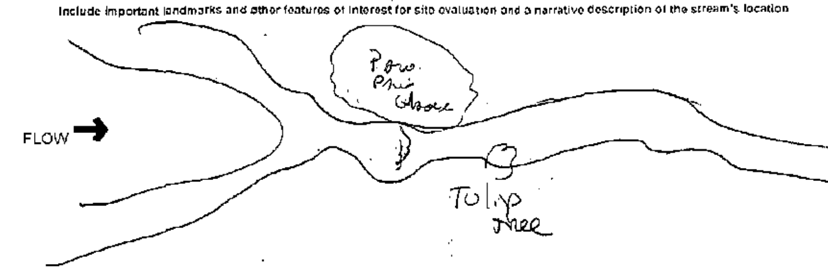
Performed? (Y/N) N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ____ Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____

Comments Regarding Biology: ____

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 37

SITE NAME/LOCATION: Alt Trans. Route Aug 2 R at Plants Rd
SITE NUMBER: Stream 2 RIVER BASIN ____ DRAINAGE AREA (mi²) ____
LENGTH OF STREAM REACH (ft) ____ LAT ____ LONG ____ RIVER CODE ____ RIVER MILE ____
DATE: 6-18-07 SCORER: [illegible] COMMENTS: Mod Class 2

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

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 2). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
BLDR SLABS [16 pts]		SILT [3 pt]	
BOULDER (>256 mm) [16 pts]		LEAF PACK/WOODY DEBRIS [3 pts]	
BEDROCK [16 pt]		FINE DETRITUS [3 pts]	
COBBLE (65-256 mm) [12 pts]	10	CLAY or HARDPAN [0 pt]	
GRAVEL (2-64 mm) [9 pts]	70	MUCK [0 pts]	20
SAND (<2 mm) [6 pts]		ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 10

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 9 TOTAL NUMBER OF SUBSTRATE TYPES: (B) 3

HHEI Metric Points — Substrate Max = 40: 12 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ____ AVERAGE BANKFULL WIDTH (meters): 3

Bankfull Width Max = 30: 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank):
- L ☒ R ☐ Wide >10m
- ☐ ☐ Moderate 5-10m
- ☐ ☐ Narrow <5m
- ☐ ☒ None

FLOODPLAIN QUALITY (Most Predominant per Bank):
- L ☒ R ☐ Mature Forest, Wetland
- ☐ ☐ Immature Forest, Shrub or Old Field
- ☐ ☐ Residential, Park, New Field
- ☐ ☒ Fenced Pasture
- ☐ ☐ Conservation Tillage
- ☐ ☐ Urban or Industrial
- ☐ ☐ Open Pasture, Row Crop
- ☐ ☐ Mining or Construction

COMMENTS ____

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):
- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS ____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):
☐ None ☐ 0.5 ☒ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE
☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)
- ☐ WWH Name: ____ Distance from Evaluated Stream ____
- ☐ CWH Name: ____ Distance from Evaluated Stream ____
- ☐ EWH Name: ____ Distance from Evaluated Stream ____

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page: ____ NRCS Soil Map Stream Order ____
County: Meigs Township / City: Gilford

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6-4-07 Quantity: 0.2"

Photograph Information: ____

Elevated Turbidity? (Y/N): N Canopy (% open): N 50%

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

Field Measures: Temp (°C) ____ Dissolved Oxygen (mg/l) ____ pH (S.U.) ____ Conductivity (µmhos/cm) ____

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

Additional comments/description of pollution impacts: ____

BIOTIC EVALUATION

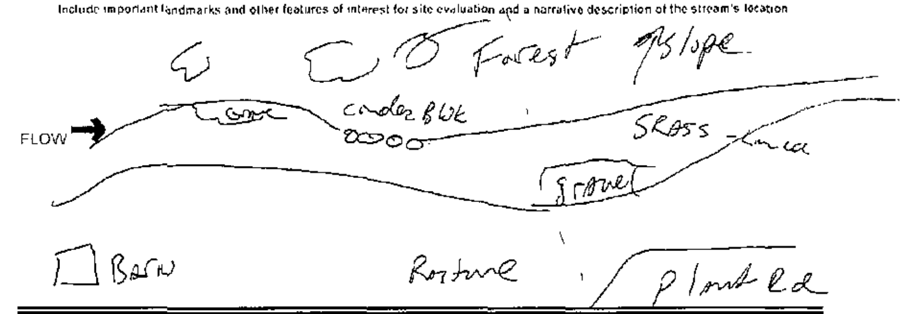
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ____ Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____

Comments Regarding Biology: ____

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 15

SITE NAME/LOCATION: Alt Trans Route
SITE NUMBER: Stream 3 RIVER BASIN ______ DRAINAGE AREA (mi²) ______
LENGTH OF STREAM REACH (ft) ______ LAT ______ LONG ______ RIVER CODE ______ RIVER MILE ______
DATE 6/18/07 SCORER Reas/4 COMMENTS ______ Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	40
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	20
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	20
☐☐	GRAVEL (2-64 mm) [9 pts]		☐☐	MUCK [0 pts]	20
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 TOTAL NUMBER OF SUBSTRATE TYPES: (B) 4

HHEI Metric Points — Substrate Max = 40: 10 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☒ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters): 1

Bankfull Width Max=30: 5

This information **must** also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS ______

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

☐ None ☐ 0.5 ☐ 1.0 ☒ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- ☐ WWH Name ______ Distance from Evaluated Stream ______
- ☐ CWH Name ______ Distance from Evaluated Stream ______
- ☐ EWH Name ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name New Haven NRCS Soil Map Page ______ NRCS Soil Map Stream Order ______
County Meigs Township / City Le Tart

MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of last precipitation ______ Quantity ______
Photograph Information ______
Elevated Turbidity? (Y/N) N Canopy (% open) 50
Were samples collected for water chemistry? (Y/N) N (Note lab sample no. or id. and attach results) Lab Number ______
Field Measures: Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (μmhos/cm) ______
Is the sampling reach representative of the stream (Y/N) N If not, please explain The pond is not a natural System
Additional comments/description of pollution impacts: ______

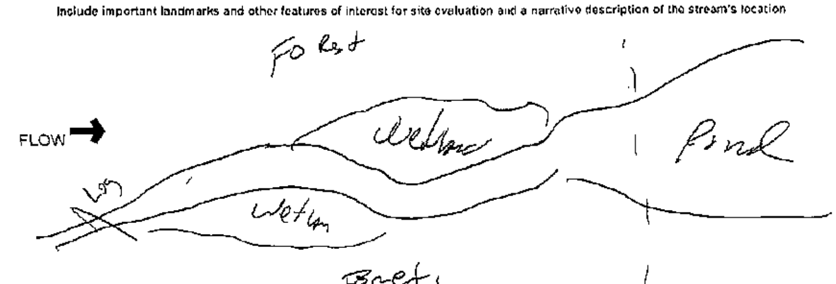
BIOTIC EVALUATION

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

Fish Observed? (Y/N) ____ Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____
Comments Regarding Biology: ______

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 41

SITE NAME/LOCATION: Atl. Trans. Boot Trib 01 Anvel Rd SITE NUMBER: 5 H RIVER BASIN DRAINAGE AREA

LENGTH OF STREAM REACH (ft) LAT LONG RIVER CODE RIVER MILE

DATE: 6-18-01 SCORER: Reposky COMMENTS: Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1 SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	20
☐☐	BOULDER (>256 mm) [16 pts]	10	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	26	☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	50	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 30 (A) 21 (B) 5

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

HHEI Metric Points — Substrate Max = 40: 26 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☒ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters): 1.1

Bankfull Width Max=30: 15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS ______

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

☐ None ☐ 0.5 ☐ 1.0 ☒ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

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

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name: Distance from Evaluated Stream
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page: NRCS Soil Map Stream Order:

County: Meigs Township / City: Lethart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: ______ Quantity: ______

Photograph Information: ______

Elevated Turbidity? (Y/N): —— Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N (If Yes, lab sample no. and attach results) Lab Number: ______

Field Measures: Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______

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

Additional comments/description of pollution impacts: ______

BIOTIC EVALUATION

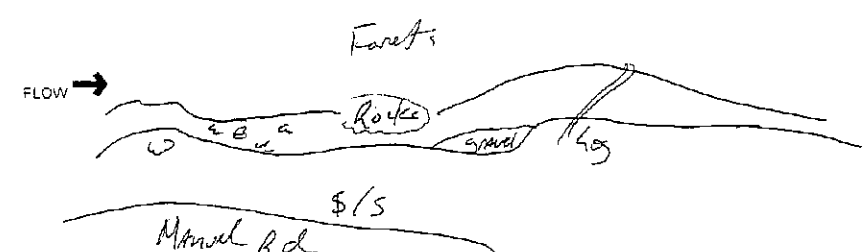
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N) ___ Salamanders Observed? (Y/N) ___ Voucher? (Y/N) ___
Frogs or Tadpoles Observed? (Y/N) ___ Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) ___ Voucher? (Y/N) ___

Comments Regarding Biology: ______

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 52 47

SITE NAME/LOCATION A+ Trans Route

SITE NUMBER St 5 RIVER BASIN ______ DRAINAGE AREA (mi²) ______

LENGTH OF STREAM REACH (ft) ______ LAT ______ LONG ______ RIVER CODE ______ RIVER MILE ______

DATE 10-14 SCORER Ribrack COMMENTS Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	
☐☐	BOULDER (>256 mm) [16 pts]	25	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	20	☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	20	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]	25	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 45

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 22

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points — Substrate Max = 40: 27 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ 30cm MAXIMUM POOL DEPTH (centimeters): 30

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters) 2

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS ______

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

☐ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☒ Severe (10 ft/100 ft)

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

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- ☒ WWH Name ______ Distance from Evaluated Stream ______
- ☐ CWH Name ______ Distance from Evaluated Stream ______
- ☐ EWH Name ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name New Haven NRCS Soil Map Page ______ NRCS Soil Map Stream Order ______

County Meigs Township / City Le Tart

MISCELLANEOUS

Base Flow Conditions? (Y/N) N Date of last precipitation ______ Quantity ______

Photograph Information ______

Elevated Turbidity? (Y/N) — Canopy (% open) 5

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

Field Measures Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______

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

Additional comments/description of pollution impacts: ______

BIOTIC EVALUATION

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

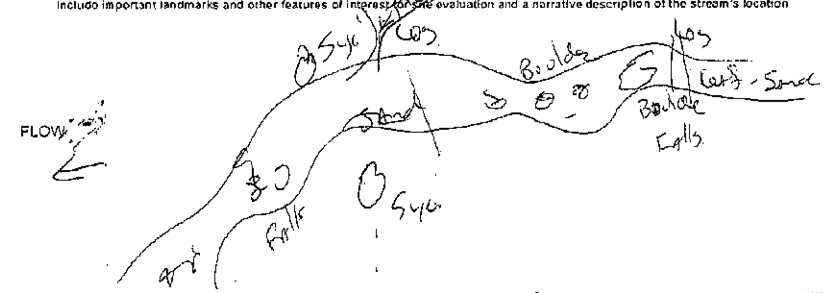
Fish Observed? (Y/N) ______ Voucher? (Y/N) ______ Salamanders Observed? (Y/N) ______ Voucher? (Y/N) ______

Frogs or Tadpoles Observed? (Y/N) ______ Voucher? (Y/N) ______ Aquatic Macroinvertebrates Observed? (Y/N) ______ Voucher? (Y/N) ______

Comments Regarding Biology: ______

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 40

SITE NAME/LOCATION: #15 . Trans Route . Amp-UP
SITE NUMBER: 5-6 RIVER BASIN ______ DRAINAGE AREA (mi²) ______
LENGTH OF STREAM REACH (ft) ______ LAT ______ LONG ______ RIVER CODE ______ RIVER MILE ______
DATE: 6-19-07 SCORER: [illegible] COMMENTS ______ Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	20
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	10
☐☐	BEDROCK [16 pt]	10	☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	30	☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	20	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]	[illegible]	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 40 (A) 15

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15 TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points — Substrate Max = 40: 20 (A + B)

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box)
- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):
- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters): 2

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

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

COMMENTS ______

FLOW REGIME (At Time of Evaluation) (Check ONLY one box)
- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS ______

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box)
- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☒ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)
- ☒ WWH Name: ______ Distance from Evaluated Stream ______
- ☐ CWH Name: ______ Distance from Evaluated Stream ______
- ☐ EWH Name: ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page ______ NRCS Soil Map Stream Order ______
County: Meigs Township / City: Le. Tart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: ______ Quantity: ______
Photograph Information: ______
Elevated Turbidity? (Y/N): — Canopy (% open): 10
Were samples collected for water chemistry? (Y/N): N Note lab sample no. or id. and attach results ______
Field Measures: Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______
Is the sampling reach representative of the stream (Y/N): Y If not, please explain ______

Additional comments/description of pollution impacts: ______

BIOTIC EVALUATION

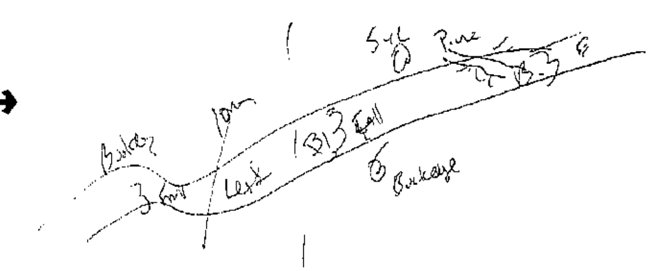
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ___ Voucher? (Y/N) ___ Salamanders Observed? (Y/N) ___ Voucher? (Y/N) ___
Frogs or Tadpoles Observed? (Y/N) ___ Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) ___ Voucher? (Y/N) ___
Comments Regarding Biology ______

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

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

FLOW →



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 50

SITE NAME/LOCATION Alt - Trans 16372

SITE NUMBER S-7 RIVER BASIN ______ DRAINAGE AREA (mi²) ______

LENGTH OF STREAM REACH (ft) ______ LAT ______ LONG ______ RIVER CODE ______ RIVER MILE ______

DATE 6-19-07 SCORER Repasky COMMENTS Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	20
☐☐	BOULDER (>256 mm) [16 pts]	20	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☒☒	COBBLE (65-256 mm) [12 pts]	30	☐☐	CLAY or HARDPAN [0 pt]	
☒☒	GRAVEL (2-64 mm) [9 pts]	30	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 50

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 4

HHEI Metric Points — Substrate Max = 40: 25 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): 10

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters) 3.5

Bankfull Width Max=30: 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS ______

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

☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☒ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ______ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S)

- ☒ WWH Name ______ Distance from Evaluated Stream ______
- ☐ CWH Name ______ Distance from Evaluated Stream ______
- ☐ EWH Name ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name New Haven NRCS Soil Map Page ______ NRCS Soil Map Stream Order ______

County Meigs Township / City Le Tart

MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of last precipitation ______ Quantity ______

Photograph Information ______

Elevated Turbidity? (Y/N) — Canopy (% open) 5

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

Field Measures Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______

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

Additional comments/description of pollution impacts ______

BIOTIC EVALUATION

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

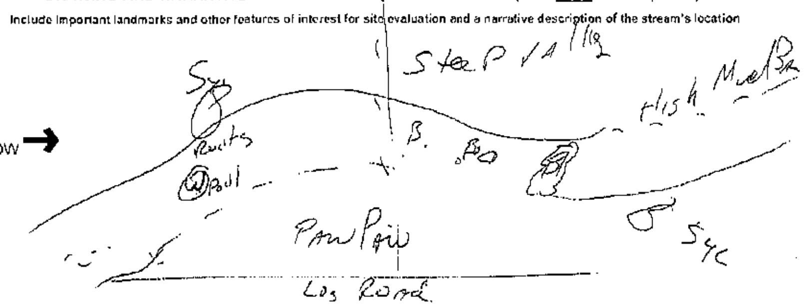
Fish Observed? (Y/N) ____ Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____

Comments Regarding Biology: ______

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

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

FLOW →



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 45

SITE NAME/LOCATION: Alt Trail Rot – Run-off
SITE NUMBER: S-8 RIVER BASIN ____ DRAINAGE AREA (mi²) ____
LENGTH OF STREAM REACH (ft) ____ LAT ____ LONG ____ RIVER CODE ____ RIVER MILE ____
DATE: 6-19-07 SCORER: Bassler COMMENTS: Mod Class 2

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

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

Bor Tuttle

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	35
☐☐	BOULDER (>256 mm) [16 pts]	22	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	30	☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	35	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 52

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21
TOTAL NUMBER OF SUBSTRATE TYPES: (B) 4

HHEI Metric Points — Substrate Max = 40: 25 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ MAXIMUM POOL DEPTH (centimeters): ____

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ____ AVERAGE BANKFULL WIDTH (meters): 2.5

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

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

COMMENTS ____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☒ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS ____

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

☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☒ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

- ☒ WWH Name: ____ Distance from Evaluated Stream ____
- ☐ CWH Name: ____ Distance from Evaluated Stream ____
- ☐ EWH Name: ____ Distance from Evaluated Stream ____

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page ____ NRCS Soil Map Stream Order ____
County: Meigs Township / City: Letart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: ____ Quantity: ____
Photograph Information: ____
Elevated Turbidity? (Y/N): N Canopy (% open): N-½
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: ____
Field Measures: Temp (°C) ____ Dissolved Oxygen (mg/l) ____ pH (S.U.) ____ Conductivity (µmhos/cm) ____
Is the sampling reach representative of the stream (Y/N) Y If not, please explain: ____

Additional comments/description of pollution impacts: ____

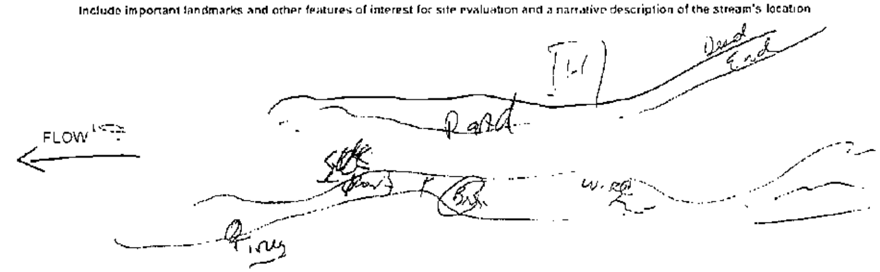
BIOTIC EVALUATION

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

Fish Observed? (Y/N) N Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____
Comments Regarding Biology: ____

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 57

SITE NAME/LOCATION: Alt Trans Route

SITE NUMBER: 5-9 RIVER BASIN ______ DRAINAGE AREA (mi²) ______

LENGTH OF STREAM REACH (ft) ______ LAT ______ LONG ______ RIVER CODE ______ RIVER MILE ______

DATE: 6-6-07 SCORER: Reposh COMMENTS ______

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

STREAM CHANNEL MODIFICATIONS: [X] NONE / NATURAL CHANNEL [ ] RECOVERED [ ] RECOVERING [ ] RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE	PERCENT	TYPE	PERCENT
BLDR SLABS [16 pts]	40	SILT [3 pt]	10
BOULDER (>256 mm) [16 pts]	20	LEAF PACK/WOODY DEBRIS [3 pts]	10
BEDROCK [16 pt]		FINE DETRITUS [3 pts]	
COBBLE (65-256 mm) [12 pts]	20	CLAY or HARDPAN [0 pt]	
GRAVEL (2-64 mm) [9 pts]		MUCK [0 pts]	
SAND (<2 mm) [6 pts]		ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 80

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 32

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points — Substrate Max = 40: 37 (A + B)

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

- [ ] > 30 centimeters [20 pts]
- [ ] > 22.5 - 30 cm [30 pts]
- [ ] > 10 - 22.5 cm [25 pts]
- [ ] > 5 cm - 10 cm [15 pts]
- [ ] < 5 cm [6 pts]
- [X] NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters): ______

Pool Depth Max = 30: 0

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

- [ ] > 4.0 meters (> 13') [30 pts]
- [ ] > 3.0 m - 4.0 m (> 9'7" - 13') [25 pts]
- [X] > 1.5 m - 3.0 m (> 9'7" - 4'8") [20 pts]
- [ ] > 1.0 m - 1.5 m (> 3'3" - 4'8") [15 pts]
- [ ] ≤ 1.0 m (≤ 3'3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters): 2

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

- [ ] Stream Flowing
- [ ] Subsurface flow with isolated pools (Interstitial)
- [ ] Moist Channel, isolated pools, no flow (Intermittent)
- [X] Dry channel, no water (Ephemeral)

COMMENTS ______

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

- [ ] None
- [ ] 0.5
- [ ] 1.0
- [ ] 1.5
- [ ] 2.0
- [ ] 2.5
- [X] 3.0
- [ ] >3

STREAM GRADIENT ESTIMATE

[ ] Flat (0.5 ft/100 ft) [ ] Flat to Moderate [ ] Moderate (2 ft/100 ft) [X] Moderate to Severe [X] Severe (10 ft/100 ft)

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

QHEI PERFORMED? - [ ] Yes [X] No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S):

[X] WWH Name ______ Distance from Evaluated Stream ______
[ ] CWH Name ______ Distance from Evaluated Stream ______
[ ] EWH Name ______ Distance from Evaluated Stream ______

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page ______ NRCS Soil Map Stream Order ______

County: Meigs Township / City: Le Tart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6-4-07 Quantity: 0.2"

Photograph Information: yes

Elevated Turbidity? (Y/N): — Canopy (% open): 10

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

Field Measures: Temp (°C) ______ Dissolved Oxygen (mg/l) ______ pH (S.U.) ______ Conductivity (µmhos/cm) ______

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

Additional comments/description of pollution impacts ______

BIOTIC EVALUATION

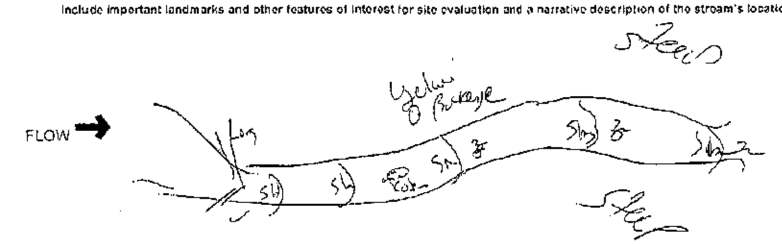
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____

Comments Regarding Biology: ______

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 53

SITE NAME/LOCATION: Ale Thomas Route
SITE NUMBER: S-10 RIVER BASIN ____ DRAINAGE AREA (mi²) ____
LENGTH OF STREAM REACH (ft) ____ LAT ____ LONG ____ RIVER CODE ____ RIVER MILE ____
DATE: 6-19-02 SCORER ____ COMMENTS: Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]	10	☐☐	SILT [3 pt]	20
☐☐	BOULDER (>256 mm) [16 pts]	20	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	40
☐☐	BEDROCK [16 pts]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	30	☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	10	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 60

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 28 TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points — Substrate Max = 40: 33 (A + B)

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

☐ > 30 centimeters [20 pts]
☐ > 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ MAXIMUM POOL DEPTH (centimeters): ____

Pool Depth Max = 30: 0

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

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9'7" - 13') [25 pts]
☒ > 1.5 m - 3.0 m (> 4'8" - 9'7") [20 pts]
☐ > 1.0 m - 1.5 m (> 3'3" - 4'8") [15 pts]
☐ ≤ 1.0 m (≤ 3'3") [5 pts]

COMMENTS ____ AVERAGE BANKFULL WIDTH (meters): 3

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ____

FLOW REGIME (*At Time of Evaluation*) (Check ONLY one box)
☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☒ Dry channel, no water (Ephemeral)
COMMENTS ____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box)
☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☒ >3

STREAM GRADIENT ESTIMATE
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)
☒ WWH Name ____ Distance from Evaluated Stream ____
☐ CWH Name ____ Distance from Evaluated Stream ____
☐ EWH Name ____ Distance from Evaluated Stream ____

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page ____ NRCS Soil Map Stream Order ____
County: Meigs Township / City: Le Tart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: ____ Quantity: ____
Photograph Information: ____
Elevated Turbidity? (Y/N): N Canopy (% open): ____
Were samples collected for water chemistry? (Y/N): N Lab Sample # or ID (attach results) ____
Field Measures: Temp (°C) ____ Dissolved Oxygen (mg/l) ____ pH (S.U.) ____ Conductivity (µmhos/cm) ____
Is the sampling reach representative of the stream (Y/N): Y If not, please explain: ____

Additional comments/description of pollution impacts: ____

BIOTIC EVALUATION

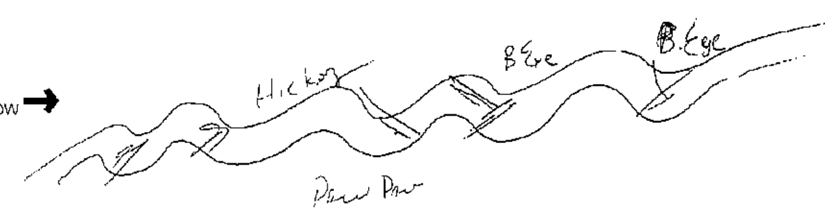
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____
Comments Regarding Biology: ____

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

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

FLOW →



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 40

SITE NAME/LOCATION: Alt Adams Rd 2 ... Bl..nd Hollow SITE NUMBER SF-11 RIVER BASIN ____ DRAINAGE AREA (mi²) ____

LENGTH OF STREAM REACH (ft) ____ LAT ____ LONG ____ RIVER CODE ____ RIVER MILE ____

DATE 10-19-? SCORER ____ COMMENTS Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B)

TYPE	PERCENT	TYPE	PERCENT
BLDR SLABS [16 pts]		SILT [3 pt]	30
BOULDER (>256 mm) [16 pts]	10	LEAF PACK/WOODY DEBRIS [3 pts]	10
BEDROCK [16 pt]		FINE DETRITUS [3 pts]	
COBBLE (65-256 mm) [12 pts]	30	CLAY or HARDPAN [0 pt]	
GRAVEL (2-64 mm) [9 pts]	20	MUCK [0 pts]	
SAND (<2 mm) [6 pts]		ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 10

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 15 TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points — Substrate Max = 40: 20 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ MAXIMUM POOL DEPTH (centimeters): 5

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ____ AVERAGE BANKFULL WIDTH (meters) 2.5

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS X-ing near Blind Road

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS ____

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

☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☒ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score ____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name ____ Distance from Evaluated Stream ____
☐ CWH Name ____ Distance from Evaluated Stream ____
☐ EWH Name ____ Distance from Evaluated Stream ____

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

USGS Quadrangle Name New Haven NRCS Soil Map Page ____ NRCS Soil Map Stream Order ____

County Meigs Township / City [illegible]

MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of last precipitation ____ Quantity ____

Photograph Information ____

Elevated Turbidity? (Y/N) N Canopy (% open) ____

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

Field Measures Temp (°C) ____ Dissolved Oxygen (mg/l) ____ pH (S.U.) ____ Conductivity (µmhos/cm) ____

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

Additional comments/description of pollution impacts: ____

BIOTIC EVALUATION

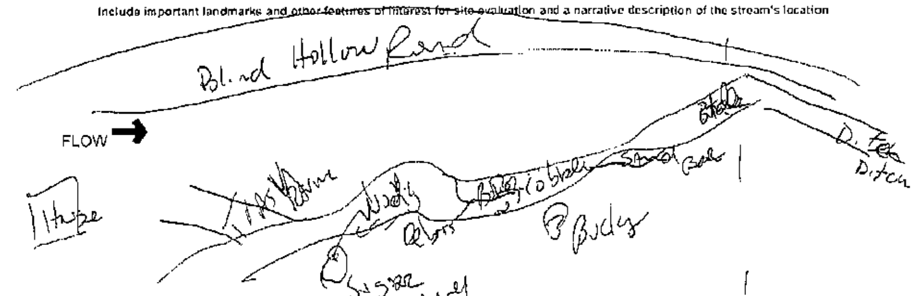
Performed? (Y/N) N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____
Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____

Comments Regarding Biology: ____

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

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



Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 31

SITE NAME/LOCATION: Alt. Trans Route Amp off
New Blood Hollow SITE NUMBER S-12 RIVER BASIN ___ DRAINAGE AREA (mi²) ___
LENGTH OF STREAM REACH (ft) ___ LAT ___ LONG ___ RIVER CODE ___ RIVER MILE ___
DATE 6-4-07 SCORER Repasky COMMENTS ___ Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE	PERCENT	TYPE	PERCENT
BLDR SLABS [16 pts]		SILT [3 pt]	30
BOULDER (>256 mm) [16 pts]	10	LEAF PACK/WOODY DEBRIS [3 pts]	30
BEDROCK [16 pt]		FINE DETRITUS [3 pts]	
COBBLE (65-256 mm) [12 pts]	20	CLAY or HARDPAN [0 pt]	
GRAVEL (2-64 mm) [9 pts]		MUCK [0 pts]	
SAND (<2 mm) [6 pts]	10	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 30

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6   TOTAL NUMBER OF SUBSTRATE TYPES: (B) 5

HHEI Metric Points — Substrate Max = 40: 11 (A + B)

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ___ MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ___ AVERAGE BANKFULL WIDTH (meters): 2

Bankfull Width Max = 30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH (Per Bank) (L R):
- ☒☒ Wide >10m
- ☐☐ Moderate 5-10m
- ☐☐ Narrow <5m
- ☐☐ None

FLOODPLAIN QUALITY (Most Predominant per Bank) (L R):
- ☒☒ Mature Forest, Wetland
- ☐☐ Immature Forest, Shrub or Old Field
- ☐☐ Residential, Park, New Field
- ☐☐ Fenced Pasture
- ☐☐ Conservation Tillage
- ☐☐ Urban or Industrial
- ☐☐ Open Pasture, Row Crop
- ☐☐ Mining or Construction

COMMENTS ___

FLOW REGIME (At Time of Evaluation) (Check ONLY one box)
- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS ___

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box)
- ☐ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☒ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ___ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)
☒ WWH Name: ___ Distance from Evaluated Stream ___
☐ CWH Name: ___ Distance from Evaluated Stream ___
☐ EWH Name: ___ Distance from Evaluated Stream ___

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page: ___ NRCS Soil Map Stream Order ___
County: Miss Township / City: Le Tort

MISCELLANEOUS

Base Flow Conditions? (Y/N): ✓ Date of last precipitation: 6-4-07 Quantity: 0.2"

Photograph Information: ___

Elevated Turbidity? (Y/N): ___ Canopy (% open): 70

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

Field Measures: Temp (°C) ___ Dissolved Oxygen (mg/l) ___ pH (S.U.) ___ Conductivity (µmhos/cm) ___

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

Additional comments/description of pollution impacts: ___

BIOTIC EVALUATION

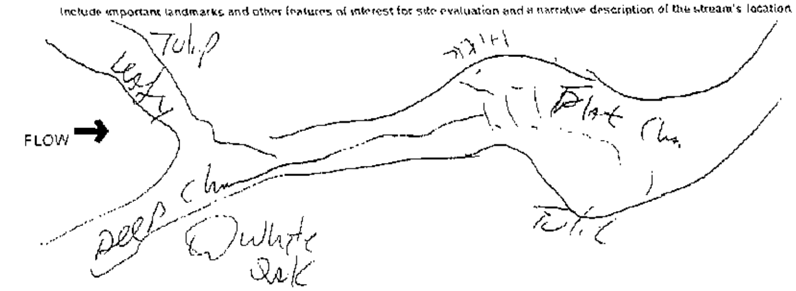
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): N Voucher? (Y/N) ___ Salamanders Observed? (Y/N) ___ Voucher? (Y/N) ___
Frogs or Tadpoles Observed? (Y/N) ___ Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) ___ Voucher? (Y/N) ___

Comments Regarding Biology: ___

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

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



Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): 32

SITE NAME/LOCATION: Alternate Transmission Line – Amp Ohio
SITE NUMBER: 5-13 RIVER BASIN: DRAINAGE AREA:
LENGTH OF STREAM REACH: LAT: LONG: RIVER CODE: RIVER MILE:
DATE: 6-19-02 SCORER: Repasky COMMENTS: Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		☒ ☒	SILT [3 pt]	40
☐ ☐	BOULDER (>256 mm) [16 pts]	10	☐ ☒	LEAF PACK/WOODY DEBRIS [3 pts]	20
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]	10	☐ ☐	CLAY or HARDPAN [0 pt]	10
☐ ☐	GRAVEL (2-64 mm) [9 pts]	10	☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]	~~20~~	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 20

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 6 TOTAL NUMBER OF SUBSTRATE TYPES: (B) 6

HHEI Metric Points — Substrate Max = 40: 12 (A + B)

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

☐ > 30 centimeters [20 pts] ☐ > 5 cm - 10 cm [15 pts]
☐ > 22.5 - 30 cm [30 pts] ☐ < 5 cm [5 pts]
☐ > 10 - 22.5 cm [25 pts] ☒ NO WATER OR MOIST CHANNEL [0 pts] 5c

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

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

☐ > 4.0 meters (> 13') [30 pts] ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]
☒ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 2 m

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS

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

☐ Stream Flowing ☒ Moist Channel, isolated pools, no flow (Intermittent)
☐ Subsurface flow with isolated pools (Interstitial) ☐ Dry channel, no water (Ephemeral)

COMMENTS

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

☐ None ☐ 1.0 ☐ 2.0 ☒ 3.0
☐ 0.5 ☐ 1.5 ☐ 2.5 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S)
☒ WWH Name: Distance from Evaluated Stream
☐ CWH Name: Distance from Evaluated Stream
☐ EWH Name: Distance from Evaluated Stream

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page: NRCS Soil Map Stream Order:
County: Meigs Township/City: Letart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6-4-02 Quantity: 0.2"
Photograph Information:
Elevated Turbidity? (Y/N): N Canopy (% open): 5%
Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:
Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)
Is the sampling reach representative of the stream (Y/N): Y If not, please explain:

Additional comments/description of pollution impacts:

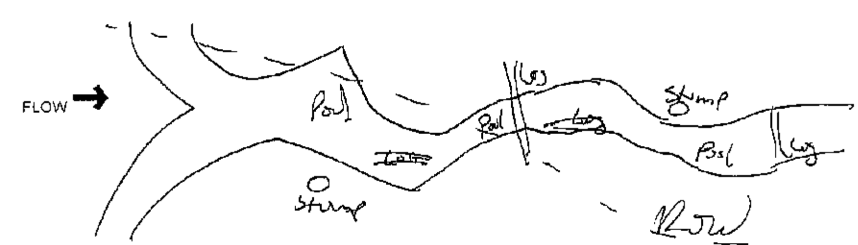
BIOTIC EVALUATION

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

Fish Observed? (Y/N) ___ Voucher? (Y/N) ___ Salamanders Observed? (Y/N) ___ Voucher? (Y/N) ___
Frogs or Tadpoles Observed? (Y/N) ___ Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) ___ Voucher? (Y/N) ___
Comments Regarding Biology:

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) 39

Alternate Transmission Line - Amp Ohio

S-14

6-19 Repasky

Class 2

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

STREAM CHANNEL MODIFICATIONS: X NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.)

TYPE		PERCENT	TYPE		PERCENT
☐ ☐	BLDR SLABS [16 pts]		X	SILT [3 pt]	40
☐ ☐	BOULDER (>256 mm) [16 pts]	5	☐ ☐	LEAF PACK/WOODY DEBRIS [3 pts]	20
☐ ☐	BEDROCK [16 pt]		☐ ☐	FINE DETRITUS [3 pts]	
☐ ☐	COBBLE (65-256 mm) [12 pts]	10	☐ ☐	CLAY or HARDPAN [0 pt]	
X	GRAVEL (2-64 mm) [9 pts]	20	☐ ☐	MUCK [0 pts]	
☐ ☐	SAND (<2 mm) [6 pts]	5	☐ ☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 15 (A) 12

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES

TOTAL NUMBER OF SUBSTRATE TYPES (B) 6

HHEI Metric Points — Substrate Max = 40: 18 (A + B)

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

☐ > 30 centimeters [20 pts]
☐ 22.5 - 30 cm [30 pts]
☐ > 10 - 22.5 cm [25 pts]
☐ > 5 cm - 10 cm [15 pts]
☐ < 5 cm [5 pts]
X NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ____ MAXIMUM POOL DEPTH (centimeters)

Pool Depth Max = 30: 0

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

☐ > 4.0 meters (> 13') [30 pts]
☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
X > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ____ AVERAGE BANKFULL WIDTH (meters) 2

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆

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

COMMENTS ____

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

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
X Dry channel, no water (Ephemeral)

COMMENTS ____

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

☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 X 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe X Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes X No QHEI Score ____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

X WWH Name: ____ Distance from Evaluated Stream ____
☐ CWH Name: ____ Distance from Evaluated Stream ____
☐ EWH Name: ____ Distance from Evaluated Stream ____

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page: ____ NRCS Soil Map Stream Order ____

County: Meigs Township / City: Letart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6-4-07 Quantity: 0.2"

Photograph Information: ____

Elevated Turbidity? (Y/N): N Canopy (% open): 5%

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

Field Measures: Temp (°C) ____ Dissolved Oxygen (mg/l) ____ pH (S.U.) ____ Conductivity (µmhos/cm) ____

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

Additional comments/description of pollution impacts: ____

BIOTIC EVALUATION

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

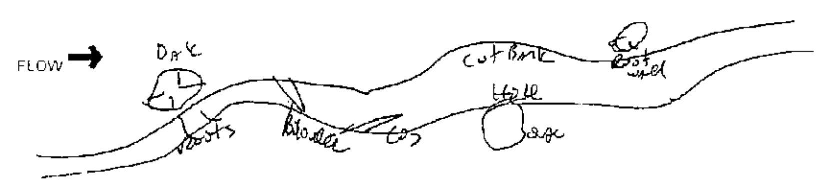
Fish Observed? (Y/N) ____ Voucher? (Y/N) ____ Salamanders Observed? (Y/N) ____ Voucher? (Y/N) ____

Frogs or Tadpoles Observed? (Y/N) ____ Voucher? (Y/N) ____ Aquatic Macroinvertebrates Observed? (Y/N) ____ Voucher? (Y/N) ____

Comments Regarding Biology: ____

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): #50

SITE NAME/LOCATION: Alternate Transmission Line - Amp Ohio
SITE NUMBER ___ RIVER BASIN ___ DRAINAGE AREA (mi²) ___
LENGTH OF STREAM REACH (ft) 5-15 LAT ___ LONG ___ RIVER CODE ___ RIVER MILE ___
DATE 6-19-02 SCORER Repasky COMMENTS Cotton Creek Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☐	SILT [3 pt]	20
☐☐	BOULDER (>256 mm) [16 pts]	10	☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]	50	☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	20	☐☐	MUCK [0 pts]	
☐☐	SAND (<2 mm) [6 pts]		☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 60

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: (A) 21

TOTAL NUMBER OF SUBSTRATE TYPES: (B) 4

HHEI Metric Points — Substrate Max = 40: 25 (A + B)

2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):
- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ___ MAXIMUM POOL DEPTH (centimeters): ___

Pool Depth Max = 30: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):
- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ___ AVERAGE BANKFULL WIDTH (meters) 3.05

Bankfull Width Max=30: 25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ___

FLOW REGIME (At Time of Evaluation) (Check ONLY one box)
- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS ___

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box)
☐ None ☐ 0.5 ☒ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE
☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ___ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)
- ☒ WWH Name: ___ Distance from Evaluated Stream ___
- ☐ CWH Name: ___ Distance from Evaluated Stream ___
- ☐ EWH Name: ___ Distance from Evaluated Stream ___

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

USGS Quadrangle Name: New Haven NRCS Soil Map Page: ___ NRCS Soil Map Stream Order ___

County: Meigs Township/City: Letart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6-4-02 Quantity: 0.2"

Photograph Information: #63 - #64

Elevated Turbidity? (Y/N): N Canopy (% open): 10

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

Field Measures: Temp (°C) ___ Dissolved Oxygen (mg/l) ___ pH (S.U.) ___ Conductivity (µmhos/cm) ___

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

Additional comments/description of pollution impacts: ___

BIOTIC EVALUATION

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

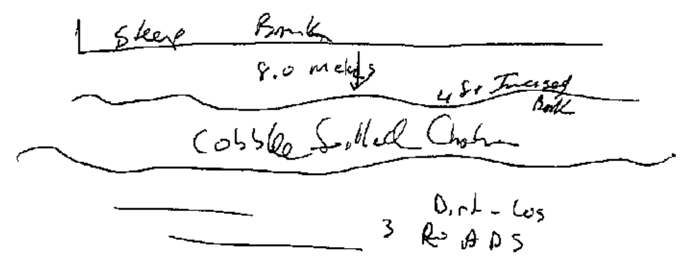
Fish Observed? (Y/N) ___ Voucher? (Y/N) ___ Salamanders Observed? (Y/N) ___ Voucher? (Y/N) ___
Frogs or Tadpoles Observed? (Y/N) ___ Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) ___ Voucher? (Y/N) ___

Comments Regarding Biology: ___

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

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

FLOW →



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) *50*

Alternate Transmission Line – Ampo Ohio ... S16 ... Repasky ... Class 2

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

	HHEI Metric Points
1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.	

TYPE	PERCENT	TYPE	PERCENT
BLDR SLABS [16 pts]		SILT [3 pt]	20
BOULDER (>256 mm) [16 pts]		LEAF PACK/WOODY DEBRIS [3 pts]	40
BEDROCK [16 pt]		FINE DETRITUS [1 pts]	
COBBLE (65-256 mm) [12 pts]	20	CLAY or HARDPAN [0 pt]	
GRAVEL (2-64 mm) [9 pts]	50	MUCK [0 pts]	
SAND (<2 mm) [6 pts]		RIP RAP [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 20 (A) 21 (B) 4

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES — TOTAL NUMBER OF SUBSTRATE TYPES

Substrate Max = 40: **25**   A + B

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

- ☐ > 30 centimeters [20 pts]
- ☐ 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ______ MAXIMUM POOL DEPTH (centimeters) ______

Pool Depth Max = 30: ______

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☒ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 4' 8" - 9' 7") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS ______ AVERAGE BANKFULL WIDTH (meters) 3.5

Bankfull Width Max = 30: **25**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

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

COMMENTS ______

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS ______

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

☐ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☒ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed)

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ______ (If Yes, Attach Completed QHEI Form)

☒ ... ☐ ... ☐ ...

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

USGS Quadrangle Name: New Haven ... County: Meigs ... Township/City: Letart

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: 6-4-07 Quantity: 0.2"

Photograph Information: ______

Elevated Turbidity? (Y/N): ______ Canopy (% open): 10

Were samples collected for water chemistry? (Y/N): N ...

Field Measurements: ______

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

Additional comments/description of pollution impacts: ______

BIOTIC EVALUATION

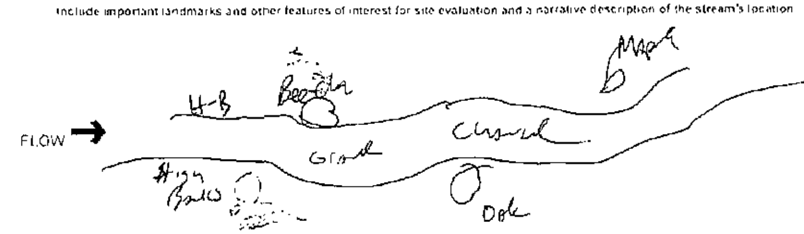
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ___ Voucher? (Y/N) ___ Salamanders Observed? (Y/N) ___ Voucher? (Y/N) ___
Frogs or Tadpoles Observed? (Y/N) ___ Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) ___ Voucher? (Y/N) ___

Comments Regarding Biology: ______

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

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



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 54

SITE NAME/LOCATION _____

SITE NUMBER S-217 RIVER BASIN _____ DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) _____ LAT _____ LONG _____ RIVER CODE _____ RIVER MILE _____

DATE 6-19 SCORER DMS/S COMMENTS _____

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

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1 **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32) Add total number of significant substrate types found (Max of 8) Final metric score is sum of boxes A & B

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☐	SILT [3 pt]	10
☒	BOULDER (>256 mm) [16 pts]	40	☐	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☒	COBBLE (65-256 mm) [12 pts]	25	☐	CLAY or HARDPAN [0 pt]	
☐	GRAVEL (2-64 mm) [9 pts]	10	☐	MUCK [0 pts]	
☐	SAND (<2 mm) [6 pts]	10	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 65 (A) 28 (B) 6

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

HHEI Metric Points — Substrate Max = 40: 34 — A + B

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

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ ≤ 5 cm [5 pts]
- ☒ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): _____

Pool Depth Max = 30: 0

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

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☒ > 1.5 m - 3.0 m (> 5' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (≤ 3' 3") [5 pts]

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 3

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) as looking downstream)

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

COMMENTS _____

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

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☒ Dry channel, no water (Ephemeral)

COMMENTS _____

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

☐ None	☐ 1.0	☐ 2.0	☒ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

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

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score ___ If Yes Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S)

☒ WWH Name _____ Distance from Evaluated Stream _____

☐ EWH Name _____ Distance from Evaluated Stream _____

☐ MWH Name _____ Distance from Evaluated Stream _____

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

USGS Quadrangle Name Newtown NRCS Soil Map Page _____ NRCS Soil Map Stream Order _____

County Meig Township / City Letart

MISCELLANEOUS

Base Flow Conditions? (Y/N) Y Date of last precipitation 6-4-02 Quality 6-24

Photograph Information No - low Battery

Elevated Turbidity? (Y/N) _____ Canopy (% open) 10

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

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

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

Additional comments/description of pollution impacts _____

BIOTIC EVALUATION

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

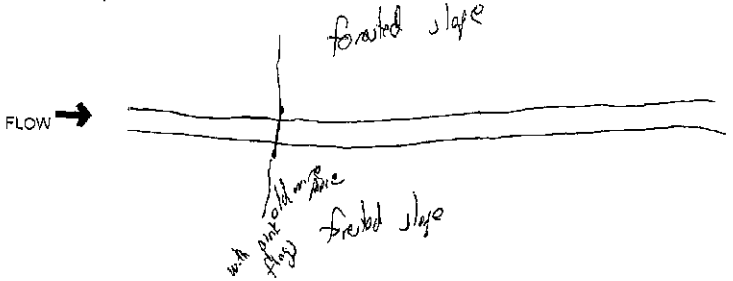
Fish Observed? (Y/N) N Voucher? (Y/N) ___ Salamanders Observed? (Y/N) ___ Voucher? (Y/N) ___

Frogs or Tadpoles Observed? (Y/N) ___ Voucher? (Y/N) ___ Aquatic Macroinvertebrates Observed? (Y/N) ___ Voucher? (Y/N) ___

Comments Regarding Biology: _____

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

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



APPENDIX D

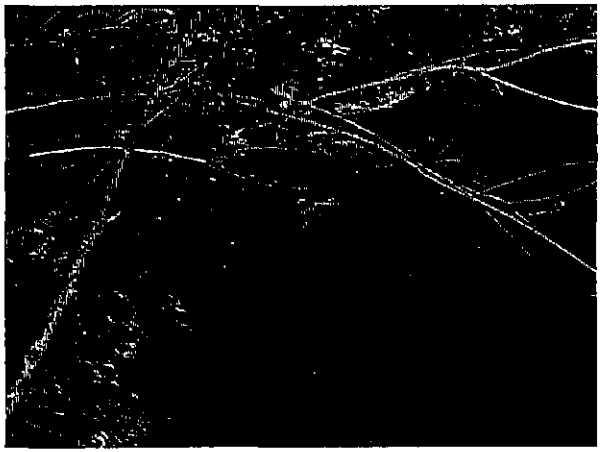
SELECTED PHOTOGRAPHS

Photograph 1: Wetland 1, facing North.

Photograph 2: Wetland 1, facing South.

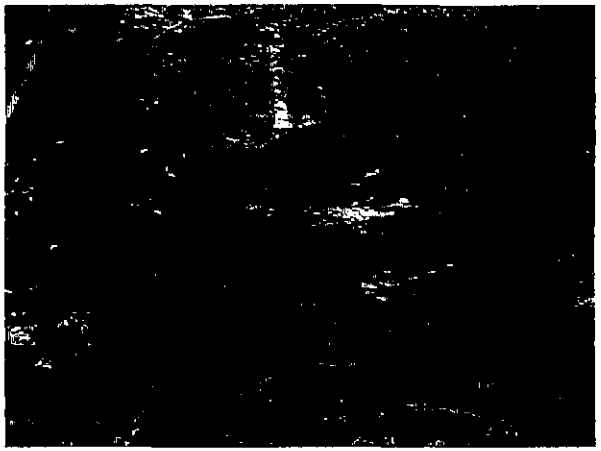
Photograph 3: Wetland 2, looking North.

Photograph 4: Stream 7, looking Northwest.



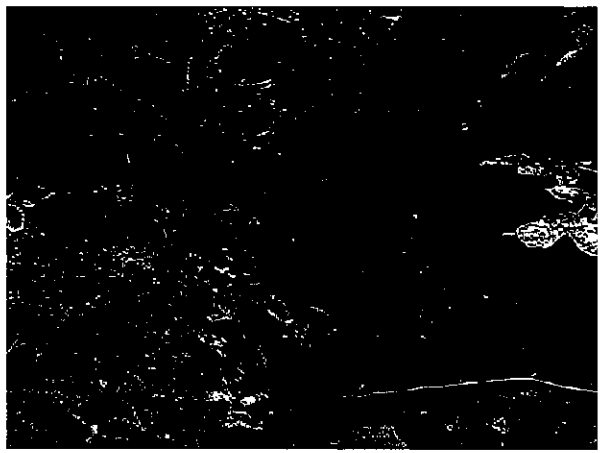
Photograph 5: Stream 8, looking South.

Photograph 6: Stream 9, Looking East.

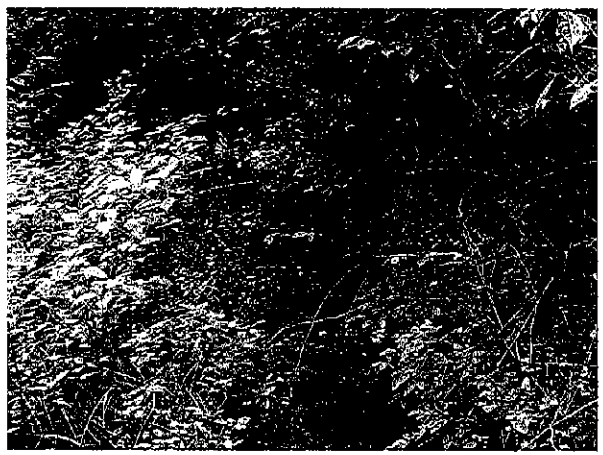


Photograph 7: Stream 10, Looking East.

Photograph 8: Stream 11, Looking Southwest.

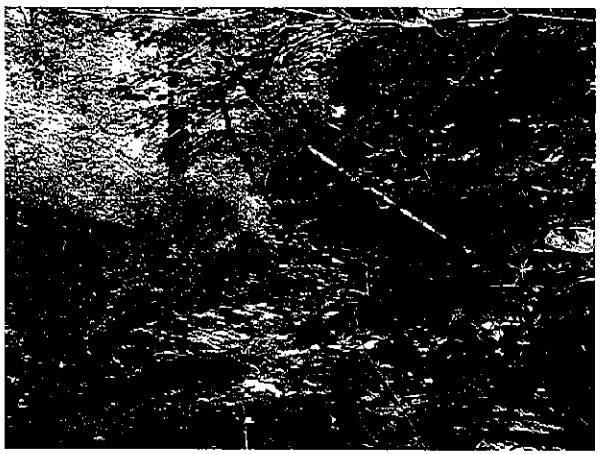


Photograph 9: Stream 12, Looking Southeast.



Photograph 10: Stream 13, Looking East.

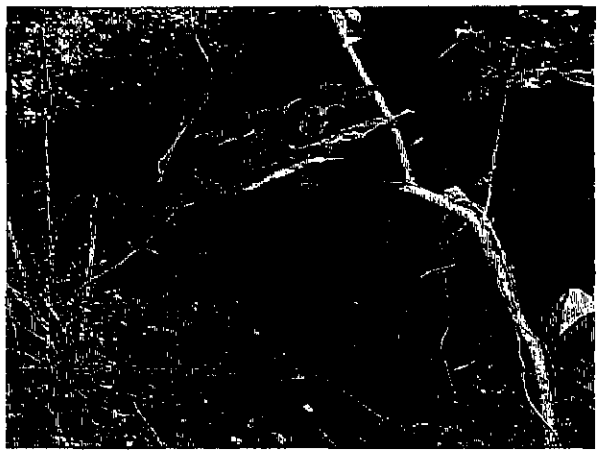
Photograph 11: Stream 14, Looking East.



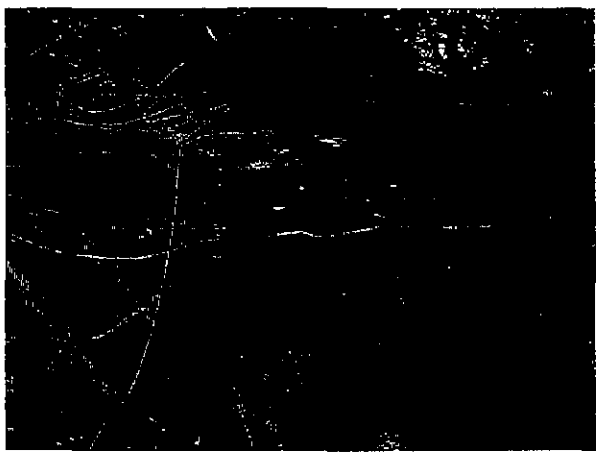
Photograph 12: Stream 15, Looking East.

Photograph 13: Stream 16, Looking Northeast.

Photograph 14: Stream 17, Looking South.



Photograph 15: Stream 18, Looking North.

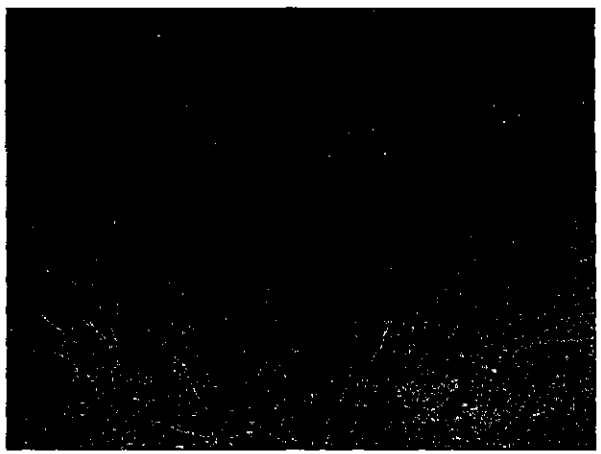


Photograph 16: Stream 19, Looking East.

Photograph 17: Stream 20, Looking East.

Photograph 18: Stream 21, Looking North.

Photograph 19: Stream 22, Looking South.

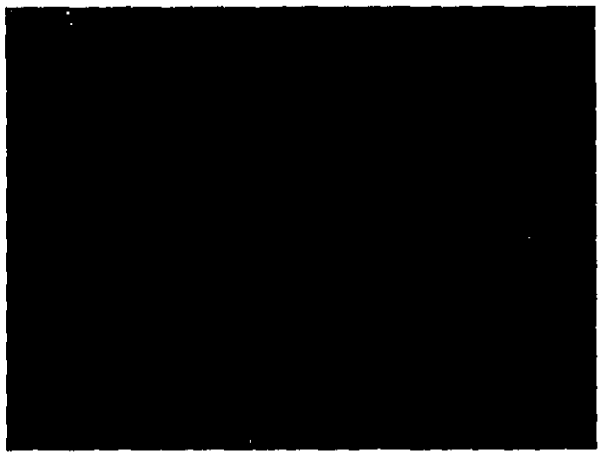


Photograph 20: Stream 23, Looking South.

Photograph 21: Stream 24, Looking Southeast.

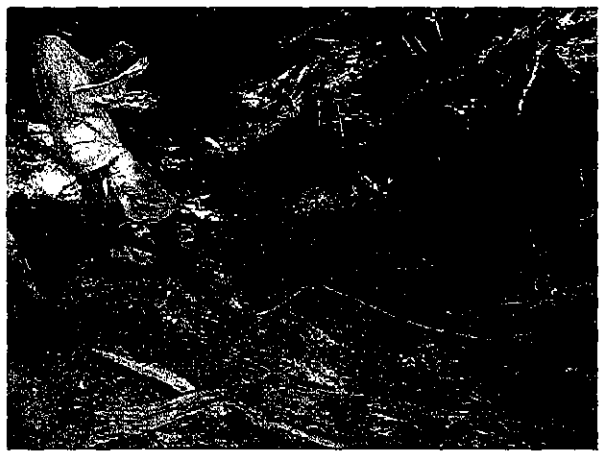
Photograph 22: Stream 25, Looking Northeast.

Photograph 23: Stream 26, Looking West.

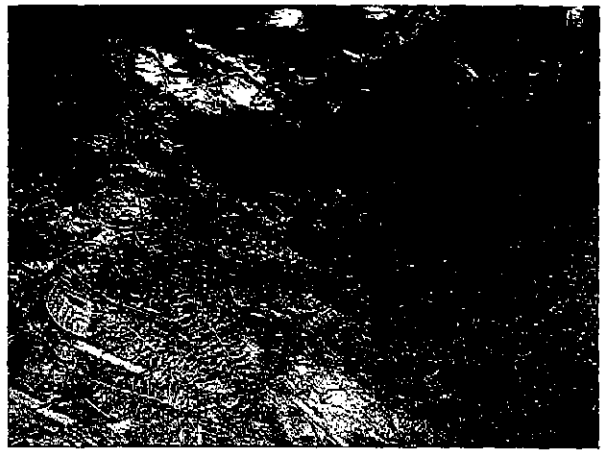


Photograph 24: Stream 27, Looking South

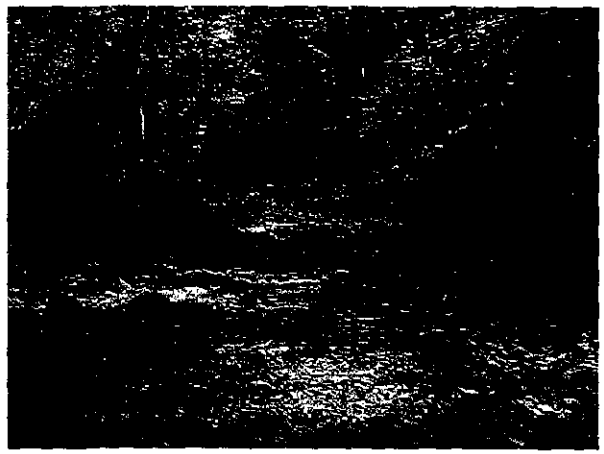
Photograph 25: Stream 28, Looking Southeast.



Photograph 26: Stream 29, Looking North.



Photograph 27: Stream 30, Looking North.



Photograph 28: Stream 31, Looking North.

Photograph 29: Stream 32, Looking South.

Photograph 30: Stream 33, Looking North.

Photograph 31: Stream 34, Looking East.

APPENDIX E

AGENCY CORRESPONDENCE

Ohio Department of Natural Resources

BOB TAFT, GOVERNOR

SAMUEL W. SPECK, DIRECTOR

Division of Natural Areas & Preserves
Nancy Strayer, Acting Chief
1889 Fountain Square, Bldg. F-1
Columbus, OH 43224-1388
Phone: (614) 265-6453 Fax: (614) 267-3096

May 10, 2004

Rebecca Wilson
GT Environmental, Inc.
635 Park Meadow Rd., Suite 112
Westerville, OH 43081

Dear Ms. Wilson:

After reviewing our Natural Heritage maps and files, I find the Division of Natural Areas and Preserves has records of rare or endangered species within 5 miles of the GT Environmental, Inc. Ohio 2 project. The site is in Sutton, Lebanon, and Letart Twps., Meigs Co., New Haven and Ravenswood Quadrangles. The maps I have included with this letter display the locations of these records and correspond with the attached list.

There are no existing or proposed state nature preserves at the project site. We are also unaware of any unique ecological sites, geologic features, breeding or non-breeding animal concentrations, champion trees, state parks, state forests, or scenic rivers within the project area. However the search includes the Racine, Old Town Creek, and Lock and Dam 23 Wildlife Areas. Jim Marshall of the Division of Wildlife should be consulted regarding possible impacts to these areas. He can be reached at (614) 594-2211.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although we inventory all types of plant communities, we only maintain records on the highest quality areas. Also we do not have data for all Ohio wetlands. The Division of Wildlife has a statewide wetland inventory that can give you additional data. Their phone number is (614) 265-6300. For National wetlands Inventory maps, please contact Madge Fitak in the Division of Geological Survey at (614) 265-6576. Aerial photos may be obtained from ODOT at (614) 275-1369. USGS maps can be requested directly from the U.S. Geological Survey at 1-888-275-8747.

Please contact me at (614) 265-6409 if I can be of further assistance.

Sincerely,

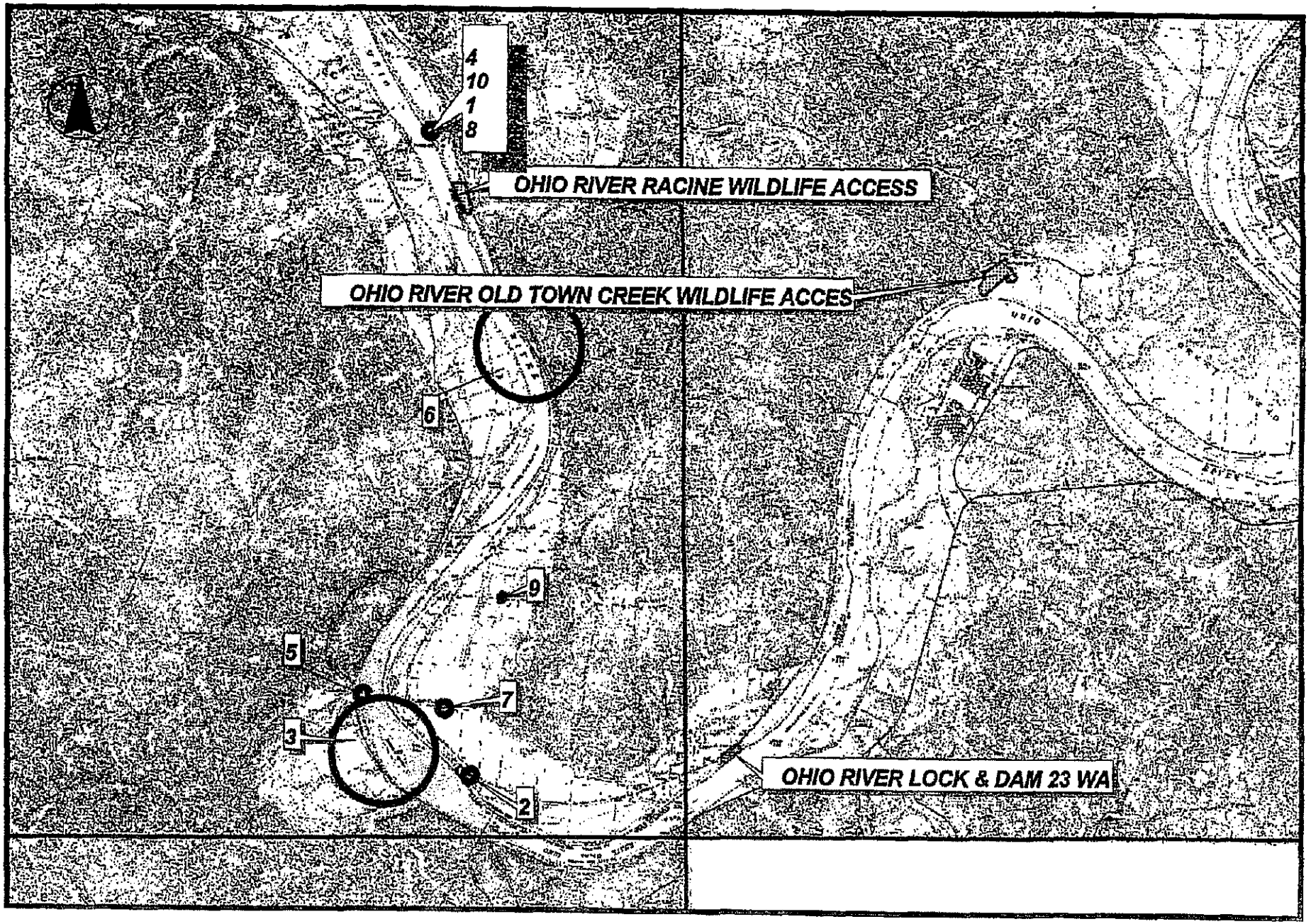
Butch Grieszmer, Data Specialist
Resource Services Group

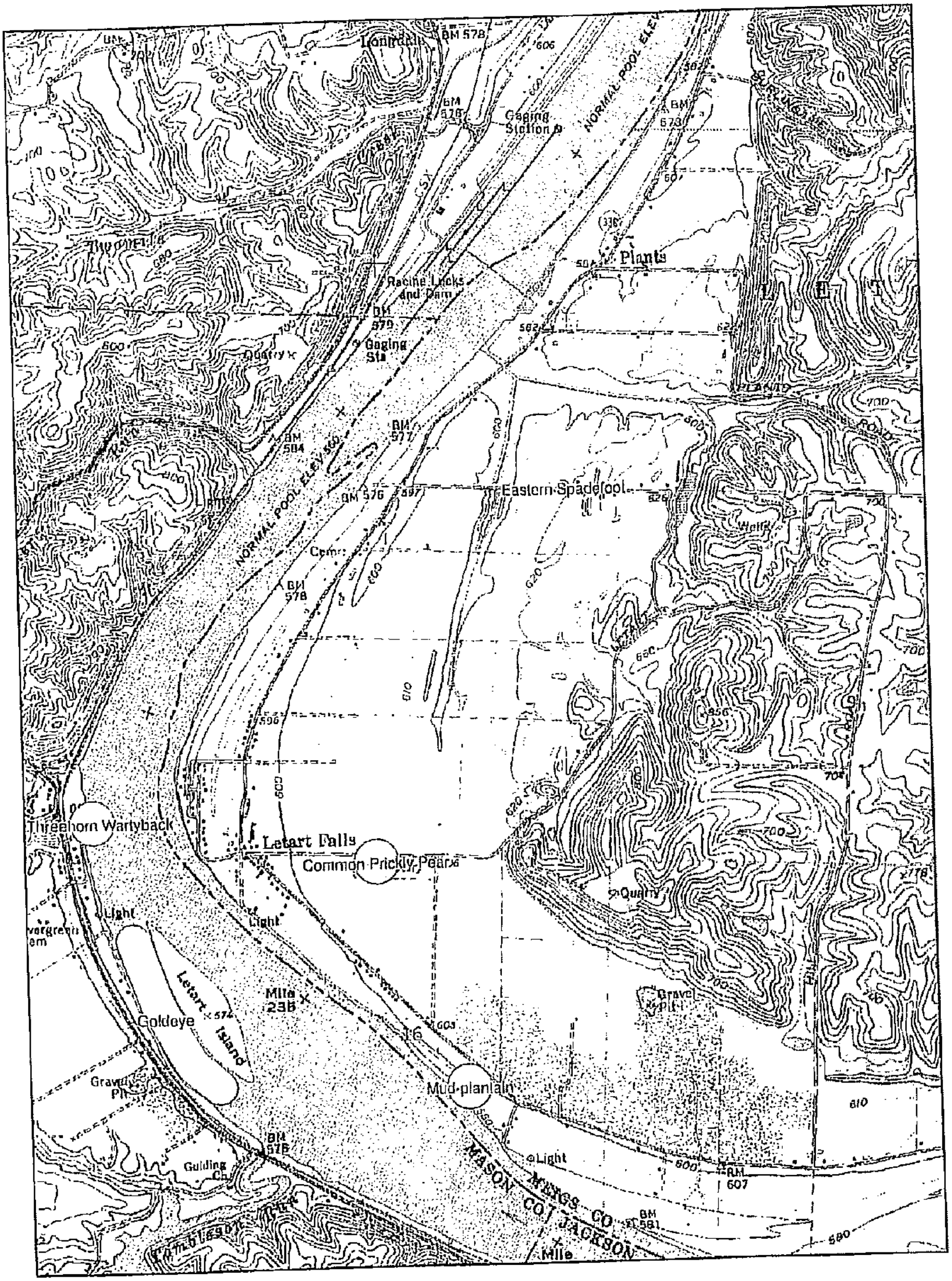
GT Environmental, Inc. Ohio 2 Project

	Scientific Name	Common Name	State Status	Federal Status
	Cicindela marginipennis	Cobblestone Tiger Beetle	T	
2	Heteranthera reniformis	Mud-plantain	E	
3	Hiodon alosoides	Goldeye	E	
4	Macrhybopsis aestivalis	Speckled Chub	E	
5	Obliquaria reflexa	Threehorn Wartyback	T	
6	Obliquaria reflexa	Threehorn Wartyback	T	
7	Opuntia humifusa	Common Prickly Pear	P	
8	Percina copelandi	Channel Darter	T	
9	Scaphiopus holbrookii	Eastern Spadefoot	E	
10	Spermacoce glabra	Smooth Buttonweed	P	

E=Endangered
FE=Federally Endangered
FT=Federally Theatened
P=Potentially Threatened
SC=Special Concern
SI=Special Interest
T=Threatened

Ohio 2


4
10
1
8
OHIO RIVER RACINE WILDLIFE ACCESS
OHIO RIVER OLD TOWN CREEK WILDLIFE ACCES
6
9
5
7
3
2
OHIO RIVER LOCK & DAM 23 WA
3000 0 3000 6000 Feet


Racine Locks and Dam
Gaging Station
Plants
Gaging Sta
Quarry
NORMAL POOL ELEV
Eastern Spadefoot
Letart Falls
Common Prickly Pear
Threehorn Wartyback
Light
Letart Island
Goldeye
Mile 238
Mud-plantain
Gravel Pit
Quarry
Gulding Ch
MASON CO
JACKSON
MEIGS CO
Light
Mile

APPENDIX 07-2

STREAM CROSSING BMPs

BEST MANAGEMENT PRACTICES FOR STREAM CROSSINGS

AMERICAN MUNICIPAL POWER GENERATING STATION AND TRANSMISSION PROJECT, MEIGS COUNTY, OH

1.0 INTRODUCTION

American Municipal Power- Ohio ("AMP-Ohio") is proposing to construct a 345 kV electric transmission line from its proposed American Municipal Power Generating Station ("AMPGS") in southeastern Meigs County, Ohio, to connect to the existing Muskingum-Sporn 345 kV transmission line. URS conducted a wetland delineation, stream assessment, and threatened and endangered species survey along the Preferred Route's transmission line corridor. No rare or endangered plants were identified during this survey. Wetland descriptions and stream classifications can be found in the Wetland Delineation, Stream Assessment, and Threatened and Endangered Species Habitat Report created for this project.

No wetlands will be impacted either by the transmission line or by access to pole locations. Construction of the transmission line and future right of way (ROW) maintenance have the potential to temporarily impact the streams located within the project vicinity. Temporary impacts will be a result of access roads, pole construction, and transmission line stringing. Additionally, canopy and tall understory trees along streambanks will be hand-cut as needed within the transmission line ROW and along access roads.

The purpose of this document is to demonstrate AMP-Ohio's intention to: a) avoid stream disturbance to the extent possible, b) minimize stream impacts and disturbances through best management practices, c) stabilize streambanks and restore vegetation, and d) mitigate permanent impacts. All methods proposed in this document are conditional, and will be assessed on a case-by-case basis as directed by the Ohio Power Siting Board (OPSB).

2.0 AVOIDANCE

A route selection study was conducted by Sargent & Lundy to identify and evaluate potential routes for the project. Additionally, URS conducted a wetland delineation, stream assessment, and threatened and endangered species survey along the Preferred and Alternate Route transmission line corridor. The objective of these studies was to avoid

to the extent possible and minimize the overall impacts to ecological and land use features, while taking into consideration engineering and construction constraints.

3.0 BEST MANAGEMENT PRACTICES

Streams and headwaters will be crossed by pole location access routes (for construction of the poles), which may or may not be along the right of way, and by right of way clearing, line stringing and line maintenance crews. These BMPs describe the general practices to be used when crossing streams in the following cases:

1. For temporary access roads to pole locations for the purposes of construction
2. During access to the ROW for clearing and stringing of conductors and shield wires
3. During periodic maintenance of the ROW

The precise method used at each stream crossing will be assessed on a case by case basis, but in general the method will depend on the stream class, quality, valley and bank steepness, and depth, width, and flow rate of the stream. Some of these parameters were evaluated during the wetland delineation and stream assessment conducted as part of the project.

A stream crossing provides construction traffic temporary access across a stream while reducing the amount of disturbance and sediment pollution. It is a temporary practice which includes restoring the crossing area after construction. The following recommended stream crossing methods were developed with reference to the Rainwater and Land Development manual prepared by Dan Mecklenburg of the Ohio Department of Natural Resources Division of Soil and Water Conservation (1996). Diagrams included in the descriptions below are from the manual.

Global Measures

Each stream and its riparian corridor will be left undisturbed to the extent practical. Structures used in a stream channel will be limited to those that do not cause back ups or washouts during high flow. They will be planned to be in service for the shortest duration practical and will be removed as soon as their function is complete. Safety is of

paramount importance for the stream crossings. AMP-Ohio will use methods that do not risk the safety of the construction crews.

3.1 Streams Crossed for Construction Vehicle Access

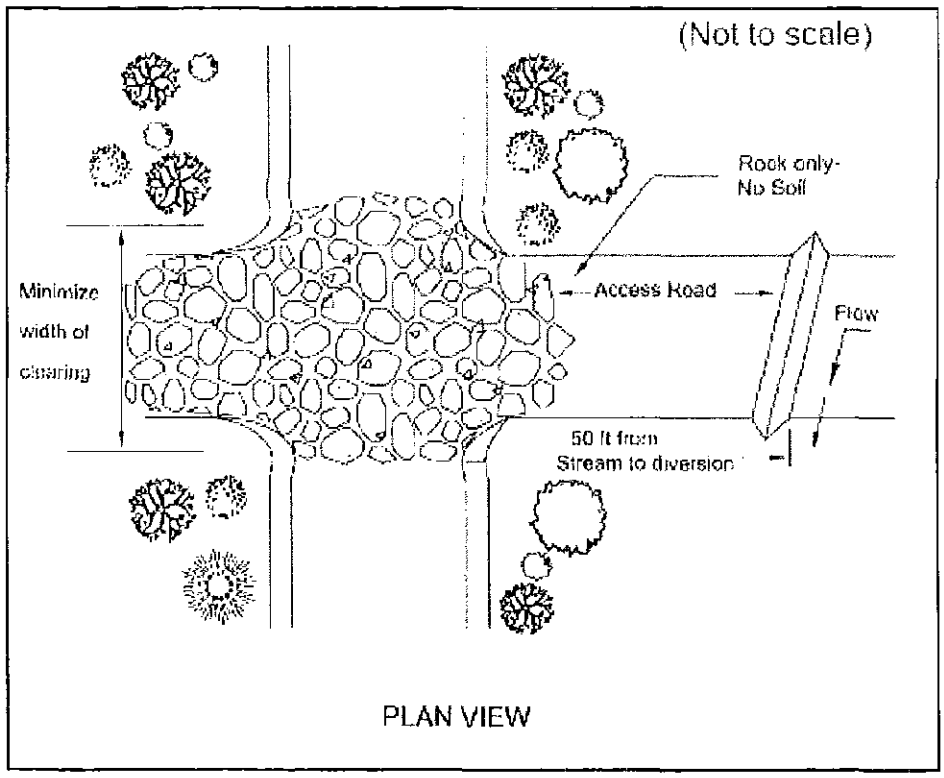
Temporary access roads will be used for pole construction and transmission line installation. This access will, in some cases, require vehicles to cross headwater channels. The crossing method will be assessed on a case-by-case basis depending on the conditions, terrain, and assessed quality of the streams. Best management practices (BMP's) will be used adjacent to each crossing location. These specifications are designed so that there will be no elimination or substantial impairment of existing in-stream water uses as a part of this project.

The following methods are proposed:

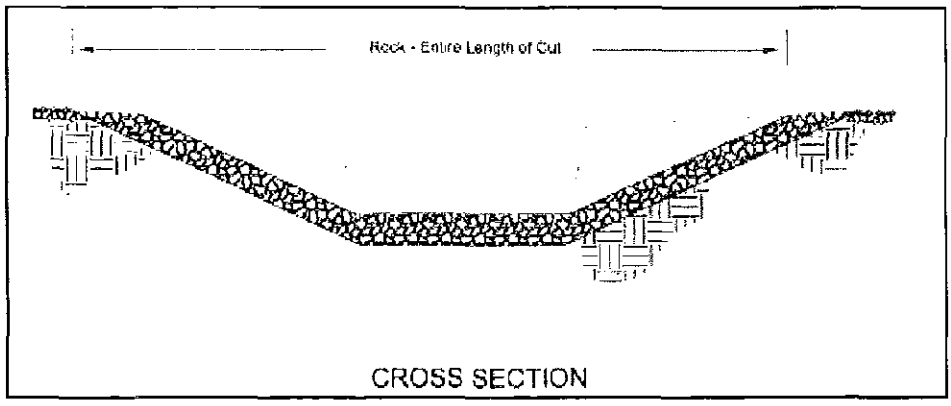
- Temporary Stream Ford
- Culvert Stream Crossings
- Temporary Access Bridge

TEMPORARY FORDS

Temporary stream fords are proposed for crossing Class I and modified Class I streams. This will involve minimum clearing necessary to gain access to the stream and for passage of construction vehicles. Stone, rock or aggregate of ODOT No.1 as a minimum size will be placed in the channel to provide a solid base for vehicle passage. Work will be conducted during low flow conditions.



PLAN VIEW

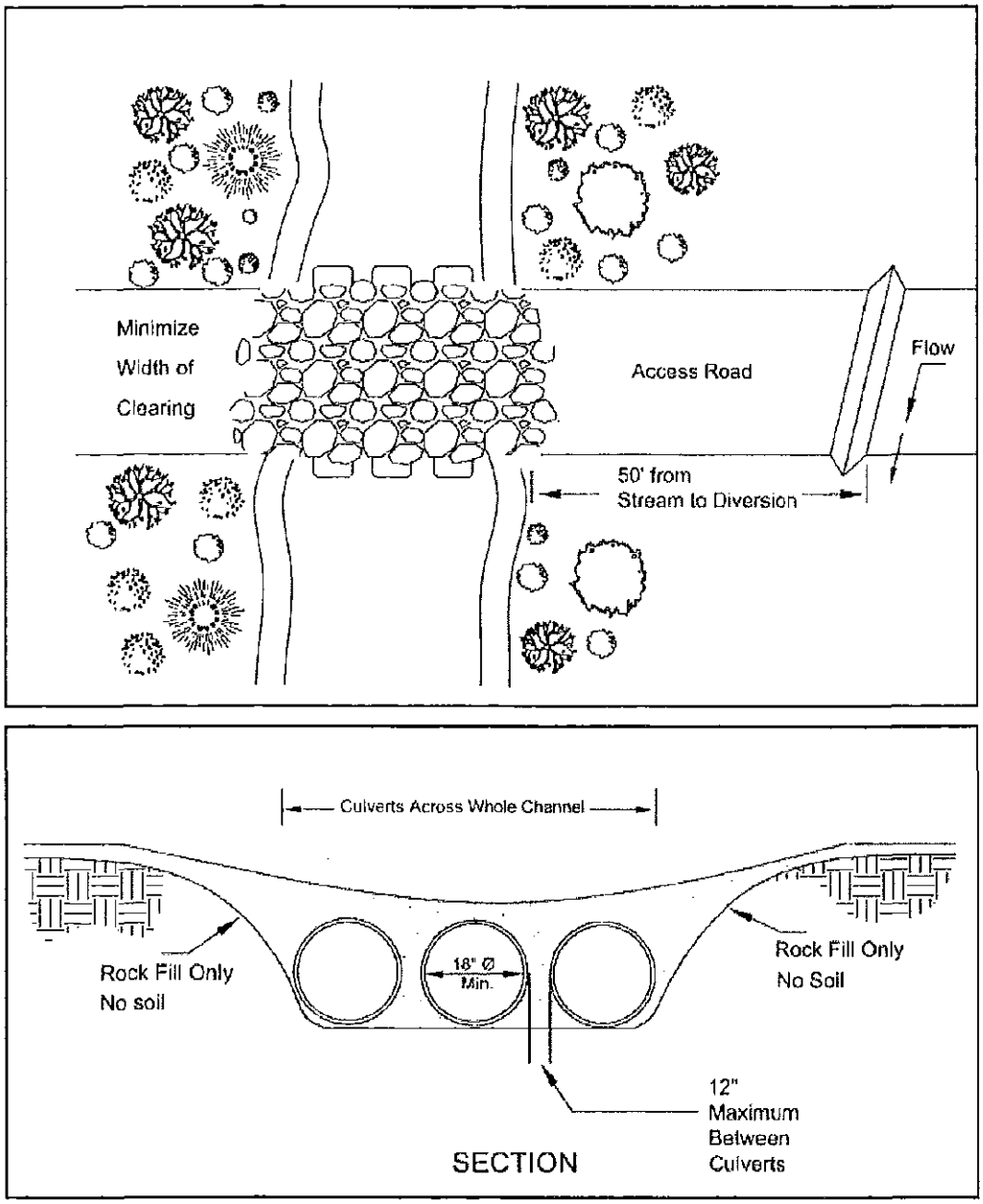


CROSS SECTION

- Disturbance of the stream will be kept to a minimum, streambank vegetation will be preserved to the maximum extent practical and the stream crossing width will be kept as narrow as possible. Clearing will be done by cutting rather than grubbing.
- Sediment laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence and straw bails will be used as needed according to site-specific topographic conditions.
- Aggregate stone and rock used for this type of stream crossing will not be removed. It will be formed such that it does not create an impoundment, impede fish passage or cause erosion of the stream banks.
- Following completion of the work the areas cleared for the temporary access crossing will be stabilized through planting where appropriate. Areas of exposed soil will be stabilized in accordance with the SWP3 plan for the project.
- Fords will not be used where the stream banks are more then 4 feet high.
- Fords will be placed at straight sections of the channel to avoid pools and cut banks where bank instability is likely to be greatest.
- Fords will be made perpendicular to the channel to minimize the length of channel disturbed (manual considers up to 30 degree deviation acceptable).

CULVERT STREAM CROSSINGS

Culvert stream crossings are proposed for crossing Class II and modified Class II streams.



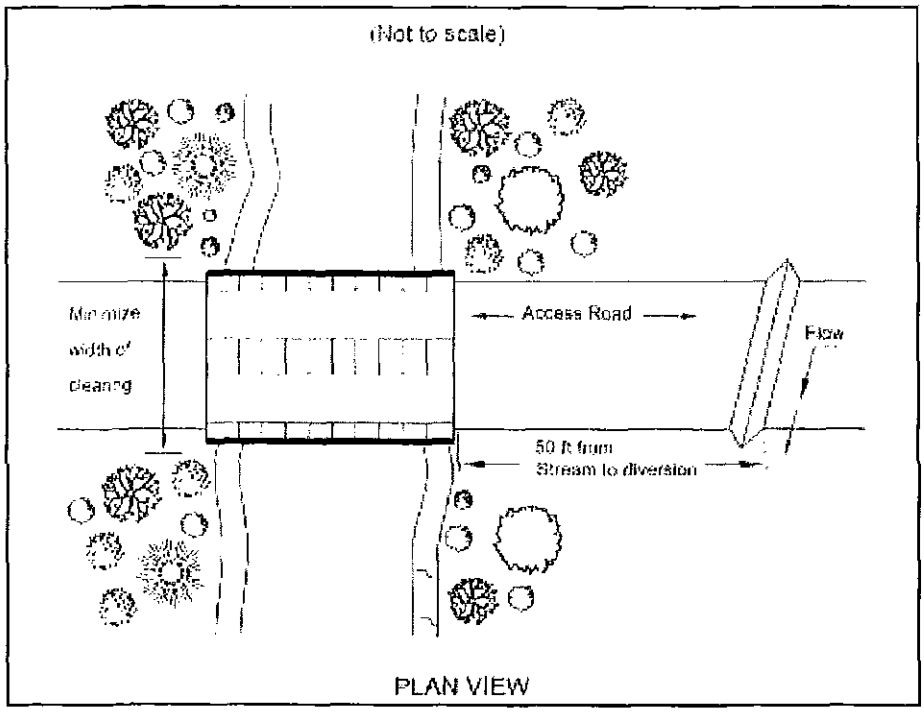
- Disturbance of the stream will be kept to a minimum, streambank vegetation will be preserved to the maximum extent practical and the stream crossing width will be kept as narrow as possible. Clearing will be done by cutting rather than grubbing.

Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.

- Sediment laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence and straw bails will be used as needed according to site-specific topographic conditions.
- Culvert pipe will be placed on the existing streambed to avoid a drop or waterfall at the downstream end of the pipe, which would be a barrier to fish migration. Crossings will be placed in shallow areas (riffles) rather then pools.
- Culvert will be sized to be at least three times the depth of the normal stream flow at the crossing location. The minimum diameter culvert that will be used in 18 inches.
- There will be a sufficient number of culvert pipes to completely cross the stream with no more than a 12-inch space between each one.
- Stone, rock or aggregate of ODOT No.1 as a minimum size will be placed in the channel, and between culverts. To prevent washouts larger stone may be used with gabion mattresses. No soil will be placed in the stream channel.
- After completion of construction, aggregate used for the crossing will be left in place. Care will be taken so that aggregate does not create an impoundment or impede fish passage. Structures such as culvert pipe, and gabion mattresses will be removed.
- Stream banks will be stabilized and woody species planted as appropriate.

TEMPORARY ACCESS BRIDGES

Temporary Access Bridges will be used for Class III stream crossings.



- Disturbance of the stream will be kept to a minimum, streambank vegetation will be preserved to the maximum extent practical and the stream crossing width will be kept as narrow as possible. Clearing will be done by cutting rather than grubbing. Roots and stumps will be left in place to aid stabilization and to accelerate re-vegetation.
- Sediment laden runoff will be prevented from flowing from the access road directly into the stream. Diversions and swales will be used to direct runoff to stormwater management locations. Silt fence and straw bails will be used as needed according to site-specific topographic conditions.
- Bridges will be constructed to span the entire channel. If the channel width exceeds 8 feet then a floating pier or bridge support may be placed in the channel. No more than one pier, footing or support will be allowed for every 8 feet of span width. No footings, piers or supports will be allowed for spans of less than 8 feet.
- No fill other than clean stone free from soil will be placed within the stream channel.

AMP-Ohio will supplement these methods with protocols discussed with OEPA, Corps and OPSB on a case-by-case basis as specific stream conditions dictate. In addition these crossings will be addressed in the stormwater pollution prevention plan (SWP3) for the project. Some of the access routes will be left in place for maintenance activity. Fences and gates will be kept in sufficient state of repair to confine livestock satisfactorily and gates will be kept closed when not in immediate us. All fences cut or damaged will be restored to a condition as good as, or better than, the condition as found. Where frequent access is required, gates will be installed at no cost to the property owner.

3.2 Streams Crossed for Transmission Line Stringing

The ROW for the electric transmission line has to be clear of vegetation that might interfere with the safe and reliable operation of the line. This is typically the tall growing specimens that have the potential to interfere with the operation of the line. Ideally, if a transmission pole is tall enough and a stream valley is deep enough, trees can be preserved at the bottom of the valley, adjacent to the stream. However, based on the pole design and topographic relief, none of the valleys crossed appear sufficiently deep enough to allow the free growth of potentially dangerous trees. Therefore AMP-Ohio's clearing and maintenance policy requires that trees that have the potential to interfere with the operation of the transmission line be removed.

Canopy and tall understory trees in the riparian buffer along streambanks will be hand-cut as needed during transmission line stringing. The width of the riparian buffer is dependent on stream type, as shown in Table 1 below. No vehicles or equipment will be permitted in streams except where designated as access routes. Line stringing will be completed by hand at these locations. Within the transmission line ROW trees will be cut to a level to allow for maximum sag of the line. Understory trees and shrubs in the riparian buffer along class II and III streams, which do not pose an immediate threat to the wire/pole, will be left in place to provide continuous ground cover and shading of the stream. The saplings, shrubs, and herbaceous vegetation that are left will ensure streambank stabilization and erosion control. The removal of the canopy will allow for enhanced shrub growth and herbaceous ground cover. Trees stumps will be left in place for all stream classes. The saplings and shrubs left at the time of construction will be hand-cut as needed during future ROW maintenance. AMP's general clearing plan specifies that a vegetation screen will be left near roads where reasonable and practicable and that these screens along roads will be inventoried. The root mass of all plants will be

preserved. Selective clearing techniques will be employed wherever possible to preserve low-growing compatible plant species. All compatible plant species will be saved whenever possible. More extensive cutting will be used on areas where there is little or no existing compatible vegetation, on haul roads and in pole construction areas. Trees will be felled in a manner to minimize damage to crops, fences and other facilities.

TABLE 1: Riparian Buffer of Streams Crossed for Transmission Line Stringing

Stream Class	Width of Riparian Buffer	Understory Trees and Shrubs Left in Place for Future ROW Maintenance	Tree Stumps Removed
Class I	10 feet	No	No
Class II	15 feet	Yes	No
Class III	50 feet	Yes	No

3.3 Vegetation Disposal

Disposal of vegetation will be consistent with landowner's preferences, wildlife values and particular site conditions. Debris will be kept out of streams, ponds and other surface waters. Felled trees may be moved to the edge of the ROW and left in place depending on the preferences of the land owner. Branches and debris may be chipped and spread through the ROW for erosion control.

3.4 Erosion Control

AMP-Ohio will obtain a construction stormwater NPDES permit from the Ohio EPA. Temporary and permanent erosion and sediment controls at the perimeter of all disturbed sites will include one or more of the measures specified in the associated erosion and sediment control plan. Topsoil at pole excavations will be stockpiled and protected from erosion. Topsoil will be redistributed over disturbed areas to insure permanent re-vegetation following construction. The sapling, shrub, and herbaceous vegetation layers will be left to the extent possible to minimize erosion along streambanks.

3.5 Restoration and Enhancement of Vegetation

Restoration, including temporary and permanent seeding will be coordinated with construction to maximize re-vegetation and soil stabilization. Following construction, all

pole sites, material storage sites and temporary access roads will be seeded with a suitable grass seed mixture as specified in the erosion and sediment control plan. Re-vegetation techniques will enhance the ROW for appropriate wildlife food and habitat. Permanent vegetative cover will be established on denuded areas not otherwise permanently stabilized in accordance with the following provisions. Native, indigenous, or other appropriate plant materials will be selected on the basis of site-specific climatic conditions, soil characteristics, the soil moisture regime, and topography. The seedbed will be modified to provide an optimum environment for seed germination, seedling growth and survival, as specified in the erosion and sediment control plan. The intent of this provision is to ensure the establishment and continued growth of plant material to prevent erosion and sedimentation and to provide wildlife habitat. After restoration is complete, AMP-Ohio will periodically inspect the ROW for areas of erosion, sedimentation and inadequate re-vegetation conditions. Prompt efforts will be made to correct these areas as soon as they are identified.

3.6 Right-of-Way Maintenance Plans

The ROW for the electric transmission line has to be clear of vegetation that might interfere with the safe and reliable operation of the line. Within the ROW, trees will be cut to a level to allow for maximum sag of the line. The saplings and shrubs that were left at the time of construction and transmission line stringing will be hand-cut as needed during ROW maintenance. No vehicles will be permitted in streams except where designated as access routes. Understory trees and shrubs that do not pose an immediate threat to the wire/pole will be left in place to provide continuous ground cover and shading of the stream. Lower stature shrubs and low-growing plant species (grasses and herbaceous plants) will be left to grow in the ROW. Any herbicides used will be applied in accordance with applicable state and federal laws and regulations, and will be registered with the appropriate state and federal agencies. Only water compatible herbicides will be used within 200 feet of wetlands, streams, and bodies of water. These herbicides will be used in accordance with the manufacturer's label directions and recommendations and will be applied under the direct supervision of certified applicators. Minimum ground spray distance will be adhered to as specified by the herbicide manufacturer.

AMP-Ohio will make every effort to conduct clearing during the time period of September 15 through April 1. An Indiana bat survey is scheduled prior to clearing work.

3.7 Communication and Compliance of Best Management Practices

In order to keep in compliance with the best management practices proposed in this document, construction supervisors involved in this project will attend the pre-construction meeting. This meeting will provide detailed information on the procedures proposed in this document and outline the importance of their implementation. Additionally, attendees will be given a chance to comment on these procedures and give additional recommendations. Contractors and laborers will be under the general direction of construction supervisors that attend the meeting.

AMP-Ohio will staff the project with an environmental inspector to assist project contractors in accommodation of the various environmental constraints and commitments. However contractors will be responsible for understanding the various conditions imposed by the respective governmental agencies and the implications of how these conditions may affect their ability to complete their respective elements of the project.

4.0 MITIGATION

No permanent impacts to streams or bodies of water are expected, therefore no specific mitigation procedures are proposed. Restoration measures are described in the discussion of stream crossings above. If any impacts occur, they will be assessed on a case-by-case basis. AMP-Ohio will provide detailed mitigation plans to the OPSB Staff, Corps and OEPA if inadvertent adverse impacts occur.