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FILE CHESTER WILLCOX & SAXBE LLP
Attorneys and Counselors at Law

NATHANIEL S. OROSZ

DIRECT DIAL (614) 334-6117
norosz@cwslaw.com

September 25, 2008

Via Hand Delivery

Renee Jenkins
Ohio Power Siting Board
Docketing Division
180 East Broad Street – 13th Floor
Columbus, Ohio 43215

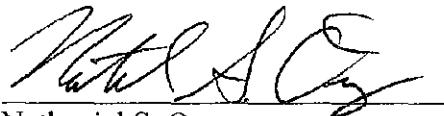
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2008 SEP 25 PM 2:49
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RE: OPSB Case No. 06-1357-EL-BTX

Dear Ms. Jenkins:

Please docket the enclosed materials, which were submitted to the Ohio Power Siting Board Staff on September 25, 2008 with regard to the accepted, complete application in OPSB Case No. 06-1357-EL-BTX, In the Matter of the Application of American Municipal Power-Ohio, Inc., for a Certificate of Environmental Compatibility and Public Need for an Electric Power Transmission Line and Related Facilities.

Respectfully,



Nathaniel S. Orosz
Counsel for American Municipal Power-Ohio, Inc.

cc: Judge Gregory Price – 12th Floor

This is to certify that the images appearing are an accurate and complete representation of a case file document delivered in the regular course of business.
Technician ADD Date Processed 9/25/08

September 25, 2008

Via Hand Delivery

Klaus Lambeck
Chief
Facilities, Siting & Environmental Analysis Division
Ohio Power Siting Board
180 East Broad Street
Columbus, Ohio 43215



RE: OPSB Case No. 06-1357-EL-BTX

Dear Klaus:

I am writing on behalf of American Municipal Power-Ohio, Inc. ("AMP-Ohio") in regards to AMP-Ohio's pending application before the Ohio Power Siting Board in OPSB Case No. 06-1357-EL-BTX, In the Matter of the Application of American Municipal Power-Ohio, Inc., for a Certificate of Environmental Compatibility and Public Need for an Electric Power Transmission Line and Related Facilities ("Application").

Since submittal of the Application, AMP-Ohio has submitted a number of clarifications regarding the AMPGS proposed preferred and alternate route for the transmission line. AMP-Ohio's August 18, 2008 letter and submittal included transmission line profile drawings, conceptual access plans, and estimates on the total areas of vegetation clearing for the preferred and alternate options. On August 19th and 20th, Ohio Power Siting and Ohio EPA staff representatives participated in a field walk down of the preferred transmission route.

By this letter, AMP-Ohio submits the attached updated clarification drawings, reports and information.

I am also providing documentation of a small modification of the proposed transmission route.

As set forth in O.A.C. 4906-5-10(A)(6), this modification is not an amendment to the accepted, complete Application because it is within 2,000 feet of the study corridor, will not impact any additional landowners, and will not create further impacts within the planned right-of-way of the proposed facility.

OHIO: AMHERST • ARCADIA • ARCANUM • BEACH CITY • BLANCHESTER • BLOOMDALE • BOWLING GREEN • BRADNER • BREWSTER • BRYAN • CAREY • CELINA • CLEVELAND • CLYDE
COLUMBIANA • COLUMBUS • CUSTAR • CUYAHOGA FALLS • CYGNET • DESHLER • DOVER • EDGERTON • ELDORADO • ELMORE • GALION • GENOA • GLOUSTER • GRAFTON • GREENWICH
HAMILTON • HASKINS • HOLIDAY CITY • HUBBARD • HUDSON • HURON • JACKSON • JACKSON CENTER • LAKEVIEW • LEBANON • LODI • LUCAS • MARSHALLVILLE • MENDON • MILAN • MINSTER
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WEST VIRGINIA: NEW MARTINSVILLE • PHILIPPI
KENTUCKY: WILLIAMSTOWN



Please do not hesitate to contact me if you have any questions.

On Behalf of the Members,

A handwritten signature in black ink, appearing to read 'Scott Kiesewetter', with a long horizontal stroke extending to the right.

Scott Kiesewetter
Manager of New Plant Engineering
American Municipal Power-Ohio, Inc.

Attachments

cc: James O'Dell, OPSB Staff
Jolene Thompson, AMP-Ohio
Randy Meyer, AMP-Ohio
John Bentine, CWS

Listing of Attachments:

Attachment A – General Alignment Plan Primary (Preferred) Transmission Route dated September 19, 2008

Attachment B – Preferred Route Preliminary Access Plan dated September 22, 2008

Attachment C – Clearing Plan for Transmission Lines dated September 24, 2008

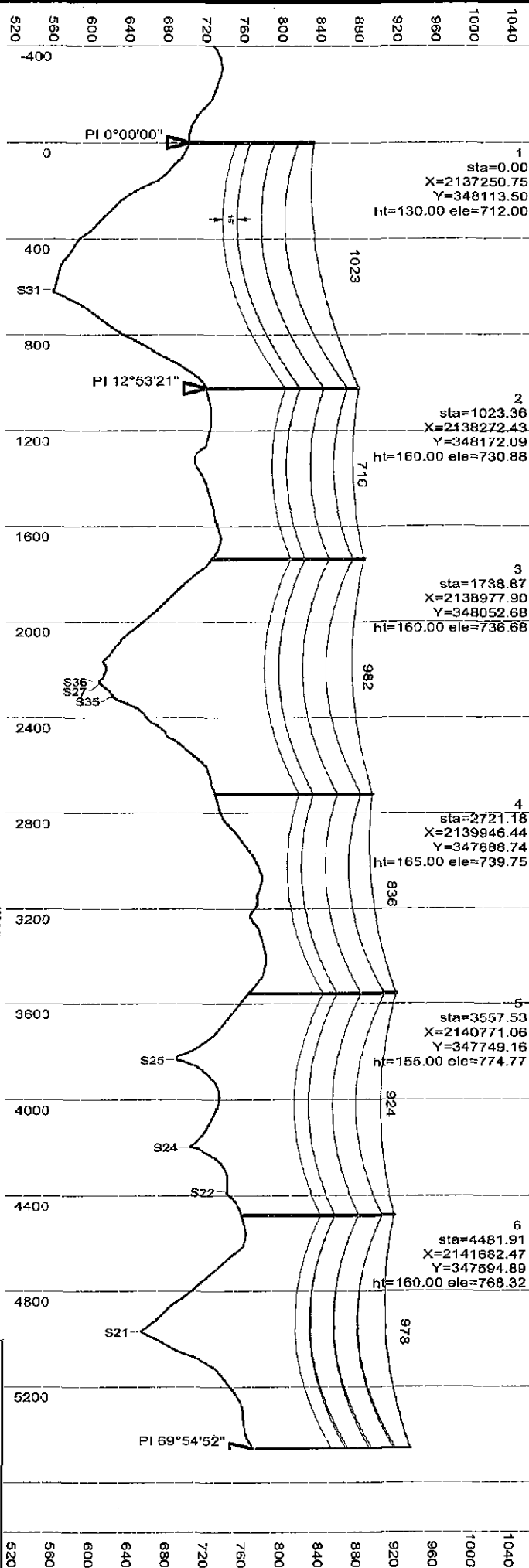
Attachment D – Preferred Route Wetland Delineation and Stream Assessment Report dated September 23, 2008

Attachment E – Photographic Record Preferred Transmission Route

Attachment F – Transmission Line Preferred and Alternate Routes Extension to Plant Substation

Attachment A

**General Alignment Plan Primary (Preferred)
Transmission Route dated September 19, 2008**

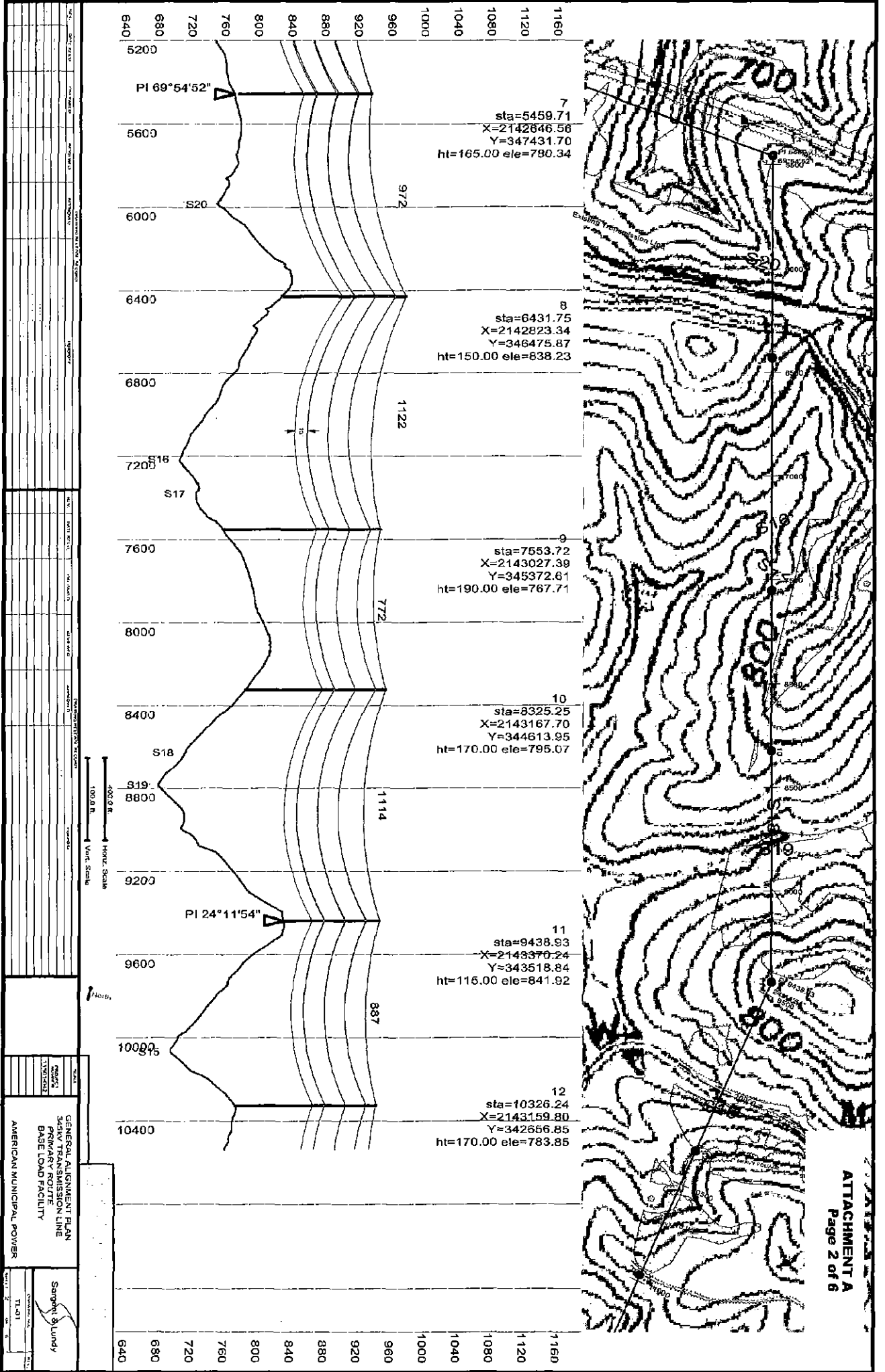


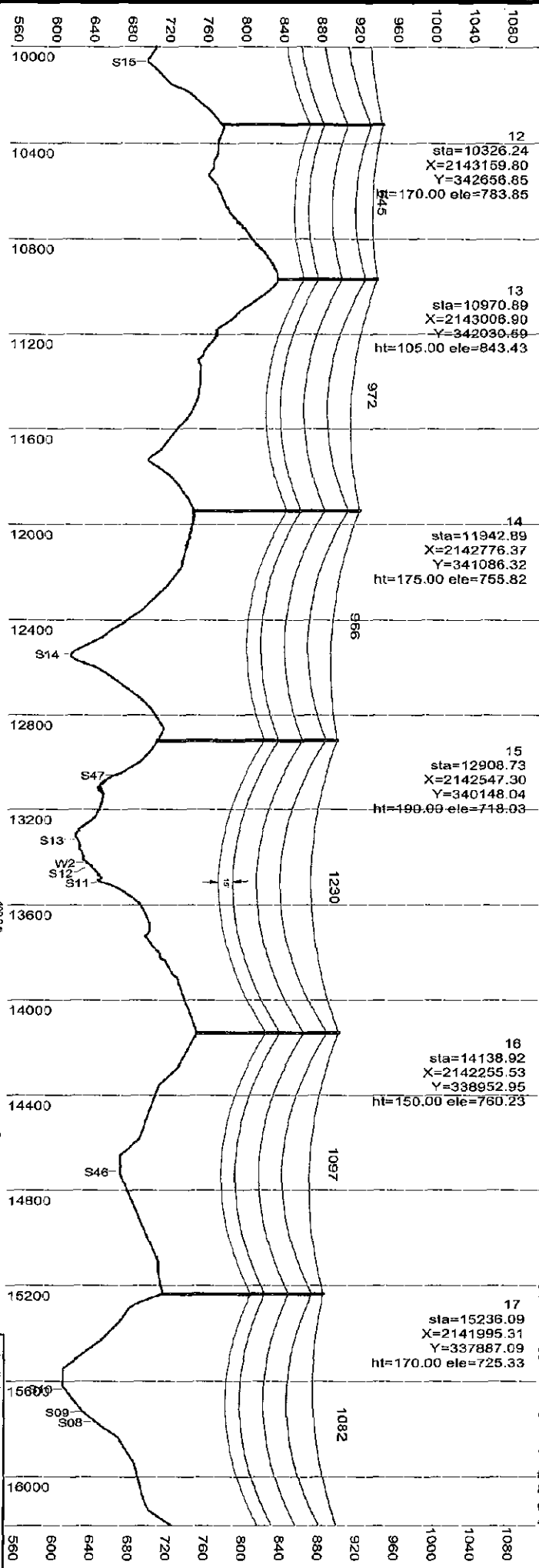
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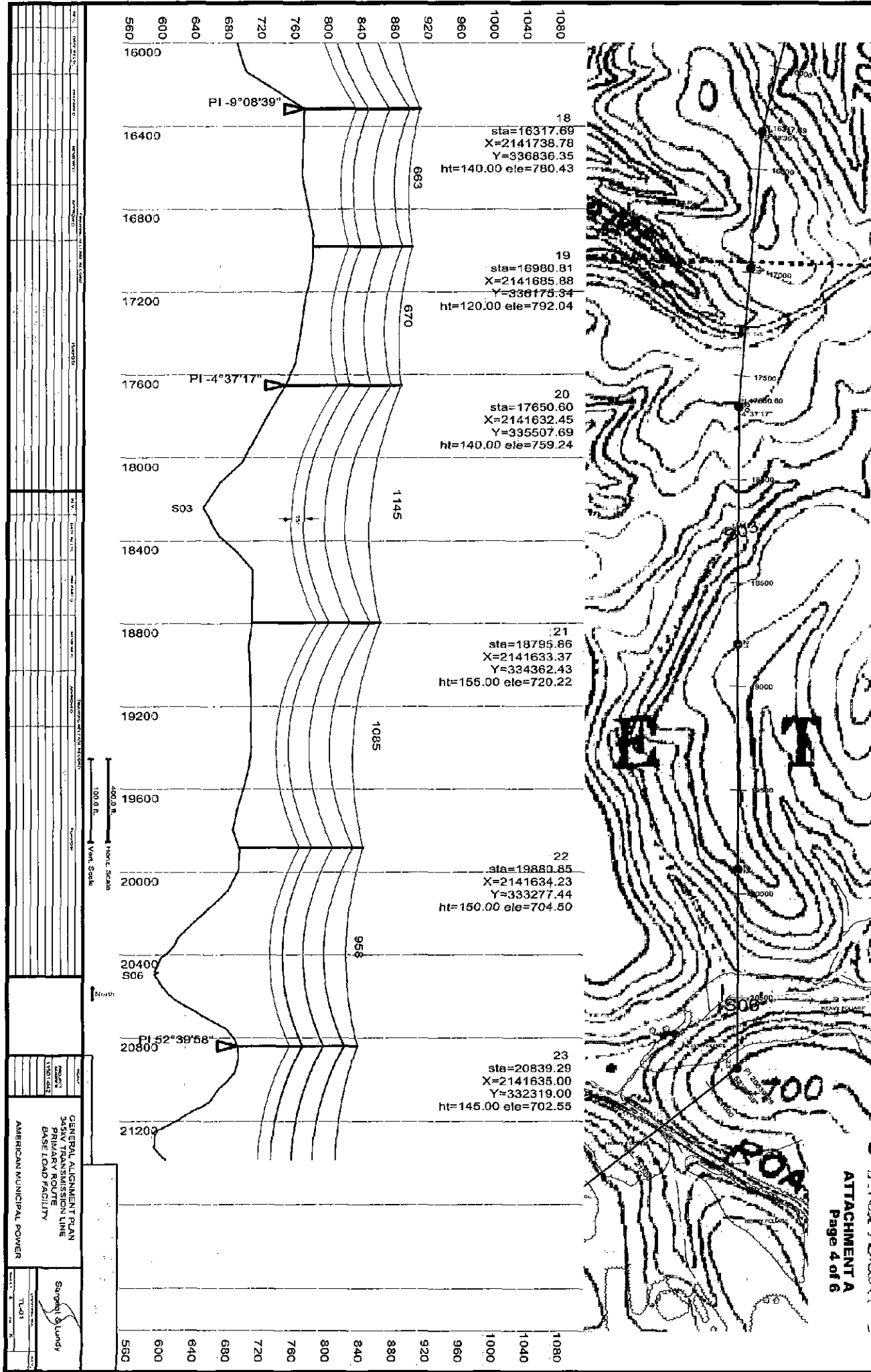
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PRIMARY ROUTE
BASE LOAD FACILITY
AMERICAN MUNICIPAL POWER

Sargent & Lundy
TRANSMISSION
TL-01



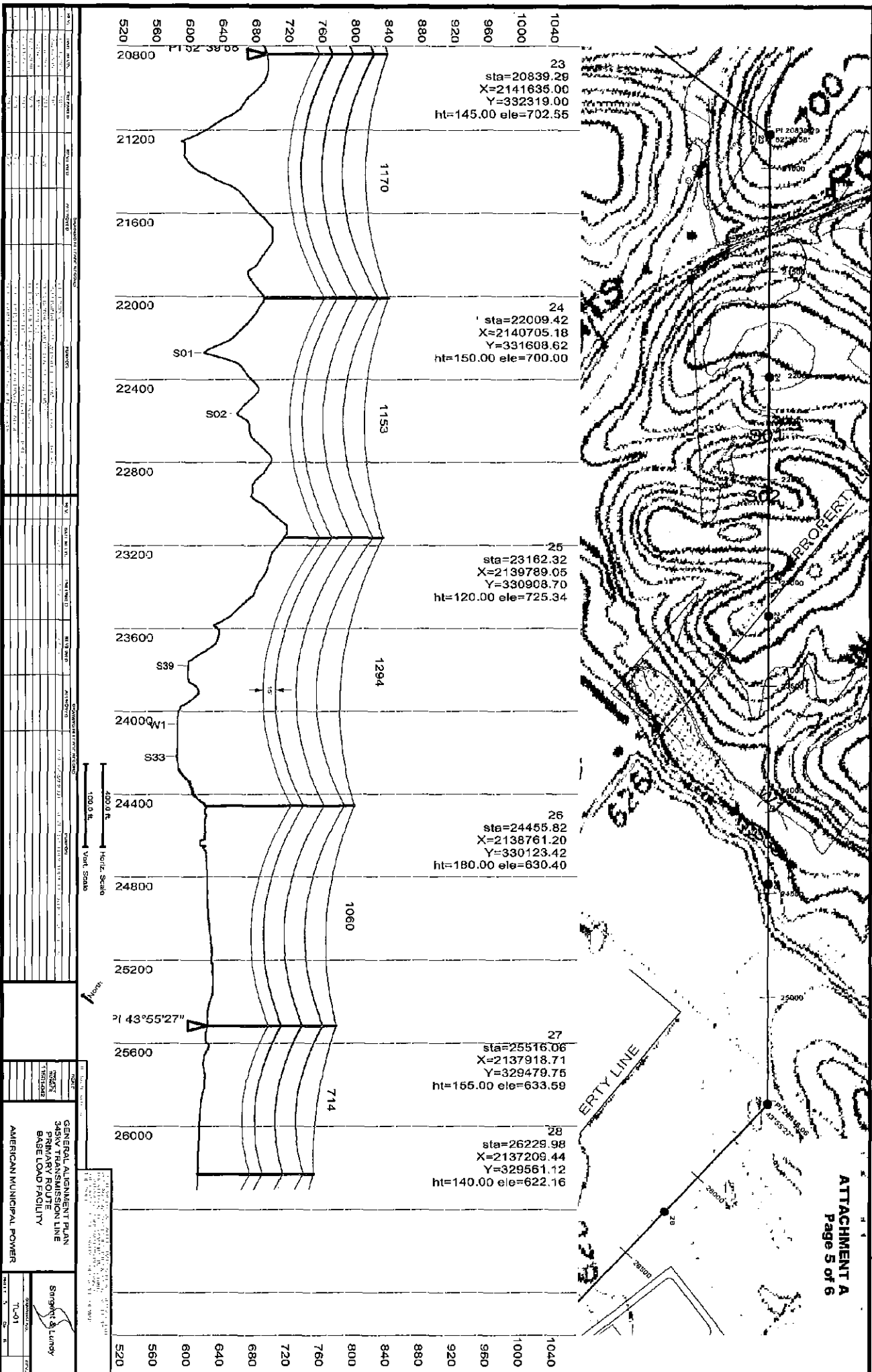


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186	10/1/01	TL-01				10/1/01
187	10/1/01	TL-01				10/1/01
188	10/1/01	TL-01				10/1/01
189	10/1/01	TL-01				10/1/01
190	10/1/01	TL-01				10/1/01
191	10/1/01	TL-01				10/1/01
192	10/1/01	TL-01				10/1/01
193	10/1/01	TL-01				10/1/01



GENERAL ALIGNMENT PLAN
PRIMARY ROUTE
BASE LOAD FACILITY
AMERICAN MUNICIPAL POWER

Sargent & Lundy
T.L. 01



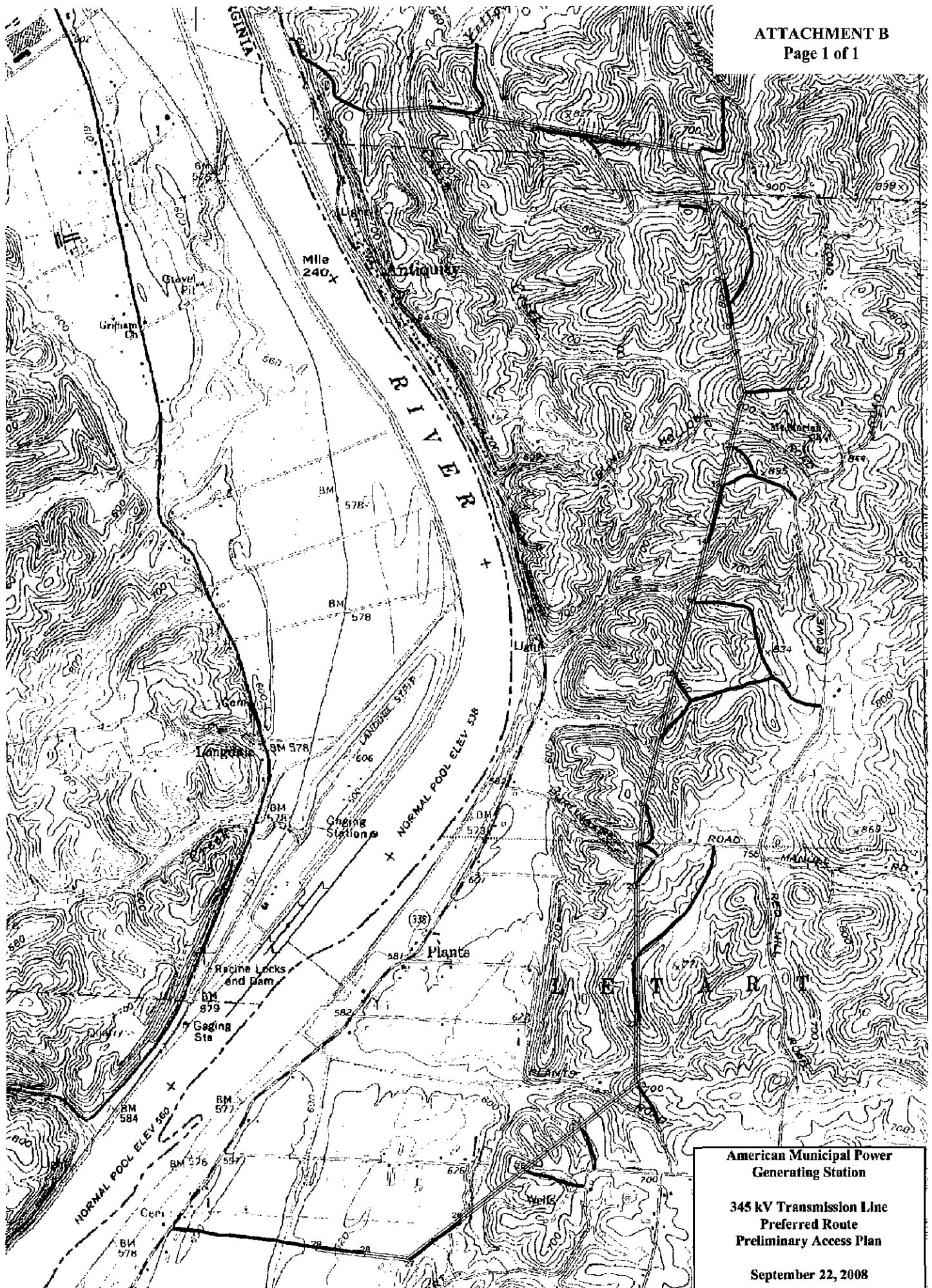


DATE	BY	CHKD BY	APP'D BY	SCALE	PROJECT	REVISION
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	GENERAL ALIGNMENT PLAN SABINIA SUBSTATION LINE BASE LOAD FACILITY	1
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	2
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	3
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	4
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	5
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	6
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	7
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	8
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	9
10/1/03	J. L. Smith	J. L. Smith	J. L. Smith	1"=100'	AMERICAN MUNICIPAL POWER	10

Sargent & Lundy
 PROJECT NO. 11010303
 SHEET NO. 6 OF 6

Attachment B

**Preferred Route Preliminary Access Plan dated
September 22, 2008**



Attachment C

Clearing Plan for Transmission Lines dated September 24, 2008



Brian C. Wood
Vice President
Phone: (312) 269-2638
brian.c.wood@sargentlundy.com

September 24, 2008

American Municipal Power-Ohio, Inc.
Baseload Generating Station

Clearing Plan for Transmission Lines

Mr. Scott Kiesewetter
Manager of New Plant Engineering
American Municipal Power-Ohio, Etc.
2600 Airport Drive
Columbus, OH 43219

Dear Mr. Kiesewetter:

Sargent & Lundy has reviewed the Primary and Alternate transmission line routes to evaluate the clearing plan for the proposed routes.

Tree clearing will be required during construction of the new transmission line. Trees must be removed in order to construct access roads to each structure site. In addition, trees and obstructions must be removed in proximity to each transmission structure to allow space for construction crews to erect the structures. Finally, selective clearing will be required along the transmission right-of-way (ROW) to provide adequate electrical clearances between the conductors and any vegetation.

A tree species and height survey was performed by AMP –Ohio along the Primary route ROW at twenty headwater stream and two wetland crossings during mid-September 2008. AMP-Ohio staff estimates an average tree height of approximately 60 feet based on the areas included in the survey.

An approximate evaluation was performed to determine the areas that trees will need to be removed. Based on AMP-Ohio's estimated 60 feet average tree height plus an additional 15 feet clearance, as required by the National Electric Safety Code, the required clearance to the conductors would be a minimum of 75 feet. Using that as an average tree cover over the entire ROW, the following approximate lengths of ROW would be impacted and require significant selective clearing:

- Primary Route – 11,100 feet
- Alternate Route – 13,900 feet

Based on the 150 foot ROW, the total areas requiring significant selective clearing by segment would be:

- Primary Route – 39 acres
- Alternate Route – 48 acres

In addition, access roads approximately 15-20 feet in width will be required to each structure. This would add approximately five acres to the cleared areas to both the Primary and Alternate routes.

Please give Tony Lunardini (312) 269-8731 or me a call if you need any additional information.

Yours very truly,



B. Wood
Vice President

BCW:ALL:RGP:seq
Enclosures
Copies:
R. Presnak
A. Lunardini

Attachment D

Preferred Route Wetland Delineation and Stream Assessment Report dated September 23, 2008



September 23, 2008

Mr. Scott Kiesewetter
American Municipal Power
2600 Airport Drive
Columbus, Ohio 43219

**Re: Preferred Route Wetland Delineation and Stream Assessment Report,
AMP-Ohio 345 kV Transmission Line Project, Meigs County, Ohio**

Dear Mr. Kiesewetter:

American Municipal Power-Ohio, Inc. (AMP-Ohio) is planning to construct a transmission line that will connect its proposed 1,000-MW pulverized coal fired power plant to an interconnection switchyard located south of the existing American Electric Power (AEP) Sporn-Kaiser No. 1 138 kV transmission line. The proposed transmission line is located in the Letart Falls area of Meigs County, Ohio. This letter report summarizes the findings of the wetland delineation and stream assessment conducted by URS for the Preferred Route. The delineation and assessment was conducted in August 2006, June 2007, April 2008, July 2008, and August 2008. Figure 1 shows the proposed delineated area and the surrounding vicinity.

The ecological assessment for this project was conducted by a qualified URS biologist. The assessment was comprised of an Army Corps of Engineers (ACOE) jurisdictional wetland delineation, Ohio EPA Ohio Rapid Assessment Method (ORAM) version 5.0 qualitative wetland assessments, and Headwater Habitat Evaluation Index (HHEI) and Qualitative Habitat Evaluation Index (QHEI) for surface drainages.

Methods

The project site was investigated for the presence of wetlands using the procedures outlined in the ACOE Wetlands Delineation Manual (1987 Manual) (Environmental Laboratory, 1987). Completed ACOE wetland delineation forms for wetland W1 and W2 are included in Attachment 1. Additionally, URS prepared Ohio EPA ORAM version 5.0, (ORAM v5.0 Manual) qualitative wetland evaluation forms for these wetlands, which are included in Attachment 1. Habitat assessments for streams with a drainage area less than one square mile and located within the 150-foot construction right-of-way (ROW), were conducted using the methods described in the Ohio EPA's *Field Evaluation Manual for Ohio's Primary Headwater*

Habitat Streams. Final Version 1.0 (Davie, 2001) (HHEI). The completed HHEI forms are included in Attachment 2. Habitat assessment of streams with a drainage area greater than one square mile and located within the 150-foot construction ROW, were conducted using the methods described in the Ohio EPA's *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index* (Rankin, 2006) (QHEI). The completed QHEI forms are included in Attachment 2. The locations and approximate extent of these features are provided on Figure 1.

Results

U.S. Army Corps of Engineers Evaluation

Two wetlands, totaling 0.91 acres were delineated within the 150-foot construction ROW. Wetland W1 covers an area of 0.90 acres. Wetland W2 covers an area of 0.01 acres. Wetland W1 is labeled PEM/PSS with a small PFO component based on Cowardin Wetland Classification. Wetland W2 is labeled PEM based on the Cowardin Wetland Classification. See Table 1 for details on both wetlands.

Based upon the procedure identified in the *1987 Manual*, the areas delineated in Figure 1 are wetlands, as they meet vegetation, soil and hydrology wetland criteria. Upland areas were observed to contain some wetland vegetation, but did not meet the hydrology and/or soils criteria of the *1987 Manual*.

Ohio EPA ORAM Evaluation

According to the Ohio EPA ORAM evaluation, wetland W1 scored 58.5/100, indicating it is a Category II wetland. Wetland W2 scored 54/100, indicating it is a Category II wetland. The Category II wetland exhibited moderate to high quality plant communities with few invasive species, moderate to good plant community interspersions, 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. See Table 1 regarding delineated Preferred Route wetlands.

Ohio EPA QHEI Evaluation

Ohio EPA QHEI forms for stream habitat assessments were completed for one stream located within the 150-foot construction ROW. The completed QHEI stream form is included in Attachment 2. The location of these streams is provided on Figure 1.

The QHEI method is generally considered appropriate for streams with drainage basins greater than one square mile, if natural pools are greater than 40 cm, or if the water feature is shown as blue-line waterways on USGS 7.5-minute topographic quadrangle maps. In order to convey general stream habitat quality to the regulated public, the Ohio EPA has assigned narrative ratings to QHEI scores. The ranges vary slightly for headwater streams (H are those with a watershed area less than or equal to 20 square miles) versus larger streams (L are those with a watershed area greater than 20 square miles). The Narrative Rating System includes: Very Poor (<30 H and L), Poor (30 to 42 H, 30 to 44 L), Fair (43 to 54 H, 45 to 59 L), Good (55 to 69 H, 60 to 74 L) and Excellent (70+ H, 75+ L).

Field surveys along the Preferred Route identified one stream with a drainage area greater than one square mile. The QHEI evaluation of the stream resulted in a "good warmwater habitat" stream designation (S31).

Ohio EPA HHEI Evaluation

Ohio EPA HHEI forms for stream habitat assessment were completed for 32 streams located within the 150-foot construction ROW. The completed HHEI stream forms are included in Attachment 2. The location of these streams is provided on Figure 1.

The HHEI methodology uses a 100-point scale for scoring. The score is based on composition of substrate, pool depth, and bankfull width. Once a score is obtained, it is applied to the decision-making flow chart. This chart serves to assign a class to streams based upon stream channel modifications, biotic communities, and percentage of substrate comprised of bedrock, boulder, boulder slabs, and cobble.

The Preferred Route contains 32 primary headwater streams including: 12 Class I streams, 12 Class II streams, and 8 Class III streams. Preferred Route streams are summarized in Table 2.

Class I Streams – Twelve Class I headwater streams were identified during the field investigation with scores ranging from a low of 9 to a high of 28. The substrate composition of these streams is generally dominated by silt, clay, leafpack/woody debris. Muck, sand, and gravel are also noted as less dominant substrate types in this stream class. Maximum pool depth is less 0 inches. The bankfull width for this group of streams is less than 3 feet.

Class II Headwater Streams – Twelve Class II headwater streams were identified during the 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 gravel, silt, and sand. Cobble, leafpack/woody debris, and boulder slabs are also noted as less dominant substrate types in this class of stream. The maximum pool depth is less than 12 inches. The bank full width for this group of streams is generally less than 7 feet.

Class III Headwater Streams - Eight Class III headwater streams were evaluated during the field investigation with scores ranging from 45 to 82. The substrate of these streams is dominated by cobble, gravel, and bedrock. Sand and silt are noted as less dominant substrate types. The maximum pool depth is 10 inches. The bank full width is between 2 and 8 feet.

Interconnection Switchyard

Field surveys identified no wetlands within the interconnection switchyard (switchyard) boundary. Field surveys did identify one headwater stream, S37, within the switchyard boundary. Approximately 190 feet of S37 are within the switchyard boundary (Figure 1). Stream S37 scored 19/100, classifying it as a Class I stream. The substrate of this stream is dominated by leafpack/woody debris and sand. Gravel, cobble, and fine detritus are

noted as less dominant substrate types. The maximum pool depth is 0 inches. The bankfull width is 1 foot.

Comparison to Alternate Route

The Alternate Route contains 27 streams within the 150-foot construction ROW, one QHEI evaluated stream (same as crossed by Preferred Route) and 26 HHEI evaluated headwater streams. The QHEI evaluated stream received a "good warmwater habitat" narrative rating. Seven Class I streams, 17 Class II streams, and 2 Modified Class II streams were evaluated using the HHEI method. See Table 3 for a description of streams found with the Alternate Route 150-foot construction ROW.

Two wetlands identified within the Alternate Route, wetland W1 and Alt-W1, totaling 1.12 acres were delineated within the 150-foot construction ROW. Wetland W1 covers an area of 0.90 acres. Wetland Alt-W1 covers an area of 0.22 acres. Wetland W1 is labeled PEM/PSS with a small PFO component based on Cowardin Wetland Classification. Wetland Alt-W1 is labeled PEM based on the Cowardin Wetland Classification. See Table 4 for details on both wetlands.

According to the Ohio EPA ORAM evaluation, wetland W1 scored 58.5/100, indicating it is a Category II wetland. Wetland Alt-W1 scored 42/100, indicating it is a Category II wetland. The Category II wetland exhibited moderate to high quality plant communities with few invasive species, moderate to good plant community interspersions, 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. See Table 4 regarding Alternate Route wetlands.

Conclusions

Two jurisdictional (i.e. non-isolated), wetlands, totaling 0.91 acres, were identified within the 150-foot construction ROW of the Preferred Route. URS's Ohio EPA ORAM evaluation of both wetlands resulted in both wetlands being designated as Category II wetlands.

Thirty-three streams were identified within the 150-foot construction ROW. One stream was evaluated using the QHEI methodology and resulted in a narrative rating of "good warmwater habitat" stream. Thirty-two headwater streams were evaluated using the HHEI methodology; 12 Class I streams, 12 Class II streams, and 8 Class III streams.

One HHEI evaluated Class I stream was identified within the interconnection switchyard boundary (S37).

Two wetlands identified within the Alternate Route, totaling 1.12 acres, were delineated within the 150-foot construction ROW. Twenty-seven streams within the Alternate Route 150-foot construction ROW were assessed, one QHEI evaluated stream, a "good warmwater habitat stream", and 26 HHEI evaluated headwater streams; 7 Class I streams, 17 Class II streams, and 2 Modified Class II streams.

Approximately 5 miles of new electric transmission line will be built to connect the project to the electric grid. No wetlands or streams will be filled as part of the transmission line construction or operation. Construction will require stream crossings but these will be temporary and will be discussed with the OEPA and OPSB during preconstruction meetings. The crossing method will vary according to width and quality of the stream, but will be designed in accordance with the Rainwater and Land Development Manual published by the ODNR/OEPA. Erosion control and restoration will be conducted according to the conditions of the Stormwater Pollution Prevention Plan and OPSB Application.

The construction of the interconnect switchyard will require impact to stream S37, however impacts will be mitigated through the proposed off-site stream mitigation.

Mr. Scott Kieseewetter
9/23/2008
Page 7

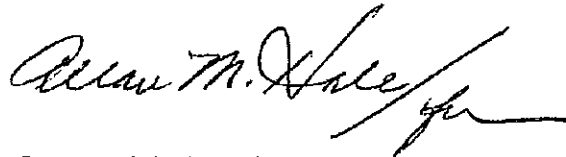
If you have any questions or comments regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

URS



Matthew Thomayer
Environmental Scientist



James Nicholas, Ph.D.
Principal Scientist

TABLE 1
WETLANDS LOCATED IN THE AMP-OHIO 345 kV
TRANSMISSION LINE PREFERRED ROUTE CORRIDOR

Wetland ID	Cowardin Wetland Type	ORAM Score	ORAM Category	Linear Feet Crossed	Acreage within 150-foot Corridor
W1	PEM/SS with PFO Component	58.5	II	252	0.90
W2	PEM	54	II	9	0.01
Total: 2				261	0.91

TABLE 2
STREAMS LOCATED IN THE AMP-OHIO 345 kV TRANSMISSION LINE PREFERRED ROUTE CORRIDOR

Stream Name	Flow Regime	Bankfull Width (feet)	Maximum Pool Depth (inches)	Assessment Method	Score	Class/Narrative Rating	Length of Stream within 150 ROW (feet)
S01	Interstitital	4	3	HHEI	56	Class II	168.0
S02	Ephemeral	1.5	0	HHEI	19	Class I	162.7
S03	Interstitital	3	3	HHEI	39	Class II	225.1
S04	Ephemeral	1.5	0	HHEI	24	Class I	177.2
S06	Ephemeral	7	0	HHEI	37	Class II	177.1
S08	Ephemeral	3	0	HHEI	27	Class I	177.5
S09	Ephemeral	6	0	HHEI	39	Class II	165.1
S10	Interstitital	7.5	2	HHEI	55	Class III	228.3
S11	Ephemeral	2	2	HHEI	34	Class II	160.1
S12	Interstitital	2.5	4	HHEI	45	Class III	309.4
S13	Perennial	2.5	3	HHEI	26	Class I	58.9
S14	Perennial	5.5	4	HHEI	64	Class III	152.8
S15	Perennial	7	2	HHEI	62	Class III	155.0
S16	Interstitital	5	3	HHEI	54	Class III	205.2
S17	Ephemeral	3	0	HHEI	18	Class I	233.2
S18	Ephemeral	2.5	0	HHEI	41	Class II	299.1
S19	Perennial	7	8	HHEI	82	Class III	214.3
S20	Ephemeral	4	0	HHEI	30	Class II	179.2
S21	Interstitital	6	3	HHEI	62	Class III	109.0
S22	Ephemeral	3	0	HHEI	9	Class I	91.3
S24	Ephemeral	2.5	0	HHEI	25	Class I	219.7
S25	Ephemeral	4	0	HHEI	35	Class II	119.6
S27	Interstitital	8	10	HHEI	71	Class III	193.1
S29	Ephemeral	1	0	HHEI	9	Class I	35.9
S31	Perennial	17	24	QHEI	63	Good Warmwater Habitat	150.3
S33	Perennial	7	12	HHEI	52	Class II	189.8

TABLE 2
STREAMS LOCATED IN THE AMP-OHIO 345 kV TRANSMISSION LINE PREFERRED ROUTE CORRIDOR

Stream Name	Flow Regime	Bankfull Width (feet)	Maximum Pool Depth (inches)	Assessment Method	Score	Class/Narrative Rating	Length of Stream within 150 ROW (feet)
S35	Intermittent	3	0	HHEI	19	Class I	162.2
S36	Ephemeral	3	0	HHEI	32	Class II	226.7
S38	Ephemeral	2	0	HHEI	23	Class I	33.9
S39	Ephemeral	3	6	HHEI	44	Class II	212.7
S40	Ephemeral	2	2	HHEI	28	Class I	6.9
S46	Ephemeral	3	2	HHEI	37	Class II	236.7
S47	Ephemeral	3	0	HHEI	21	Class I	141.9
Total: 33		141	93				5577.7

TABLE 3
STREAMS LOCATED IN THE AMP-OHIO 345 kV TRANSMISSION LINE ALTERNATE ROUTE CORRIDOR

Name	Flow Regime	Bankfull Width (feet)	Maximum Pool Depth (inches)	Assessment Method	Score	Class/Narrative Rating	Length within 150-foot Corridor (feet)
S33	Perennial	6	12	HHEI	52	Class 2	189.7
Alt-S1	Intermittent	3	0	HHEI	11	Class 1	124.0
Alt-S2	Intermittent	3	0	HHEI	37	Modified Class 2	153.7
Alt-S3	Intermittent	3	0	HHEI	15	Class 1	216.9
Alt-S4	Ephemeral	3.5	0	HHEI	41	Class 2	147.5
Alt-S5	Ephemeral	7	0	HHEI	47	Class 2	125.1
Alt-S6	Ephemeral	7	0	HHEI	40	Class 2	196.7
Alt-S7	Intermittent	10.5	0	HHEI	50	Class 2	170.4
Alt-S8	Intermittent	7	0	HHEI	45	Modified Class 2	260.3
Alt-S9	Ephemeral	6	0	HHEI	57	Class 2	144.0
Alt-S10	Ephemeral	9.5	0	HHEI	53	Class 2	191.3
Alt-S11	Ephemeral	8	0	HHEI	40	Class 2	90.3
Alt-S12	Ephemeral	7	0	HHEI	31	Class 2	268.8
Alt-S13	Intermittent	6	0	HHEI	32	Class 2	380.8
Alt-S14	Ephemeral	6	0	HHEI	38	Class 2	165.2
Alt-S15	Ephemeral	11	0	HHEI	50	Class 2	92.6
Alt-S16	Ephemeral	11	0	HHEI	50	Class 2	155.0
Alt-S17	Ephemeral	10	0	HHEI	54	Class 2	155.0
S31	Perennial	7	24	QHEI	63	Good Warmwater Habitat	160.9
S38	Ephemeral	2	0	HHEI	23	Class 1	150.5

TABLE 3
STREAMS LOCATED IN THE AMP-OHIO 345 kV TRANSMISSION LINE ALTERNATE ROUTE CORRIDOR

Name	Flow Regime	Bankfull Width (feet)	Maximum Pool Depth (inches)	Assessment Method	Score	Class/Narrative Rating	Length within 150-foot Corridor (feet)
S39	Perennial	3	6	HHEI	44	Class 2	215.7
S40	Perennial	2	2	HHEI	28	Class 1	171.3
S41	Perennial	1.5	1	HHEI	24	Class 1	148.4
S42	Perennial	2	1.5	HHEI	17	Class 1	174.2
S43	Perennial	3.5	3	HHEI	45	Class 2	192.8
S44	Perennial	3.5	3	HHEI	48	Class 2	189.8
S45	Ephemeral	2	0	HHEI	19	Class 1	164.3
Total: 27		151	53				4,795.4

TABLE 4
WETLANDS LOCATED IN THE AMP-OHIO 345 kV TRANSMISSION LINE ALTERNATE
ROUTE CORRIDOR

Wetland ID	Cowardin Wetland Type	ORAM Score	ORAM Category	Linear Feet Crossed	Acreage within 150-foot Corridor
W1	PEM/SS with PFO Component	58.5	II	252	0.90
Alt-W1	PEM	42	II	75	0.22
Total: 2				327	1.12

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MDT 9/23/08



LEGEND:

- Preferred Route
- Preferred Route 150 ft Corridor
- Alternate Route
- Alternate Route 150 ft Corridor
- Preferred Route Poles
- Delineated Wetlands
- Delineated Streams
- Drainages

- Swaleyard
- Existing Transmission Line
- Generation Station
- Streets

0 1,500 3,000
Scale in Feet

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



AMP - OHIO
BASELOAD GENERATING FACILITY

WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

JOB NO. 14946376

URS

ATTACHMENT 1

U.S. ARMY CORPS OF ENGINEERS
AND
OHIO EPA ORAM
DATA SHEETS

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

Project/Site: <u>AMP-Ohio Transmission</u>	Date: <u>8/1/06</u>						
Applicant/Owner: <u>AMP-Ohio</u>	County: <u>Meigs</u>						
Investigator: <u>JAV CURS</u>	State: <u></u>						
Do Normal Circumstances Exist on the site? Is the site significantly disturbed (Atypical Situation)? Is the area a potential Problem Area? (If needed, explain on reverse.)	<table border="0"> <tr> <td>Yes</td> <td>No</td> </tr> <tr> <td>Yes</td> <td><u>No</u></td> </tr> <tr> <td>Yes</td> <td><u>No</u></td> </tr> </table>	Yes	No	Yes	<u>No</u>	Yes	<u>No</u>
Yes	No						
Yes	<u>No</u>						
Yes	<u>No</u>						
Community ID: <u>PEM/ASS</u> Transect ID: <u>-</u> Plot ID: <u>W1</u>							

w/ PFO
component

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Pachystylum</u>	<u>H</u>	<u>FAC+</u>	9. <u>Polygonum sagittatum</u>	<u>H</u>	<u>OBL</u>
2. <u>Comptarion capensis</u>	<u>H</u>	<u>FACW</u>	10. <u>Carex sp.</u>	<u>H</u>	<u>FAC-OBL</u>
3. <u>Juncus effusus</u>	<u>H</u>	<u>FACW+</u>	11. <u>Hibiscus laevis</u>	<u>H</u>	<u>OBL</u>
4. <u>Typha latifolia</u>	<u>H</u>	<u>OBL</u>	12. <u>Polygonum pennsylvanicum</u>	<u>H</u>	<u>FACW</u>
5. <u>Typha angustifolia</u>	<u>H</u>	<u>OBL</u>	13. <u>Ranuncus occidentalis</u>	<u>S/T</u>	<u>FACW-</u>
6. <u>Eupatorium pycnostachyum</u>	<u>H</u>	<u>FACW+</u>	14. <u>Salix nigra</u>	<u>S</u>	<u>FACW-</u>
7. <u>Acer saccharinum</u>	<u>S/T</u>	<u>FACW</u>	15. <u>Asplenium</u>	<u>S</u>	<u>FACU-</u>
8. <u>Bidens frondosa</u>	<u>H</u>	<u>FACW</u>	16. <u>Verbena hastata</u>	<u>H</u>	<u>FACW+</u>

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 meadow grass

HYDROLOGY

Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12" <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>—</u> (in.) Depth to Free Water in Pit: <u>—</u> (in.) Depth to Saturated Soil: <u>surface</u> (in.)	Remarks: <u>strong wetland hydrology, stream insects</u> <u>wetland</u>

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.
0-5"	A	10YR ⁵ /2	7.5 YR ³ /4	many/prominent	silty clay
5-14"	B	10YR ⁴ /1	—	—	silty clay

Hydric Soil Indicators:

<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input checked="" type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)
---	---

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle) Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)
Remarks:	

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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: PEM
Is the site significantly disturbed (Atypical Situation)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: WET
Is the area a potential Problem Area? (If needed, explain on reverse)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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

<input type="checkbox"/> Recorded Data (Describe in Remarks) <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more Required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 inches <input checked="" type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input checked="" type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: 2 (in.) Depth to Free Water in Pit: 8 (in.) Depth to Saturated Soil: surface (in.)	
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? <input type="checkbox"/> Yes <input type="checkbox"/> 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:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Hydric soils criterion met.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> 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: 8/23/06
Applicant/Owner: AMP	County: Meigs
Investigator(s): Brooke McCloskey	State: OH
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Community ID: PEM
Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Transect ID: UPL
Is the area a potential Problem Area? (If needed, explain on reverse) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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. Ionicera japonica		He	FAC-	10.			
3. Erigeron annuus		He	FACU	11.			
4. Rubus alleghensis		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

<p><input type="checkbox"/> Recorded Data (Describe in Remarks)</p> <p style="margin-left: 20px;"><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p style="margin-left: 20px;"><input type="checkbox"/> Aerial Photographs</p> <p style="margin-left: 20px;"><input type="checkbox"/> Other</p> <p><input type="checkbox"/> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: 0 (in.)</p> <p>Depth to Free Water in Pit: 0 (in.)</p> <p>Depth to Saturated Soil: 0 (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more Required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>Remarks: Wetland hydrology criterion has not been met.</p>	

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? <input type="checkbox"/> Yes <input type="checkbox"/> 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:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture regime	<input type="checkbox"/> Listed on Local Hydric Soils List
<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: Hydric soils criterion not met.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Is this Sampling Point Within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Wetland Hydrology Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Hydric Soils Present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Remarks: None of the three wetland criteria have been met, therefore, this area is not considered a wetland.			

Site: <u>W1</u>	Rater(s): <u>JAV (JRS)</u>	Date: <u>8/1/06</u>
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5	5
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Metric 1. Wetland Area (size).

max 6 pts.

subtotal

Select one size class and assign score.

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

5

7	12
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Metric 2. Upland buffers and surrounding land use.

max 14 pts.

subtotal

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

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

4

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

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

3

17.5	29.5
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Metric 3. Hydrology.

max 30 pts.

subtotal

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

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

4

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

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (16.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

1

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

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

7

3b. Connectivity. Score all that apply.

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

2

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

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

3.5

Check all disturbances observed

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

- ☐ point source (nonstormwater)
- ☐ filling/grading
- ☐ road bed/RR track
- ☐ dredging
- ☒ other man made dam at northern end

19	48.5
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Metric 4. Habitat Alteration and Development.

max 20 pts.

subtotal

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

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

4

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

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

6

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

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

9

Check all disturbances observed

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

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

48.5

subtotal this page

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

Site:	Rater(s):	Date:
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48.5
subtotal this page

0	48.5
max 10 pts.	subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

10	58.5
max 20 pts.	subtotal

Metric 6. Plant communities, interspersions, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ 3 Emergent
- ☐ 1 Shrub
- ☐ 1 Forest
- ☐ 1 Mudflats
- ☐ 0 Open water
- ☐ Other

5

6b. horizontal (plan view) Interspersions.

Select only one.

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

2

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)
- ☒ X Nearly absent <5% cover (0)
- ☐ Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

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

3

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

Salix arundinacea and sphagnum spp. constitutes less than 5% coverage

58.5 GRAND TOTAL(max 100 pts)

Category 2

Adjacent

sublora| this page

53

subtotal this page

0

53

max 10 pts.

subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

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

Wet 2

54

max 20 pts.

subtotal

Metric 6. Plant communities, interspersions, microtopography.**6a. Wetland Vegetation Communities.**

Score all present using 0 to 3 scale.

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

6b. horizontal (plan view) Interspersion.

Select only one.

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

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

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

6d. Microtopography.

Score all present using 0 to 3 scale.

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

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.247 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

54

GRAND TOTAL(max 100 pts)

ATTACHMENT 2

**OHIO EPA QHEI
AND
OHIO EPA HHEI
DATA SHEETS**

Ohio EPA Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION: Amc SITE NUMBER: 01 RIVER BASIN: 01 DRAINAGE AREA (sq mi): 1.1
 LENGTH OF STREAM REACH (ft): 200 RIVER CODE: 01 RIVER MILE: 0.1
 DATE: 8/22/04 SCORER: BM COMMENTS:

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

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

SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY the 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	Substrate	Max = 40
<input checked="" type="checkbox"/> BEDROCK	100%	20	
<input checked="" type="checkbox"/> GRAVEL	100%	20	
<input checked="" type="checkbox"/> SAND	100%	20	
<input checked="" type="checkbox"/> SILT	100%	20	
<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS	100%	20	
<input checked="" type="checkbox"/> FINE DETRITUS	100%	20	
<input checked="" type="checkbox"/> CLAY OR MUD/ORGANIC	100%	20	
<input checked="" type="checkbox"/> MUCK	100%	20	
<input checked="" type="checkbox"/> ARTIFICIAL	100%	20	
Total Percentages of Substrate Types: <u>400%</u> (A) <u>4</u> (B)		HHEI Metric Points: <u>20</u>	

SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: 400% (A) 4 (B)

1. Maximum Pool Depth (Measure the maximum pool depth within the 6' reach (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from near falls or steep waterfalls. (Check ONLY one box):
☐ > 40 cm (16 in)
☐ 20-40 cm (8-16 in)
☐ 10-20 cm (4-8 in)
☐ 5-10 cm (2-4 in)
☐ NO WATER OR MOIST CHANNEL (0 pts)

2. Maximum Pool Depth (Measure the maximum pool depth within the 6' reach (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from near falls or steep waterfalls. (Check ONLY one box):
☐ > 40 cm (16 in)
☐ 20-40 cm (8-16 in)
☐ 10-20 cm (4-8 in)
☐ 5-10 cm (2-4 in)
☐ NO WATER OR MOIST CHANNEL (0 pts)

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements):
☐ > 40 m (131 ft)
☐ 20-40 m (66-131 ft)
☐ 10-20 m (33-66 ft)
☐ 5-10 m (16-33 ft)
☐ < 5 m (16 ft)

COMMENTS:

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ADDITIONAL STREAM INFORMATION (This information must also be completed):

OHEI PERFORMED? ☒ Yes ☐ No OHEI Score: 00 (If Yes, Attach Completed OHEI Form)

DOWNSTREAM DESIGNATED USE(S):

Distance from Evaluated Stream:

Distance from Evaluated Stream:

Distance from Evaluated Stream:

RAPPING: 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:

BIOLOGICAL 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 sheet from the Primary Headwater Habitat Assessment Manual)

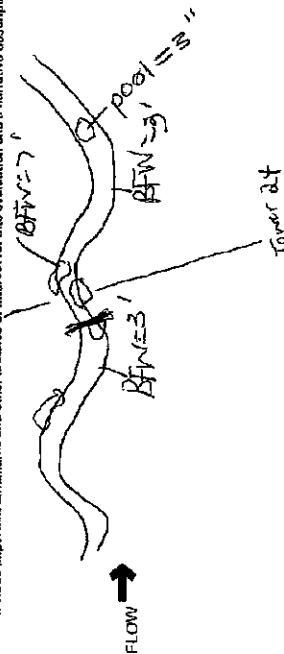
Fish Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): Y Voucher? (Y/N): Y

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

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





Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION: ANP SITE NUMBER: 32 RIVER BASIN: 200K LONG: 1 RIVER CODE: 1
LENGTH OF STREAM REACH (ft): 200 COMMENTS: BEEN

DATE: 8/22/20 RECOVERED: RECOVERED RECENT OR NO RECOVERY: RECOVERED

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

STREAM CHANNEL: NONE NATURAL CHANNEL: RECOVERED RECOVERED: RECOVERED RECENT OR NO RECOVERY: RECOVERED

MODIFICATIONS: 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	PERCENT	PERCENT
<input type="checkbox"/> BLOCK SLABS (15 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> BOULDER (25 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> BEDROCK (15 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> COBBLE (25 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> GRAVEL (25 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> SAND (25 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> SILT (10 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> LEAF PACK/WOODY DEBRIS (10 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> TREE DETRITUS (10 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> CLAY or SILT (10 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> MUCK (10 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> ATYPICAL (10 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: (A) 12 (B) 2 TOTAL NUMBER OF SUBSTRATE TYPES: 14

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

<input type="checkbox"/> > 30 centimeters (12 pts)	<input type="checkbox"/> 15-30 cm (10 pts)	<input type="checkbox"/> 5-15 cm (8 pts)	<input type="checkbox"/> NO WATER OR MOST CHANNEL DRY (0 pts)
--	--	--	---

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

<input type="checkbox"/> > 4.0 meters (15 pts)	<input type="checkbox"/> 3.0-4.0 m (12 pts)	<input type="checkbox"/> 2.0-3.0 m (10 pts)	<input type="checkbox"/> 1.0-2.0 m (8 pts)	<input type="checkbox"/> 0.5-1.0 m (6 pts)	<input type="checkbox"/> 0.1-0.5 m (4 pts)
--	---	---	--	--	--

COMMENTS: NO WATER OR MOST CHANNEL DRY

4. AVERAGE BANKFULL WIDTH (meters): 1.5

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

QUALITY	PERCENT	PERCENT	PERCENT
<input type="checkbox"/> L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> (Per Bank)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Pasture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Crop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mining or Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (intermittent)	<input type="checkbox"/> Dry channel, no water (ephemeral)
---	--	--

7. SIMULOSITY (Number of bands per 61 m (200 ft) of channel). (Check ONLY one box):

<input type="checkbox"/> None	<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.0	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.0	<input type="checkbox"/> 2.5	<input type="checkbox"/> 3.0	<input type="checkbox"/> > 3
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8. STREAM GRADIENT ESTIMATE

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

PHHW Form Page - 1

October 24, 2022 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): _____

Distance from Evaluated Stream: _____

Distance from Evaluated Stream: _____

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 NRCSS Soil Map Page: _____ NRCSS 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: _____

Additional comments/description of pollution impacts: _____

Additional comments/description of pollution impacts: _____

ENDOTIC 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)

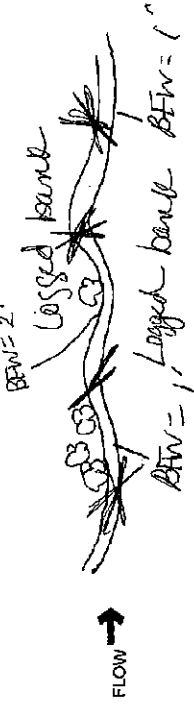
Fish Observed? (Y/N): N Voucher? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N

Frogs or Toads Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): 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



PHHW Form Page - 2

October 24, 2022 Revision

Ohio EPA Primary Headwater Habitat Evaluation Form

Class II

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

SITE NUMBER: **001** RIVER BASIN: **53** RIVER CODE: **2** DRAINAGE AREA (mi²): **1.7**

LENGTH OF STREAM REACH (ft): **200** LAT: **41° 10' N** LONG: **82° 45' W** RIVER MILE: **1.7**

DATE: **3/22/01** SCORER: **Ben** COMMENTS: **See map**

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

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

MODIFICATIONS: **See map**

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	PERCENT	PERCENT
BLUR SLABS (16 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BOULDER (2-256 mm) (16 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BEDROCK (16 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COBBLE (16 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GRAVEL (16 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAND (16 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LEAF PACK/WOODY DEBRIS (8 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FINE DETRITUS (8 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CLAY OR HARD-PAN (8 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MUCK (8 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ARTIFICIALS (8 pts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Total of Percentages of **15%** (A) **16** (B) **7**

SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: **16** **7**

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 fast currents or storm water flows). (Check ONLY one box)

☐ > 30 centimeters (12 in) ☐ > 5 cm (2 in) ☐ NO WATER OR MOST CHANNEL (0 pts)

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

☐ > 10 m (33 ft) ☐ > 5 m (16 ft) ☐ > 1.5 m (5 ft)

COMMENTS: **See map**

4. AVERAGE BANK FULL WIDTH (meters)

5. FLOODPLAIN QUALITY

SEAPIAN WIDTH	FLOODPLAIN QUALITY	L	R
(Per Bank)	(Most Predominant per Bank)		
Wide > 10m	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>
Moderate 5-10m	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>
Narrow < 5m	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>
None	Period Pasture	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS: **See map**

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

☒ Stream Flowing ☐ Moist Channel, isolated pools, no flow (intermittent) ☐ Dry channel, no water (ephemeral)

COMMENTS: **See map**

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

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

8. STREAM GRADIENT ESTIMATE

☐ Flat (0.5 m/100 ft) ☐ Flat to Moderate ☒ Moderate to Severe ☐ Severe (no info)

October 24, 2002 Revision

PHWH Form Page - 1

ATTACHMENT D
Page 29 of 66

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

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score: **37** (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S): **None** Distance from Evaluated Stream: **0**

QHEI Name: **None** Distance from Evaluated Stream: **0**

QHEI Name: **None** Distance from Evaluated Stream: **0**

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

USGS Quadrangle Name: **New Haven OH** NCRS Soil Map Page: **1** NCRS Soil Map Stream Order: **1**

County: **Meigs** Township / City: **Meigs**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **UNKNOWN** Quantity: **37**

Photograph Information: **None** Canopy (% open): **80%**

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: **None**

Field Measurements: Temp (°C): **None** Dissolved Oxygen (mg/l): **None** pH (S.U.): **None** Conductivity (µmhos/cm): **None**

Is the sampling reach representative of the stream (Y/N): **Y** If not, please explain: **None**

Additional comments/description of pollution impacts: **None**

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): **N** Voucher? (Y/N): **N** Voucher? (Y/N): **N**

Frogs or Tadpoles Observed? (Y/N): **N** Voucher? (Y/N): **N** Voucher? (Y/N): **N** Voucher? (Y/N): **N**

Comments Regarding Biology: **None**

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 **See map**

October 24, 2002 Revision

PHWH Form Page - 2

Class I

24

SITE NAME/LOCATION: WMP SITE NUMBER: 54 RIVER BASIN: 12 DRAINAGE AREA (mi²): 1.2
 LENGTH OF STREAM REACH (ft): 150 LAT: 41.2 LONG: 82.5 RIVER CODE: 1 RIVER MILE: 1.2
 DATE: 8/22/02 SCORER: BSM COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions
 STREAM CHANNEL: ☒ NOVEL NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RESTORING ☐ MODIFIED
 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
<input type="checkbox"/> BLDG SLABS (16 pts)		<input type="checkbox"/> SILT (8 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE PACKED DEBRIS (16 pts)	
<input type="checkbox"/> BEDROCK (16 pts)		<input type="checkbox"/> FINE DETRITUS (16 pts)	
<input type="checkbox"/> COBBLE (65-255 mm) (12 pts)		<input type="checkbox"/> CLAY-FAKED (16 pts)	
<input type="checkbox"/> GRAVEL (2-64 mm) (12 pts)		<input type="checkbox"/> MUCK (16 pts)	
<input type="checkbox"/> SAND (65-125 mm) (12 pts)		<input type="checkbox"/> WETLAND (16 pts)	
<input type="checkbox"/> SAND (65-125 mm) (12 pts)			

Total of Percentages of Substrate Types: 200% (A) 15 (B) 4

SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: 15 + 4 = 19

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 local culverts or storm water pipes). (Check ONLY one box):

☐ > 30 centimeters (12 pts) ☐ > 5 cm - 10 cm (16 pts) ☐ > 10 - 22.5 cm (25 pts) ☐ NO WATER OR MOIST CHANNEL (10 pts)

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

☐ > 10 m (16 pts) ☐ 5-10 m (16 pts) ☐ 3-5 m (16 pts) ☐ 1-3 m (16 pts)

COMMENTS:

4. AVERAGE BANKFULL WIDTH (meters): 0

5. FLOODPLAIN QUALITY (NOTE: River Left (L) and Right (R) as looking downstream)

REPAIR ZONE AND FLOODPLAIN QUALITY	SCORE
PERMANENT WIDTH	
(Per Bank)	
Wide > 10m	
Moderate 5-10m	
Narrow < 5m	
None	
Comments:	
Flow Regime (At Time of Evaluation) (Check ONLY one box):	
Stream Flowing	
Subsurface flow with isolated pools (intermittent)	
Moist Channel, isolated pools, no flow (intermittent)	
Dry channel, no water (ephemeral)	
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 m/m)	
Flat to Moderate	
Moderate (2 m/m)	
Moderate to Severe	
Severe (10 m/m)	

COMMENTS:

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):
 Distance from Evaluated Stream:
 Distance from Evaluated Stream:
 Distance from Evaluated Stream:

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

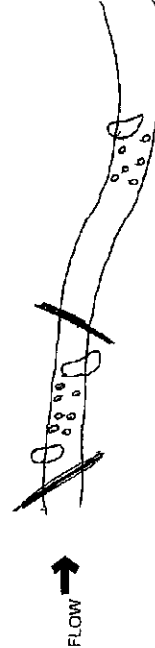
ADDITIONAL COMMENTS/DESCRIPTION OF POLLUTION IMPACTS:

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): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
 Frogs or Toads Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): 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





Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION: Waco II SITE NUMBER: 56 RIVER BASIN: Waco DRAINAGE AREA (sq mi): 141
LENGTH OF STREAM REACH (ft): 200 LAT: 31° 41' LONG: 97° 15' RIVER CODE: Waco RIVER MILE: 1.41
DATE: 8/22/02 RECORDER: BGM COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHHW 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
<input type="checkbox"/> BUDS (1/8 in)		<input type="checkbox"/> SILT (1/8 in)	
<input type="checkbox"/> BEDROCK (1/4 in)		<input type="checkbox"/> LEAF PACK (WOODY DEBRIS 1/8 in)	
<input type="checkbox"/> BEDROCK (1/2 in)		<input type="checkbox"/> FINE DETRITUS (1/8 in)	
<input type="checkbox"/> BEDROCK (3/4 in)		<input type="checkbox"/> CLAY & MUD (1/8 in)	
<input type="checkbox"/> BEDROCK (1 in)		<input type="checkbox"/> MUCK (1/8 in)	
<input type="checkbox"/> BEDROCK (1 1/2 in)		<input type="checkbox"/> ARTIFICIAL (1/8 in)	
<input type="checkbox"/> BEDROCK (2 in)			
<input type="checkbox"/> BEDROCK (2 1/2 in)			
<input type="checkbox"/> BEDROCK (3 in)			
<input type="checkbox"/> BEDROCK (3 1/2 in)			
<input type="checkbox"/> BEDROCK (4 in)			
<input type="checkbox"/> BEDROCK (4 1/2 in)			
<input type="checkbox"/> BEDROCK (5 in)			
<input type="checkbox"/> BEDROCK (5 1/2 in)			
<input type="checkbox"/> BEDROCK (6 in)			
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<input type="checkbox"/> BEDROCK (27 1/2 in)			
<input type="checkbox"/> BEDROCK (28 in)			
<input type="checkbox"/> BEDROCK (28 1/2 in)			
<input type="checkbox"/> BEDROCK (29 in)			
<input type="checkbox"/> BEDROCK (29 1/2 in)			
<input type="checkbox"/> BEDROCK (30 in)			
<input type="checkbox"/> BEDROCK (30 1/2 in)			
<input type="checkbox"/> BEDROCK (31 in)			
<input type="checkbox"/> BEDROCK (31 1/2 in)			
<input type="checkbox"/> BEDROCK (32 in)			
<input type="checkbox"/> BEDROCK (32 1/2 in)			

Final Metric Score: **17**

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 root overfalls or storm water pipes). (Check ONLY one box):

SCORE OF TWO MOST PREDOMINANT SUBSISTENCE TYPES		QUAL RATING OF SUBSISTENCE TYPES	
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the three of evaluation. Avoid diving pools from rock cutters or storm water pipes). (Check ONE, Y only box):			
<input type="checkbox"/> > 30 cm (12 in)	<input type="checkbox"/> 30-40 cm (12-16 in)	<input type="checkbox"/> 40-50 cm (16-20 in)	<input type="checkbox"/> 50-60 cm (20-24 in)
<input type="checkbox"/> > 22.5-30 cm (9-12 in)	<input type="checkbox"/> 10-20 cm (4-8 in)	<input type="checkbox"/> 20-30 cm (8-12 in)	<input type="checkbox"/> 30-40 cm (12-16 in)
<input type="checkbox"/> > 10-22.5 cm (4-9 in)	<input type="checkbox"/> NO WATER OR MUST CHANNEL	<input checked="" type="checkbox"/> NO WATER OR MUST CHANNEL	<input type="checkbox"/> NO WATER OR MUST CHANNEL

Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION: WOLF SITE NUMBER: 58 RIVER BASIN: LONG DRAINAGE AREA (sq ft): 1,000
 LENGTH OF STREAM REACH (m): 300 LAT: 38° 23' N LONG: 92° 41' W RIVER CODE: WOLF
 DATE: 9/23/01 SCORER: BEAM COMMENTS: stream in good condition
 NOTE: Complete all items on this Form - Refer to "Field Evaluation Manual for Ohio's PHHW Streams" for instructions
 STREAM CHANNEL: ☒ NONE/NATURAL CHANNEL ☐ RECOVERED ☐ RECENT OR NO RECOVERY
 MODIFICATIONS:

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 52). Add total number of significant substrate types found (Max of 6). Final metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
BLDR SLABS (16 ps)	0	SILT (1 ps)	0
BOULDER (256 mm) (16 ps)	0	LEAF PACK/WOODY DEBRIS (1 ps)	0
BEDROCK (16 ps)	0	FINE DETRITUS (1 ps)	0
COBBLE (64-256 mm) (12 ps)	0	CLAY or MUD/ORGANIC (1 ps)	0
GRAVEL (2-64 mm) (8 ps)	0	MUCK (1 ps)	0
SAND (<2 mm) (8 ps)	0	ARTIFICIAL (1 ps)	0

Total Percentages of: 35% (A) 3 (B)

SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: 19

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

☐ > 4.0 meters (> 13' (20 ps)) ☒ 1.0 m - 1.5 m (2.3' - 4.9') (16 ps)

☐ > 3.0 m - 4.0 m (9.7' - 13') (12 ps)

☐ > 2.5 - 3.0 m (8.2' - 9.8') (8 ps)

☐ > 1.0 m - 2.5 m (3.3' - 8.2') (4 ps)

☒ NO WATER OR MOIST CHANNEL (0 ps)

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

☐ > 4.0 meters (> 13' (20 ps)) ☒ 1.0 m - 1.5 m (2.3' - 4.9') (16 ps)

☐ > 3.0 m - 4.0 m (9.7' - 13') (12 ps)

☐ > 2.5 - 3.0 m (8.2' - 9.8') (8 ps)

☐ > 1.0 m - 2.5 m (3.3' - 8.2') (4 ps)

4. AVERAGE BANKFULL WIDTH (meters): 3.36

5. FLOODPLAIN QUALITY (This information must also be completed. SHOTS: River Left (L) and Right (R) as looking downstream.)

REPERMAN ZONE AND FLOODPLAIN QUALITY	SHOTS: River Left (L) and Right (R) as looking downstream
PERMANENT WIDTH (Per Bank)	Conservation Tillage <input type="checkbox"/> L R
Yield > 10m	Nature Forest, Wetland <input type="checkbox"/> L R
Moderate 5-10m	Urban or Industrial <input type="checkbox"/> L R
Narrow < 5m	Open Pasture, Row Crop <input type="checkbox"/> L R
None	Mining or Construction <input type="checkbox"/> L R

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

☐ Stream Flaring ☒ Most Channel, isolated pools, no flow (intermittent)

☐ Succession flow with isolated pools (intermittent) ☒ Dry channel, no water (ephemeral)

7. SINOUSITY (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 ☐ > 3.0

8. STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ps) ☐ Flat to Moderate ☐ Moderate to Steep ☒ Steep (10 ps)

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): _____
 QHEI Name: _____ Distance from Evaluated Stream: _____
 QHEI Name: _____ Distance from Evaluated Stream: _____
 QHEI Name: _____ Distance from Evaluated Stream: _____

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

USGS Quadrangle Name: NEW HAVEN 04 NRCIS Section Page: _____ NRCIS Soil Map Sheet Order: _____
 County: WYOMING Township/City: _____

MISCELLANEOUS

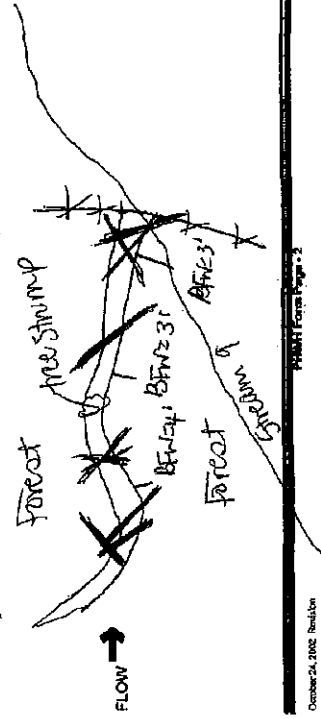
Base Flow Condition? (Y/N): Y Date of last precipitation: 10/20/01 Quantity: ??
 Photograph Information: _____
 Elevated Turbidity? (Y/N): N Canopy (% open): 100%
 Were samples collected for water chemistry? (Y/N): N (Note lab sample no. and attach results) Lab Number: _____
 Field Measures: Temp (C) _____ 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: _____

BIOE 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): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
 Frogs or Tadpoles Observed? (Y/N): N Voucher? (Y/N): N Aquatic Macroinvertebrates Observed? (Y/N): N Voucher? (Y/N): N
 Comments Regarding Biology: _____

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

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



Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION: AmP SITE NUMBER: 89 RIVER BASIN: DRAINAGE AREA (mi²) 2
 LENGTH OF STREAM REACH (ft): 300 LAT: LONG: 071°10'10" W 37°10'10" N RIVER MILE: 1.0
 DATE: 8/23/01 SCORER: Ben COMMENTS: Drainage Area 1.0
 NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHHW Streams" for Instructions
 STREAM CHANNEL: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECENT OR NO RECOVERY
 MODIFICATIONS:

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). FPA metric score is sum of boxes A & B.)

TYPE	PERCENT	TYPE	PERCENT
BLDR SLUGS (16 pts)		SILT (8 pts)	
BOULDER (225 mm) (16 pts)		LEAF PACK/MOSSY DEBRIS (8 pts)	5%
BEDROCK (16 pts)		FINE DETRITUS (8 pts)	
CORBLE (65-225 mm) (12 pts)	20%	CLAY or HARDPAN (8 pts)	
GRAVEL (2-64 mm) (16 pts)	35%	HAIRY (8 pts)	
SAND (<2 mm) (8 pts)	45%	ARTIFICIAL (8 pts)	

Total Percentages of: 20% (A) 15% (B) 4
 Bldr Slugs, Boulder, Cobble, Bedrock
 SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: 15

2. MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 81 meter (269 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes). (Check ONLY one box):
 > 30 centimeters (12 pts)
 > 22.5 - 30 cm (8 pts)
 > 10 - 22.5 cm (4 pts)
 NO WATER OR MOIST CHANNEL (0 pts)
 COMMENTS: 0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements). (Check ONLY one box):
 > 4.0 meters (13 pts)
 > 3.0 m - 4.0 m (8 pts)
 > 1.5 m - 3.0 m (4 pts)
 COMMENTS: 0

This information must also be completed

NOTE: River Left (L) and Right (R) as looking downstream

RIPARIAN ZONE AND FLOODPLAIN QUALITY

PERCENT WIDTH	FLOODPLAIN QUALITY	L	R
Per Bank	(Most Predominant per Bank)		
W46 > 10m	Mature Forest, Wetland		
Nodisturb 5-10m	Immature Forest, Shrub or Old Field		
Narrow < 5m	Residential, Park, New Field		
None	Fenced Pasture		

COMMENTS: Conspicuous Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):
 Stream Flowing
 Subsurface flow with isolated pools (Intermittent)
 Moist Channel, isolated pools, no flow (Intermittent)
 Dry channel, no water (Ephemeral)
 COMMENTS: 0

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
 4.0
 COMMENTS: 0

STREAM GRADIENT ESTIMATE
☐ Flat (rel. error %)
☒ Flat to Moderate
☐ Moderate to Steep
☐ Steep to eroding
 COMMENTS: 0

PHHW Form Page - 1

October 24, 2002 Revision

ADDITIONAL STREAM INFORMATION (This information must also be completed):

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

DOWNSTREAM DESIGNATED USE(S)

☐ AWH 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 NRCSS Soil Map Page: _____
 County: MEigs Township: Chgo

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: _____

BOTIC 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 sheet from the Primary Headwater Habitat Assessment Manual)

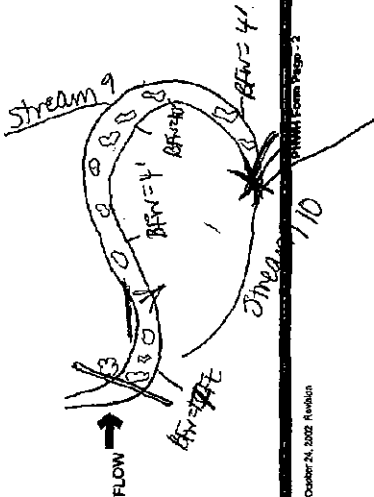
Fish Observed? (Y/N): N Salamanders Observed? (Y/N): N Voucher? (Y/N): _____

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

PHHW Form Page - 2

Primary Headwater Habitat Evaluation Form

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

SITE NAME/LOCATION: 6008 SITE NUMBER: 311 RIVER BASIN: 2 DRAINAGE AREA (sq mi): 41.0
 LENGTH OF STREAM REACH (m): 200 LAT: 40° 30' N LONG: 81° 30' W RIVER CODE: 2 RIVER MILE: 1.2
 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: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECENT OR NO RECOVERY
 MODIFICATIONS:

SUBSTRATE (Estimate Percent of each 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	<div>Substrate</div> <div>Max = 40</div> <div>24</div> <div>A + B</div>
BLUR SLATS (10 pts)	<input checked="" type="checkbox"/> 20%	
BOULDER (2-25 mm) (15 pts)	<input checked="" type="checkbox"/> 20%	
BEDROCK (15 pts)	<input type="checkbox"/> 0%	
COBBLE (65-250 mm) (15 pts)	<input checked="" type="checkbox"/> 10%	
GRAVEL (2-64 mm) (15 pts)	<input type="checkbox"/> 0%	
SAND (2-64 mm) (15 pts)	<input type="checkbox"/> 0%	
Total Percentages of Bar Sticks, Boulder, Cobble, Bedrock		
SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: (A) <u>19</u> (B) <u>5</u>		
TOTAL NUMBER OF SUBSTRATE TYPES: <u>5</u>		
2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes). (Check ONLY one box): <input type="checkbox"/> > 30 centimeters (12 pts) <input type="checkbox"/> > 22.5 - 30 cm (15 pts) <input checked="" type="checkbox"/> > 10 - 22.5 cm (20 pts) <input type="checkbox"/> NO WATER OR MOST CHANNEL DRY		
3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): <input type="checkbox"/> > 4.0 meters (> 13 ft) (15 pts) <input type="checkbox"/> > 3.0 m - 4.0 m (8.7 - 13 ft) (15 pts) <input checked="" type="checkbox"/> > 1.5 m - 3.0 m (4.9 - 9.8 ft) (20 pts) <input type="checkbox"/> > 1.0 m - 1.5 m (3.3 - 4.9 ft) (15 pts)		
COMMENTS: <u>4.8 m</u> AVERAGE BANKFULL WIDTH (meters): <u>4.8</u>		

This information must also be completed (NOTE: River Left (L) and Right (R) as looking downstream):

NEARUPAN ZONE AND FLOODPLAIN QUALITY		FLOODPLAIN QUALITY	
NEARUPAN ZONE	FLOODPLAIN QUALITY	NEARUPAN ZONE	FLOODPLAIN QUALITY
<input checked="" type="checkbox"/> L (Per Bank) <input type="checkbox"/> Wide > 10m <input type="checkbox"/> Moderate 5-10m <input type="checkbox"/> Narrow < 5m <input type="checkbox"/> None	<input type="checkbox"/> Mature Forest, Wetland <input checked="" type="checkbox"/> Immature Forest, Shrub or Old Field <input type="checkbox"/> Residential, Park, New Field <input type="checkbox"/> Farmed Pasture	<input type="checkbox"/> Conservation Tillage <input type="checkbox"/> Urban or Industrial <input type="checkbox"/> Open Pasture, Row Crop <input type="checkbox"/> Mining or Construction	<input type="checkbox"/> Moderate to Good <input checked="" type="checkbox"/> Moderate to Poor <input type="checkbox"/> Severe to Very Poor
FLOW REGIME (At Time of Evaluation) (Check ONLY one box): <input type="checkbox"/> Stream Flowing <input checked="" type="checkbox"/> Substantially flow with isolated pools (intermittent) <input type="checkbox"/> Dry channel, no water (ephemeral)		SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): <input checked="" type="checkbox"/> 0.5 <input type="checkbox"/> 1.0 <input type="checkbox"/> 1.5 <input type="checkbox"/> 2.0 <input type="checkbox"/> 2.5 <input type="checkbox"/> 3.0 <input type="checkbox"/> > 3	
STREAM GRADIENT ESTIMATE <input type="checkbox"/> Flat (0.2 m/100 m) <input type="checkbox"/> Flat to Moderate <input type="checkbox"/> Moderate to Steep <input checked="" type="checkbox"/> Steep to Very Steep			

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):
 QHEI Name: Distance from Evaluated Stream:
 QHEI Name: Distance from Evaluated Stream:

MAPING 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: Chy

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: unknown Quantity: ??
 Photograph Information:
 Evaluated 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 region representative of the stream? (Y/N): Y If not, please explain:

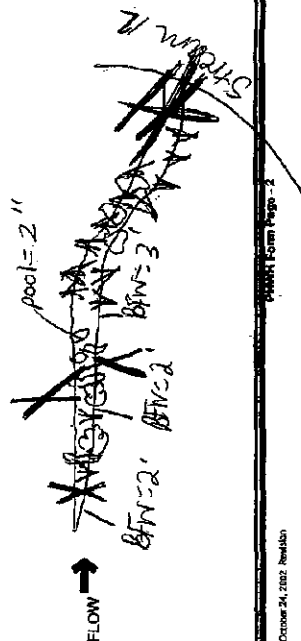
Additional comments/description of pollution impacts:

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 attached from the Primary Headwater Habitat Assessment Manual)
 Fish Observed? (Y/N): N Voucher? (Y/N): N Voucher? (Y/N):
 Frog or Toadlets Observed? (Y/N): N Voucher? (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 III

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

62

SITE NAME/LOCATION Amur SITE NUMBER 515 RIVER BASIN mi2
 LENGTH OF STREAM REACH (ft) 200 LAT. _____ LONG. _____ RIVER CODE _____
 DATE 12/3/04 SCORER Benn COMMENTS _____

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

STREAM CHANNEL

NAME NATURAL CHANNEL ☐ RECOVERED ☐ NO RECOVERY ☐ RECOVERING ☐ RECOVERED ☐ RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY the predominant substrate TYPE boxes (Max of 3). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input checked="" type="checkbox"/> GRAVEL	20%	<input checked="" type="checkbox"/> SILT/CLAY	20%
<input checked="" type="checkbox"/> SAND	20%	<input type="checkbox"/> BEDROCK	0%
<input checked="" type="checkbox"/> COBBLE	10%	<input type="checkbox"/> ORGANIC	0%
<input checked="" type="checkbox"/> MUD	30%	<input type="checkbox"/> OTHER	0%

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> SILT/CLAY	0%	<input type="checkbox"/> BEDROCK	0%
<input type="checkbox"/> GRAVEL	0%	<input type="checkbox"/> ORGANIC	0%
<input type="checkbox"/> SAND	0%	<input type="checkbox"/> OTHER	0%
<input type="checkbox"/> COBBLE	0%	<input type="checkbox"/> MUD	0%

Total of Percentages of

Bd: Slabs Boulder Cobble Bedrock 30%

(A) 23

(B) 5

SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

2. Maximum Pool Depth (Measure the maximum pool depth within the 51 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm waterfalls). (Check ONLY one box)

<input type="checkbox"/> > 4.0 m (13' 10") pool	<input type="checkbox"/> 1.0 m (3' 3") pool
<input type="checkbox"/> 3.0 m (9' 8") pool	<input type="checkbox"/> 0.5 m (1' 6") pool
<input type="checkbox"/> 2.0 m (6' 6") pool	<input type="checkbox"/> NO WATER OR BRUSH CHANNEL (0 pts)
<input type="checkbox"/> 1.0 m (3' 3") pool	

Pool Depth
Max = 30

15

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

54

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements)

<input checked="" type="checkbox"/> > 4.0 m (13' 10") pool	<input type="checkbox"/> 1.0 m (3' 3") pool
<input type="checkbox"/> 3.0 m (9' 8") pool	<input type="checkbox"/> 0.5 m (1' 6") pool
<input type="checkbox"/> 2.0 m (6' 6") pool	<input type="checkbox"/> NO WATER OR BRUSH CHANNEL (0 pts)
<input type="checkbox"/> 1.0 m (3' 3") pool	

(Check ONLY one box)

10 m (32' 8")

COMMENTS

AVERAGE BANKFULL WIDTH (meters):

7.5

RIPARIAN ZONE AND FLOODPLAIN QUALITY (This information must also be completed)

FLOODPLAIN QUALITY

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

COMMENTS

FLOW REGIME (1/1 Time or Evaluation) (Check ONLY one box)

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

COMMENTS

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

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

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 m/100 ft) ☐ Flat to Moderate ☒ Moderate (1 m/100 ft) ☐ Moderate to Severe ☐ Severe (1.5 m/100 ft)

October 24, 2002 Revised

PHWH Form Page - 1

[illegible]

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)

☐ VWH 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 Sheet Order: _____

County: MASS Township / City: _____

MISCELLANEOUS

Base Flow Conditions? (Y/N): N 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 (Include 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): N If not, please explain: _____

Additional comments (description of pollution impacts): _____

BIOICITY EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collection 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): _____ Solenostomus Observed? (Y/N): N Voucher? (Y/N): _____

Frogs or Toads Observed? (Y/N): N Voucher? (Y/N): _____ Aquatic Invertebrates Observed? (Y/N): N Voucher? (Y/N): _____

Comments Regarding Biology: _____

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

nature forest

↑
FLOW

$$BF_w = 41$$

3' Mature Forest

October 24, 2002 Revision

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): **62**

SITE NAME/LOCATION: Chico III
 SITE NUMBER: 521 RIVER BASIN: 2
 LENGTH OF STREAM REACH (ft): 200 LAT: 41° 10' RIVER CODE: 100
 DATE: 10/10/01 SCORER: DEM COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions
 SUBSTRATE METRICS: ☒ Fine / ☒ Medium / ☒ Coarse / ☒ Bedrock / ☒ Gravel / ☒ Sand / ☒ Artificial (3 pts)
 WOOD DEBRIS: ☒ None / ☒ Small / ☒ Medium / ☒ Large / ☒ Heavy (3 pts)

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	PERCENT	PERCENT
SLUG SLABS (16 pts)	0%	0%	0%
BOULDER CASCADING (16 pts)	0%	0%	0%
BECKROCK SUBSTRATE (16 pts)	0%	0%	0%
POBBLE (16 pts)	100%	100%	100%
GRAVEL (16 pts)	0%	0%	0%
SAND (16 pts)	0%	0%	0%
ARTIFICIAL (3 pts)	0%	0%	0%

Total of Percentages of Bdr Slabs, Boulder, Cobble, Bedrock: **40%** (A) **21** (B) **61**

2. MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 57 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):
 0-10 cm (16 pts) ☒ 10-20 cm (16 pts) ☒ 20-30 cm (16 pts) ☒ 30-40 cm (16 pts) ☒ 40-50 cm (16 pts) ☒ 50-60 cm (16 pts) ☒ 60-70 cm (16 pts) ☒ 70-80 cm (16 pts) ☒ 80-90 cm (16 pts) ☒ 90-100 cm (16 pts) ☒ NO WATER OR ANCHOR CHANNEL (0 pts) ☒

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box):
 0-10 m (16 pts) ☒ 10-20 m (16 pts) ☒ 20-30 m (16 pts) ☒ 30-40 m (16 pts) ☒ 40-50 m (16 pts) ☒ 50-60 m (16 pts) ☒ 60-70 m (16 pts) ☒ 70-80 m (16 pts) ☒ 80-90 m (16 pts) ☒ 90-100 m (16 pts) ☒ NO WATER OR ANCHOR CHANNEL (0 pts) ☒

COMMENTS: 72m

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

ROW	PER BANK	LEFT	RIGHT	COMMENTS
1	0	0	0	Conservation Tillage
2	0	0	0	Urban or Industrial
3	0	0	0	Open Pasture, Row Crop
4	0	0	0	Mining or Construction

5. FLOW REGIME (At Time of Evaluation) (Check ONLY one box):
 Stream Flowing ☒ Substrate flow with isolated pools (intermittent) ☒ Moist Channel, isolated pools, no flow (intermittent) ☒ Dry channel, no water (Ephemeral) ☒

6. STREAM GRADIENT ESTIMATE (Check ONLY one box):
 Flat (4.5 ft/mile) ☒ Flat to Moderate ☒ Moderate to Severe ☒ Severe (steeper) ☒

7. SNAGGINESS (Number of bends per 60 ft (200 ft) of channel) (Check ONLY one box):
 None ☒ 0.5 ☒ 1.0 ☒ 1.5 ☒ 2.0 ☒ 2.5 ☒ 3.0 ☒ >3 ☒

8. STREAM GRADIENT ESTIMATE (Check ONLY one box):
 Flat (4.5 ft/mile) ☒ Flat to Moderate ☒ Moderate to Severe ☒ Severe (steeper) ☒

ADDITIONAL STREAM INFORMATION (This information must also be completed):

ONE PERFORMED? ☐ Yes ☒ No CHEI Score (If Yes, Attach Completed CHEI Form)

DOWNSTREAM DESIGNATED USE(S)
☐ WHH 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: Muigs Township / City:

MISCELLANEOUS

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

Photograph Information: Y Canopy (% open): 0%

Elevated Turbidity? (Y/N) N (Note lab sample no. or id, and attach results) Lab Number:

Water samples collected for water chemistry? (Y/N) N pH (S.U.) Conductivity (µmhos/cm)

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) If not, please explain:

Is the sampling reach representative of the stream (Y/N) Y

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 Field Assessment Manual.)

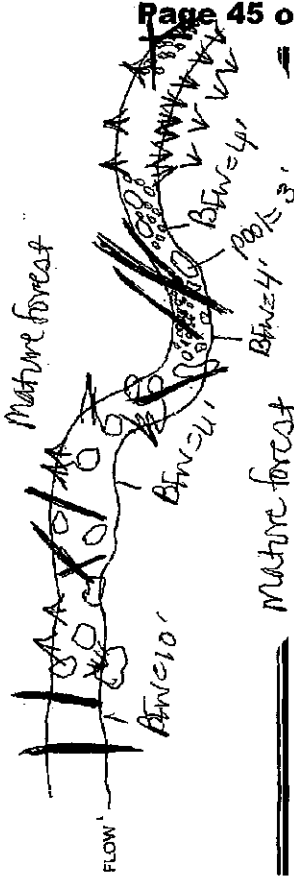
Fish Observed? (Y/N) N Salamanders Observed? (Y/N) Y Voucher? (Y/N) Y Aquatic Invertebrates Observed? (Y/N) Y Voucher? (Y/N) Y

Progs or Tadpoles Observed? (Y/N) Y Voucher? (Y/N) Y Aquatic Invertebrates Observed? (Y/N) Y Voucher? (Y/N) Y

Comments Regarding Biology: 1. quality

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): **35**

Class II

SITE NAME/LOCATION: hmp SITE NUMBER: 525 RIVER BASIN: 200 DRAINAGE AREA (sq mi): 1.1
LENGTH OF STREAM REACH (ft): 200 LAT: 41° 12' N LONG: 82° 41' W RIVER CODE: 1
DATE: 8/24/12 SCORER: 1570 COMMENTS:

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

STREAM CONDITION: Good Very Good Excellent Very Poor Poor Fair Very Fair Very Excellent Very Good Excellent Very Poor Poor Fair Very Fair Very Excellent

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 type found (Max of 6). Final metric score is sum of boxes A & B.)		HHEI Metric Points	
TYPE	PERCENT	PERCENT	POINTS
<input checked="" type="checkbox"/> SOLID SLABS (15 pts)	50%	100%	20
<input checked="" type="checkbox"/> GRAVEL (15 pts)	50%		20
<input checked="" type="checkbox"/> SAND (15 pts)	50%		20
<input checked="" type="checkbox"/> COBBLE (15 pts)	50%		20
<input checked="" type="checkbox"/> BEDROCK (15 pts)	50%		20
<input checked="" type="checkbox"/> OTHER (15 pts)	50%		20
Total of Percentage of Substrate: <u>250%</u>		A + B	
SCORE OF TWO MOST PREDOMINANT SUBSTRATE TYPES: <u>250%</u> (A) <u>15</u> (B) <u>5</u>		TOTAL NUMBER OF SUBSTRATE TYPES: <u>5</u>	

1. 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 cm (12 in) ☐ 30-60 cm (12-24 in) ☐ 60-90 cm (24-36 in) ☐ 90-120 cm (36-48 in) ☐ 120-150 cm (48-60 in) ☐ > 150 cm (60 in)

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 cm (12 in) ☐ 30-60 cm (12-24 in) ☐ 60-90 cm (24-36 in) ☐ 90-120 cm (36-48 in) ☐ 120-150 cm (48-60 in) ☐ > 150 cm (60 in)

3. BANK FULL WIDTH (Measured as the average of 5-4 measurements). (Check ONLY one box):
☐ < 30 cm (12 in) ☐ 30-60 cm (12-24 in) ☐ 60-90 cm (24-36 in) ☐ 90-120 cm (36-48 in) ☐ 120-150 cm (48-60 in) ☐ > 150 cm (60 in)

4. AVERAGE BANK-FULL WIDTH (meters): 4

This information must also be completed

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

QUALITY	SCORE
Most Predominant per Bank	L R
Native Forest, Wetland	L R
Native Forest, Shrub or Oak	L R
Field	L R
Residential, Park, New Field	L R
Fenced Pasture	L R
Mining or Construction	L R

2. FLOW REGIME (N Time of Evaluation) (Check ONLY one box):
☐ Stream Flowing ☐ Most Channel, isolated pools, no flow (intermittent)
☐ Subsurface flow with isolated pools (intermittent) ☐ Dry channel, no water (ephemeral)

3. SINUOSITY (Number of bends per 61 m (200 ft) of channel). (Check ONLY one box):
☐ None ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ > 3

4. STREAM GRADIENT ESTIMATE
☐ Flat (4.5 m/ft) ☐ Flat to Moderate ☐ Moderate to Severe ☐ Severe (no river n)

ADDITIONAL STREAM INFORMATION (This information must also be completed):

QHEI PERFORMED? ☐ Yes ☒ No QHEI Score: 1570 (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

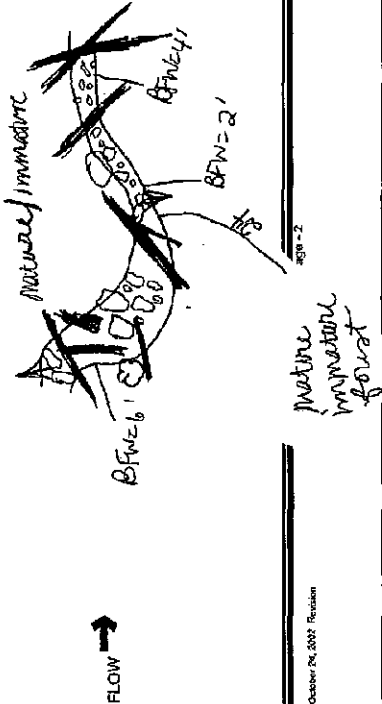
Base Flow Condition? (Y/N): Y Date of last precipitation: Unknown Canopy: 7
 Photograph Information: Y Canopy (% open): 15%
 Elevated Turbidity? (Y/N): N (Note lab sample no. or ID and attach results) Lab Number:
 Were samples collected for water chemistry? (Y/N): N Dissolved Oxygen (mg/l): pH (S.U.): Conductivity (umhos/cm):
 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:

BIOLOGIC 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): N Salamanders Observed? (Y/N): N Voucher? (Y/N): N
 Frogs or Toads Observed? (Y/N): N Voucher? (Y/N): N Aquatic Invertebrates Observed? (Y/N): N Voucher? (Y/N): 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

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3): **71**

SITE NAME/LOCATION: hmp SITE NUMBER: 327 RIVER BASIN: 200 DRAINAGE AREA (sq mi): 4.1
 LENGTH OF STREAM REACH (ft): 200 LAT. 41° 00' N LONG. 82° 00' W RIVER CODE 200 RIVER MILE 1.0
 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: ☒ ONE/NO CHANNEL ☐ DISCOVERED ☐ RECOVERED ☐ RECOVERING ☐ RECOVERED OR RECOVERINGMODIFICATIONS:

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.

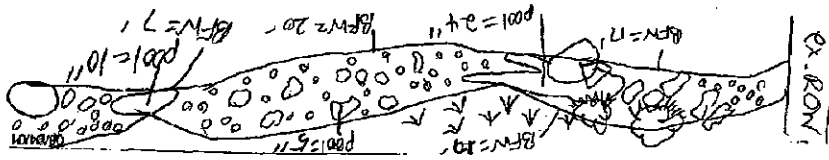
TYPE	PERCENT	PERCENT	PERCENT
Boulder (64-65 mm)	0	0	0
Cobble (32-63 mm)	0	0	0
Gravel (16-31 mm)	0	0	0
Sand (4-15 mm)	0	0	0
Mud (less than 4 mm)	0	0	0
Other (Specify)	0	0	0
Substrate (Max of 40)	21	21	21

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 local culverts or storm water pipes). (Check ONLY one box):

0-30 centimeters (12 inches) ☐ 31-60 centimeters (12-24 inches) ☐ 61-90 centimeters (24-36 inches) ☐ 91-120 centimeters (36-48 inches) ☐ 121-150 centimeters (48-60 inches) ☐ 151-180 centimeters (60-72 inches) ☐ 181-210 centimeters (72-84 inches) ☐ 211-240 centimeters (84-96 inches) ☐ 241-270 centimeters (96-108 inches) ☐ 271-300 centimeters (108-120 inches) ☐ 301-330 centimeters (120-132 inches) ☐ 331-360 centimeters (132-144 inches) ☐ 361-390 centimeters (144-156 inches) ☐ 391-420 centimeters (156-168 inches) ☐ 421-450 centimeters (168-180 inches) ☐ 451-480 centimeters (180-192 inches) ☐ 481-510 centimeters (192-204 inches) ☐ 511-540 centimeters (204-216 inches) ☐ 541-570 centimeters (216-228 inches) ☐ 571-600 centimeters (228-240 inches) ☐ 601-630 centimeters (240-252 inches) ☐ 631-660 centimeters (252-264 inches) ☐ 661-690 centimeters (264-276 inches) ☐ 691-720 centimeters (276-288 inches) ☐ 721-750 centimeters (288-300 inches) ☐ 751-780 centimeters (300-312 inches) ☐ 781-810 centimeters (312-324 inches) ☐ 811-840 centimeters (324-336 inches) ☐ 841-870 centimeters (336-348 inches) ☐ 871-900 centimeters (348-360 inches) ☐ 901-930 centimeters (360-372 inches) ☐ 931-960 centimeters (372-384 inches) ☐ 961-990 centimeters (384-396 inches) ☐ 991-1020 centimeters (396-408 inches) ☐ 1021-1050 centimeters (408-420 inches) ☐ 1051-1080 centimeters (420-432 inches) ☐ 1081-1110 centimeters (432-444 inches) ☐ 1111-1140 centimeters (444-456 inches) ☐ 1141-1170 centimeters (456-468 inches) ☐ 1171-1200 centimeters (468-480 inches) ☐ 1201-1230 centimeters (480-492 inches) ☐ 1231-1260 centimeters (492-504 inches) ☐ 1261-1290 centimeters (504-516 inches) ☐ 1291-1320 centimeters (516-528 inches) ☐ 1321-1350 centimeters (528-540 inches) ☐ 1351-1380 centimeters (540-552 inches) ☐ 1381-1410 centimeters (552-564 inches) ☐ 1411-1440 centimeters (564-576 inches) ☐ 1441-1470 centimeters (576-588 inches) ☐ 1471-1500 centimeters (588-600 inches) ☐ 1501-1530 centimeters (600-612 inches) ☐ 1531-1560 centimeters (612-624 inches) ☐ 1561-1590 centimeters (624-636 inches) ☐ 1591-1620 centimeters (636-648 inches) ☐ 1621-1650 centimeters (648-660 inches) ☐ 1651-1680 centimeters (660-672 inches) ☐ 1681-1710 centimeters (672-684 inches) ☐ 1711-1740 centimeters (684-696 inches) ☐ 1741-1770 centimeters (696-708 inches) ☐ 1771-1800 centimeters (708-720 inches) ☐ 1801-1830 centimeters (720-732 inches) ☐ 1831-1860 centimeters (732-744 inches) ☐ 1861-1890 centimeters (744-756 inches) ☐ 1891-1920 centimeters (756-768 inches) ☐ 1921-1950 centimeters (768-780 inches) ☐ 1951-1980 centimeters (780-792 inches) ☐ 1981-2010 centimeters (792-804 inches) ☐ 2011-2040 centimeters (804-816 inches) ☐ 2041-2070 centimeters (816-828 inches) ☐ 2071-2100 centimeters (828-840 inches) ☐ 2101-2130 centimeters (840-852 inches) ☐ 2131-2160 centimeters (852-864 inches) ☐ 2161-2190 centimeters (864-876 inches) ☐ 2191-2220 centimeters (876-888 inches) ☐ 2221-2250 centimeters (888-900 inches) ☐ 2251-2280 centimeters (900-912 inches) ☐ 2281-2310 centimeters (912-924 inches) ☐ 2311-2340 centimeters (924-936 inches) ☐ 2341-2370 centimeters (936-948 inches) ☐ 2371-2400 centimeters (948-960 inches) ☐ 2401-2430 centimeters (960-972 inches) ☐ 2431-2460 centimeters (972-984 inches) ☐ 2461-2490 centimeters (984-996 inches) ☐ 2491-2520 centimeters (996-1008 inches) ☐ 2521-2550 centimeters (1008-1020 inches) ☐ 2551-2580 centimeters (1020-1032 inches) ☐ 2581-2610 centimeters (1032-1044 inches) ☐ 2611-2640 centimeters (1044-1056 inches) ☐ 2641-2670 centimeters (1056-1068 inches) ☐ 2671-2700 centimeters (1068-1080 inches) ☐ 2701-2730 centimeters (1080-1092 inches) ☐ 2731-2760 centimeters (1092-1104 inches) ☐ 2761-2790 centimeters (1104-1116 inches) ☐ 2791-2820 centimeters (1116-1128 inches) ☐ 2821-2850 centimeters (1128-1140 inches) ☐ 2851-2880 centimeters (1140-1152 inches) ☐ 2881-2910 centimeters (1152-1164 inches) ☐ 2911-2940 centimeters (1164-1176 inches) ☐ 2941-2970 centimeters (1176-1188 inches) ☐ 2971-3000 centimeters (1188-1200 inches) ☐ 3001-3030 centimeters (1200-1212 inches) ☐ 3031-3060 centimeters (1212-1224 inches) ☐ 3061-3090 centimeters (1224-1236 inches) ☐ 3091-3120 centimeters (1236-1248 inches) ☐ 3121-3150 centimeters (1248-1260 inches) ☐ 3151-3180 centimeters (1260-1272 inches) ☐ 3181-3210 centimeters (1272-1284 inches) ☐ 3211-3240 centimeters (1284-1296 inches) ☐ 3241-3270 centimeters (1296-1308 inches) ☐ 3271-3300 centimeters (1308-1320 inches) ☐ 3301-3330 centimeters (1320-1332 inches) ☐ 3331-3360 centimeters (1332-1344 inches) ☐ 3361-3390 centimeters (1344-1356 inches) ☐ 3391-3420 centimeters (1356-1368 inches) ☐ 3421-3450 centimeters (1368-1380 inches) ☐ 3451-3480 centimeters (1380-1392 inches) ☐ 3481-3510 centimeters (1392-1404 inches) ☐ 3511-3540 centimeters (1404-1416 inches) ☐ 3541-3570 centimeters (1416-1428 inches) ☐ 3571-3600 centimeters (1428-1440 inches) ☐ 3601-3630 centimeters (1440-1452 inches) ☐ 3631-3660 centimeters (1452-1464 inches) ☐ 3661-3690 centimeters (1464-1476 inches) ☐ 3691-3720 centimeters (1476-1488 inches) ☐ 3721-3750 centimeters (1488-1500 inches) ☐ 3751-3780 centimeters (1500-1512 inches) ☐ 3781-3810 centimeters (1512-1524 inches) ☐ 3811-3840 centimeters (1524-1536 inches) ☐ 3841-3870 centimeters (1536-1548 inches) ☐ 3871-3900 centimeters (1548-1560 inches) ☐ 3901-3930 centimeters (1560-1572 inches) ☐ 3931-3960 centimeters (1572-1584 inches) ☐ 3961-3990 centimeters (1584-1596 inches) ☐ 3991-4020 centimeters (1596-1608 inches) ☐ 4021-4050 centimeters (1608-1620 inches) ☐ 4051-4080 centimeters (1620-1632 inches) ☐ 4081-4110 centimeters (1632-1644 inches) ☐ 4111-4140 centimeters (1644-1656 inches) ☐ 4141-4170 centimeters (1656-1668 inches) ☐ 4171-4200 centimeters (1668-1680 inches) ☐ 4201-4230 centimeters (1680-1692 inches) ☐ 4231-4260 centimeters (1692-1704 inches) ☐ 4261-4290 centimeters (1704-1716 inches) ☐ 4291-4320 centimeters (1716-1728 inches) ☐ 4321-4350 centimeters (1728-1740 inches) ☐ 4351-4380 centimeters (1740-1752 inches) ☐ 4381-4410 centimeters (1752-1764 inches) ☐ 4411-4440 centimeters (1764-1776 inches) ☐ 4441-4470 centimeters (1776-1788 inches) ☐ 4471-4500 centimeters (1788-1800 inches) ☐ 4501-4530 centimeters (1800-1812 inches) ☐ 4531-4560 centimeters (1812-1824 inches) ☐ 4561-4590 centimeters (1824-1836 inches) ☐ 4591-4620 centimeters (1836-1848 inches) ☐ 4621-4650 centimeters (1848-1860 inches) ☐ 4651-4680 centimeters (1860-1872 inches) ☐ 4681-4710 centimeters (1872-1884 inches) ☐ 4711-4740 centimeters (1884-1896 inches) ☐ 4741-4770 centimeters (1896-1908 inches) ☐ 4771-4800 centimeters (1908-1920 inches) ☐ 4801-4830 centimeters (1920-1932 inches) ☐ 4831-4860 centimeters (1932-1944 inches) ☐ 4861-4890 centimeters (1944-1956 inches) ☐ 4891-4920 centimeters (1956-1968 inches) ☐ 4921-4950 centimeters (1968-1980 inches) ☐ 4951-4980 centimeters (1980-1992 inches) ☐ 4981-5010 centimeters (1992-2004 inches) ☐ 5011-5040 centimeters (2004-2016 inches) ☐ 5041-5070 centimeters (2016-2028 inches) ☐ 5071-5100 centimeters (2028-2040 inches) ☐ 5101-5130 centimeters (2040-2052 inches) ☐ 5131-5160 centimeters (2052-2064 inches) ☐ 5161-5190 centimeters (2064-2076 inches) ☐ 5191-5220 centimeters (2076-2088 inches) ☐ 5221-5250 centimeters (2088-2100 inches) ☐ 5251-5280 centimeters (2100-2112 inches) ☐ 5281-5310 centimeters (2112-2124 inches) ☐ 5311-5340 centimeters (2124-2136 inches) ☐ 5341-5370 centimeters (2136-2148 inches) ☐ 5371-5400 centimeters (2148-2160 inches) ☐ 5401-5430 centimeters (2160-2172 inches) ☐ 5431-5460 centimeters (2172-2184 inches) ☐ 5461-5490 centimeters (2184-2196 inches) ☐ 5491-5520 centimeters (2196-2208 inches) ☐ 5521-5550 centimeters (2208-2220 inches) ☐ 5551-5580 centimeters (2220-2232 inches) ☐ 5581-5610 centimeters (2232-2244 inches) ☐ 5611-5640 centimeters (2244-2256 inches) ☐ 5641-5670 centimeters (2256-2268 inches) ☐ 5671-5700 centimeters (2268-2280 inches) ☐ 5701-5730 centimeters (2280-2292 inches) ☐ 5731-5760 centimeters (2292-2304 inches) ☐ 5761-5790 centimeters (2304-2316 inches) ☐ 5791-5820 centimeters (2316-2328 inches) ☐ 5821-5850 centimeters (2328-2340 inches) ☐ 5851-5880 centimeters (2340-2352 inches) ☐ 5881-5910 centimeters (2352-2364 inches) ☐ 5911-5940 centimeters (2364-2376 inches) ☐ 5941-5970 centimeters (2376-2388 inches) ☐ 5971-6000 centimeters (2388-2400 inches) ☐ 6001-6030 centimeters (2400-2412 inches) ☐ 6031-6060 centimeters (2412-2424 inches) ☐ 6061-6090 centimeters (2424-2436 inches) ☐ 6091-6120 centimeters (2436-2448 inches) ☐ 6121-6150 centimeters (2448-2460 inches) ☐ 6151-6180 centimeters (2460-2472 inches) ☐ 6181-6210 centimeters (2472-2484 inches) ☐ 6211-6240 centimeters (2484-2496 inches) ☐ 6241-6270 centimeters (2496-2508 inches) ☐ 6271-6300 centimeters (2508-2520 inches) ☐ 6301-6330 centimeters (2520-2532 inches) ☐ 6331-6360 centimeters (2532-2544 inches) ☐ 6361-6390 centimeters (2544-2556 inches) ☐ 6391-6420 centimeters (2556-2568 inches) ☐ 6421-6450 centimeters (2568-2580 inches) ☐ 6451-6480 centimeters (2580-2592 inches) ☐ 6481-6510 centimeters (2592-2604 inches) ☐ 6511-6540 centimeters (2604-2616 inches) ☐ 6541-6570 centimeters (2616-2628 inches) ☐ 6571-6600 centimeters (2628-2640 inches) ☐ 6601-6630 centimeters (2640-2652 inches) ☐ 6631-6660 centimeters (2652-2664 inches) ☐ 6661-6690 centimeters (2664-2676 inches) ☐ 6691-6720 centimeters (2676-2688 inches) ☐ 6721-6750 centimeters (2688-2700 inches) ☐ 6751-6780 centimeters (2700-2712 inches) ☐ 6781-6810 centimeters (2712-2724 inches) ☐ 6811-6840 centimeters (2724-2736 inches) ☐ 6841-6870 centimeters (2736-2748 inches) ☐ 6871-6900 centimeters (2748-2760 inches) ☐ 6901-6930 centimeters (2760-2772 inches) ☐ 6931-6960 centimeters (2772-2784 inches) ☐ 6961-6990 centimeters (2784-2796 inches) ☐ 6991-7020 centimeters (2796-2808 inches) ☐ 7021-7050 centimeters (2808-2820 inches) ☐ 7051-7080 centimeters (2820-2832 inches) ☐ 7081-7110 centimeters (2832-2844 inches) ☐ 7111-7140 centimeters (2844-2856 inches) ☐ 7141-7170 centimeters (2856-2868 inches) ☐ 7171-7200 centimeters (2868-2880 inches) ☐ 7201-7230 centimeters (2880-2892 inches) ☐ 7231-7260 centimeters (2892-2904 inches) ☐ 7261-7290 centimeters (2904-2916 inches) ☐ 7291-7320 centimeters (2916-2928 inches) ☐ 7321-7350 centimeters (2928-2940 inches) ☐ 7351-7380 centimeters (2940-2952 inches) ☐ 7381-7410 centimeters (2952-2964 inches) ☐ 7411-7440 centimeters (2964-2976 inches) ☐ 7441-7470 centimeters (2976-2988 inches) ☐ 7471-7500 centimeters (2988-3000 inches) ☐ 7501-7530 centimeters (3000-3012 inches) ☐ 7531-7560 centimeters (3012-3024 inches) ☐ 7561-7590 centimeters (3024-3036 inches) ☐ 7591-7620 centimeters (3036-3048 inches) ☐ 7621-7650 centimeters (3048-3060 inches) ☐ 7651-7680 centimeters (3060-3072 inches) ☐ 7681-7710 centimeters (3072-3084 inches) ☐ 7711-7740 centimeters (3084-3096 inches) ☐ 7741-7770 centimeters (3096-3108 inches) ☐ 7771-7800 centimeters (3108-3120 inches) ☐ 7801-7830 centimeters (3120-3132 inches) ☐ 7831-7860 centimeters (3132-3144 inches) ☐ 7861-7890 centimeters (3144-3156 inches) ☐ 7891-7920 centimeters (3156-3168 inches) ☐ 7921-7950 centimeters (3168-3180 inches) ☐ 7951-7980 centimeters (3180-3192 inches) ☐ 7981-8010 centimeters (3192-3204 inches) ☐ 8011-8040 centimeters (3204-3216 inches) ☐ 8041-8070 centimeters (3216-3228 inches) ☐ 8071-8100 centimeters (3228-3240 inches) ☐ 8101-8130 centimeters (3240-3252 inches) ☐ 8131-8160 centimeters (3252-3264 inches) ☐ 8161-8190 centimeters (3264-3276 inches) ☐ 8191-8220 centimeters (3276-3288 inches) ☐ 8221-8250 centimeters (3288-3300 inches) ☐ 8251-8280 centimeters (3300-3312 inches) ☐ 8281-8310 centimeters (3312-3324 inches) ☐ 8311-8340 centimeters (3324-3336 inches) ☐ 8341-8370 centimeters (3336-3348 inches) ☐ 8371-8400 centimeters (3348-3360 inches) ☐ 8401-8430 centimeters (3360-3372 inches) ☐ 8431-8460 centimeters (3372-3384 inches) ☐ 8461-8490 centimeters (3384-3396 inches) ☐ 8491-8520 centimeters (3396-3408 inches) ☐ 8521-8550 centimeters (3408-3420 inches) ☐ 8551-8580 centimeters (3420-3432 inches) ☐ 8581-8610 centimeters (3432-3444 inches) ☐ 8611-8640 centimeters (3444-3456 inches) ☐ 8641-8670 centimeters (3456-3468 inches) ☐ 8671-8700 centimeters (3468-3480 inches) ☐ 8701-8730 centimeters (3480-3492 inches) ☐ 8731-8760 centimeters (3492-3504 inches) ☐ 8761-8790 centimeters (3504-3516 inches) ☐ 8791-8820 centimeters (3516-3528 inches) ☐ 8821-8850 centimeters (3528-3540 inches) ☐ 8851-8880 centimeters (3540-3552 inches) ☐ 8881-8910 centimeters (3552-3564 inches) ☐ 8911-8940 centimeters (3564-3576 inches) ☐ 8941-8970 centimeters (3576-3588 inches) ☐ 8971-9000 centimeters (3588-3600 inches) ☐ 9001-9030 centimeters (3600-3612 inches) ☐ 9031-9060 centimeters (3612-3624 inches) ☐ 9061-9090 centimeters (3624-3636 inches) ☐ 9091-9120 centimeters (3636-3648 inches) ☐ 9121-9150 centimeters (3648-3660 inches) ☐ 9151-9180 centimeters (3660-3672 inches) ☐ 9181-9210 centimeters (3672-3684 inches) ☐ 9211-9240 centimeters (3684-3696 inches) ☐ 9241-9270 centimeters (3696-3708 inches) ☐ 9271-9300 centimeters (3708-3720 inches) ☐ 9301-9330 centimeters (3720-3732 inches) ☐ 9331-9360 centimeters (3732-3744 inches) ☐ 9361-9390 centimeters (3744-3756 inches) ☐ 9391-9420 centimeters (3756-3768 inches) ☐ 9421-9450 centimeters (3768-3780 inches) ☐ 9451-9480 centimeters (3780-3792 inches) ☐ 9481-9510 centimeters (3792-3804 inches) ☐ 9511-9540 centimeters (3804-3816 inches) ☐ 9541-9570 centimeters (3816-3828 inches) ☐ 9571-9600 centimeters (3828-3840 inches) ☐ 9601-9630 centimeters (3840-3852 inches) ☐ 9631-9660 centimeters (3852-3864 inches) ☐ 9661-9690 centimeters (3864-3876 inches) ☐ 9691-9720 centimeters (3876-3888 inches) ☐ 9721-9750 centimeters (3888-3900 inches) ☐ 9751-9780 centimeters (3900-3912 inches) ☐ 9781-9810 centimeters (3912-3924 inches) ☐ 9811-9840 centimeters (3924-3936 inches) ☐ 9841-9870 centimeters (3936-3948 inches) ☐ 9871-9900 centimeters (3948-3960 inches) ☐ 9901-9930 centimeters (3960-3972 inches) ☐ 9931-9960 centimeters (3972-3984 inches) ☐ 9961-9990 centimeters (3984-3996 inches) ☐ 9991-10020 centimeters (3996-4008 inches) ☐ 10021-10050 centimeters (4008-4020 inches) ☐ 10051-10080 centimeters (4020-4032 inches) ☐ 10081-10110 centimeters (4032-4044 inches) ☐ 10111-10140 centimeters (4044-4056 inches) ☐ 10141-10170 centimeters (4056-4068 inches) ☐ 10171-10200 centimeters (4068-4080 inches) ☐ 10201-10230 centimeters (4080-4092 inches) ☐ 10231-10260 centimeters (4092-4104 inches) ☐ 10261-10290 centimeters (4104-4116 inches) ☐ 10291-10320 centimeters (4116-4128 inches) ☐ 10321-10350 centimeters (4128-4140 inches) ☐ 10351-10380 centimeters (4140-4152 inches) ☐ 10381-10410 centimeters (4152-4164 inches) ☐ 10411-10440 centimeters (4164-4176 inches) ☐ 10441-10470 centimeters (4176-4188 inches) ☐ 10471-10500 centimeters (4188-4200 inches) ☐ 10501-10530 centimeters (4200-4212 inches) ☐ 10531-10560 centimeters (4212-4224 inches) ☐ 10561-10590 centimeters (4224-4236 inches) ☐ 10591-10620 centimeters (4236-4248 inches) ☐ 10621-10650 centimeters (4248-4260 inches) ☐ 10651-10680 centimeters (4260-4272 inches) ☐ 10681-10710 centimeters (4272-4284 inches) ☐ 10711-10740 centimeters (4284-4296 inches) ☐ 10741-10770 centimeters (4296-4308 inches) ☐ 10771-10800 centimeters (4308-4320 inches) ☐ 10801-10830 centimeters (4320-4332 inches) ☐ 10831-10860 centimeters (4332-4344 inches) ☐ 10861-10890 centimeters (4344-4356 inches) ☐ 10891-10920 centimeters (4356-4368 inches) ☐ 10921-10950 centimeters (4368-4380 inches) ☐ 10951-10980 centimeters (4380-4392 inches) ☐ 10981-11010 centimeters (4392-4404 inches) ☐ 11011-11040 centimeters (4404-4416 inches) ☐ 11041-11070 centimeters (4416-4428 inches) ☐ 11071-11100 centimeters (4428-4440 inches) ☐ 11101-11130 centimeters (4440-4452 inches) ☐ 11131-11160 centimeters (4452-4464 inches) ☐ 11161-11190 centimeters (4464-4476 inches) ☐ 11191-11220 centimeters (4476-4488 inches) ☐ 11221-11250 centimeters (4488-4500 inches) ☐ 11251-11280 centimeters (4500-4512 inches) ☐ 11281-11310 centimeters (4512-4524 inches) ☐ 11311-11340 centimeters (4524-4536 inches) ☐ 11341-11370 centimeters (4536-4548 inches) ☐ 11371-11400 centimeters (4548-4560 inches) ☐ 11401-11430 centimeters (4560-4572 inches) ☐ 11431-11460 centimeters (4572-4584 inches) ☐ 11461-11490 centimeters (4584-4596 inches) ☐ 11491-11520 centimeters (4596-4608 inches)

—Serpent + northern two-lined salamanders (larvae) idled in stream.

Instructions for scoring the alternate cover metrics: Each cover type should receive a score between 0 and 3. Where a cover type is present in very small amounts or if more common of highest quality, a 1-cover type is present in moderate amounts, but not of highest quality or in small amounts of highest quality, a 2-cover type is present in moderate or greater amounts. Examples of highest quality include large diameter logs that are stable, well developed in deepwater, or deep, well-developed, functional pools. Instructions for scoring the alternate cover metrics: Each cover type should receive a score between 0 and 3. Where a cover type is present in very small amounts or if more common of highest quality, a 1-cover type is present in moderate amounts, but not of highest quality or in small amounts of highest quality, a 2-cover type is present in moderate or greater amounts. Examples of highest quality include large diameter logs that are stable, well developed in deepwater, or deep, well-developed, functional pools.



How

Is Sampling Reach Representative of the Stream (Y/N) X If Not, Explain: _____

Major Suspected Sources or Impacts (Check All That Apply): _____

None ☐ Industrial ☐ WWTP ☐ Agricultural ☐ Livestock ☐ Subdivision ☐ Construction ☐ Urban Runoff ☐ CSCs ☐ Suburban Impacts ☐ Mining ☐ Channelization ☐ Riparian Removal ☐ Natural ☐ Dams ☐ Other Flow Alteration ☐

Subsurface Rating (1-10) 8		Aesthetic Rating (1-10) 8	
Gradient <input type="checkbox"/> - Low, <input type="checkbox"/> - Moderate, <input type="checkbox"/> - High		Stream Measurements:	
First Sampling Pass	Distance: _____	Water Clarity: _____	Water Stage: _____
Canopy % Open _____	Bankfull Max Floodplain Entrench _____	Bankfull Mean W/D _____	Bankfull Depth _____
Average Width _____	Average Depth _____	Maximum Depth _____	Average Depth _____
Subsurface Rating (1-10) _____	Aesthetic Rating (1-10) _____	Gradient <input type="checkbox"/> - Low, <input type="checkbox"/> - Moderate, <input type="checkbox"/> - High	Stream Measurements:
First Sampling Pass	Distance: _____	Water Clarity: _____	Water Stage: _____
Canopy % Open _____	Bankfull Max Floodplain Entrench _____	Bankfull Mean W/D _____	Bankfull Depth _____
Average Width _____	Average Depth _____	Maximum Depth _____	Average Depth _____
Subsurface Rating (1-10) _____	Aesthetic Rating (1-10) _____	Gradient <input type="checkbox"/> - Low, <input type="checkbox"/> - Moderate, <input type="checkbox"/> - High	Stream Measurements:

Is Sampling Reach Representative of the Stream (Y/N) Y If Not, Explain:

44

River Code: RM Stream: Q 33
 Location: RM 2
 Date: 8/2/06
 Substrate Type: RM 2
 Scores Full Name: 15 RUGBY Affiliation: URS
 SUBSTRATE (Check Only Two Substrate Type Boxes) Estimate % present
 POOL RIFLE SUBSTRATE ORIGIN
 00% 50% Check One (OR 2 & AVERAGE)
 TYPE: POOL RIFLE
☐ GRAVEL (7) ☐ SAND (16) ☐ MUD (11)
☐ COARSE SAND (9) ☐ FINE SAND (10) ☐ SILT (11)
☐ COBBLES (12) ☐ BEDROCK (12) ☐ WETLAND (10)
☐ CHAROPANT (1) ☐ ARTIFICIAL (2)
 NOTE: leave Shales Originating
 From Point Sources
☐ CHUCK (2) ☐ SILT (2) ☐ SANDSTONE (10) EMBEDDED (1) NESS:
☐ RIP/RAIP (0) ☐ LACETRINE (0)
☐ SHALE (1-1)
☐ COAL FINES (1-2)
 NUMBER OF SUBSTRATE TYPES: 8 4 or More (2)
 (High Quality Only, Score 3 or +)
 COMMENTS:

1) INSTREAM COVER. (Give each cover type a score of 0 to 3; see back for instructions) TYPE: <u>Scum Al</u> Thint Occur		AMOUNT: (Check ONLY One or check 2 and AVERAGE) <input type="checkbox"/> < EXTENSIVE 75% (17) <input checked="" type="checkbox"/> < MODERATE 25-75% (11) <input type="checkbox"/> < SPARSE 5-25% (3) <input type="checkbox"/> < NEARLY ABSENT < 5% (1)	
2) CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE.)		MODIFICATIONS/OTHER	
CHANNELS:		<input type="checkbox"/> < SHAGGING <input type="checkbox"/> < IMPOUND <input type="checkbox"/> < HIGH <input type="checkbox"/> < ISLANDS <input checked="" type="checkbox"/> < MODERATE <input type="checkbox"/> < RELOCATION <input type="checkbox"/> < CANYON REMOVAL <input type="checkbox"/> < LEAVED <input type="checkbox"/> < LOW <input type="checkbox"/> < PREDGING <input type="checkbox"/> < ONE SIDE CHANNEL MODIFICATIONS	
SEDIMENT CHANNELIZATION:		<input type="checkbox"/> < RECOVERING [3] <input type="checkbox"/> < RECENT OR NO RECOVERY [1]	
DEVELOPMENT		<input type="checkbox"/> < NON- [6] <input type="checkbox"/> < EXCELLENT [7] < NON- [6] <input checked="" type="checkbox"/> < GOOD [5] <input type="checkbox"/> < FAIR [3] <input type="checkbox"/> < POOR [1]	
MINUSCULY		<input type="checkbox"/> < HIGH [4] <input type="checkbox"/> < MODERATE [3] <input type="checkbox"/> < LOW [2] <input type="checkbox"/> < NON- [1]	
3) BOTHTHANS [1] COMMENTS:		4) AQUATIC MACROPHITES [1] <input type="checkbox"/> < LOSS OR WOODY DEBRIS [1]	
5) POOL/SL: 70 cm [2] <input type="checkbox"/> < BOWTHILLS [1] <input type="checkbox"/> < BOWERS [0]		6) DUCKS, BACAWATERS [1] <input type="checkbox"/> < AQUATIC MACROPHITES [1]	
7) UNDERCUT BANKS [1] 8) OVERHANGING VEGETATION [1] 9) SHALLOWS (R-SLOW WATER) [1]		10) COVER TYPE: Scum Al Thint Occur	

COMMENTS:

RIPARIAN ZONE AND BANK EROSION	check ONE box per bank or check 2 and AVERAGE per bank	Prior Right Looking Downstream?
SEASONAL WIDTH	BANK EROSION	Riparian
R (Per Bank)	R (Per Bank)	
WIDE > 50m [6]	MAJOR/LITTLE	[10]
Moderate 10-50m [3]	□ MODERATE [2]	
NARROW 5-10 m [1]	□ HEAVY/SEVERE [1]	Max 10
VERY NARROW < 5 m [1]		
□ NONE [0]		

FLOOD PLAIN QUALITY (Past 100 Meter RIPARIAN)	L R
R (Most Predominant Per Bank)	
FOREST SWAMP FIELD [2]	□ OPEN INDUSTRIAL TILLAGE [3]
□ SPRING OR OLD FIELD [2]	□ OPEN OR INDUSTRIAL [1]
□ RESIDENTIAL PARK NEW FIELD [1]	□ OPEN PASTURE POWDERED [0]
□ FENCED PASTURE [1]	□ MINING CONSTRUCTION [0]

COMMENTS:

POOL GLIDE AND RIFLE/RUN QUALITY
MORE NOISY

MAX. DEPTH (Check 1 only)
☒ > 1m (0)

POOL WIDTH > RIFLE WIDTH (2)
☒ POOL WIDTH > RIFLE WIDTH (1)
☐ POOL WIDTH < RIFLE W. (0)

POOL VELOCITY (Check All That Apply)
☐ EDGES (1)
☒ TORRENTIAL (1)
☐ FAST (1)
☒ INTERMITTENT (1)
☐ MODERATE (1)
☐ SLOW (1)
☐ VERY FAST (1)

CURRENT VELOCITY (POOL S & RIFLES):
(Check All That Apply)
☐ TORRENTIAL (1)
☒ INTERMITTENT (1)
☐ MODERATE (1)
☐ SLOW (1)
☐ VERY FAST (1)

PROF/ CURRENT
5
MAX 12

[illegible]

EPA 4520
 06/24/01



Primary Headwater Habitat Evaluation Form

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

18.5

SITE NAME/LOCATION 0430-MT-SO2

SITE NUMBER _____ RIVER BASIN _____ DRAINAGE AREA (mi²) _____

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

DATE 4/30/08 SCORER B. O'H COMMENTS _____

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

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

MODIFICATIONS: AREA HAS BEEN LOGGED BUT DOES NOT APPEAR TO HAVE ALTERED STREAM

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
<input type="checkbox"/> BLDG SLABS [16 pts]		<input type="checkbox"/> SILT [3 pt]	
<input checked="" type="checkbox"/> BOULDER (>256 mm) [16 pts]	5	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	10
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input checked="" type="checkbox"/> COBBLE (85-256 mm) [12 pts]	10	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	45
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	15	<input type="checkbox"/> MUCK [0 pts]	
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	15	<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock 15

(A) 7.5

(B) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI
Metric
Points

Substrate
Max = 40

13.5

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]

COMMENTS NO WATER

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 FAIRLY STEEP AND DITCHING INTO FAIR
2.5-3'

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)
☐ Wide >10m
☐ Moderate 5-10m
☒ Narrow <5m
☐ None

FLOODPLAIN QUALITY

- L R (Most Predominant per Bank)
☐ 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 AREA HAS BEEN LOGGED

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: _____ NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____
 County: _____ Township / City: _____

MISCELLANEOUS

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

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 95%

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) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

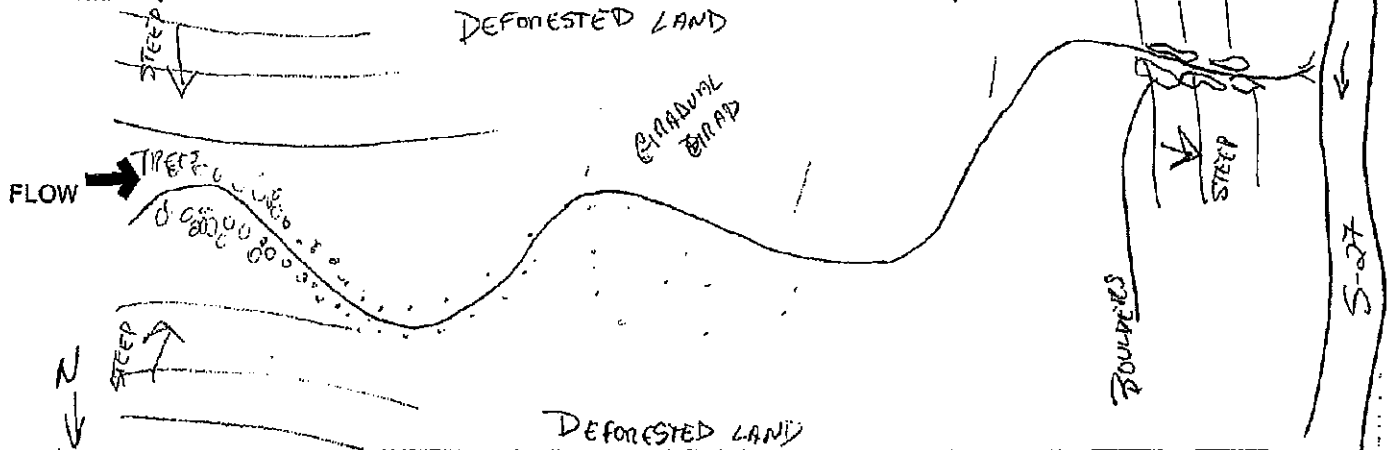
Performed? (Y/N): _____ (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

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





Primary Headwater Habitat Evaluation Form

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

32

SITE NAME/LOCATION 0430-MT S03

SITE NUMBER

RIVER BASIN

DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft)

LAT.

LONG.

RIVER CODE

RIVER MILE

DATE 04/30/08SCORER BEN OTTO

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:

THE SURROUNDING AREA HAS BEEN DEFORESTED / NOT APPEAR TO HAVE ALTERED

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
<input type="checkbox"/> BLDR SLABS [16 pts]		<input type="checkbox"/> SILT [3 pt]	
<input type="checkbox"/> BOULDER (>266 mm) [16 pts]	<u>10</u>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>10</u>
<input type="checkbox"/> BEDROCK [16 pt]	<u>10</u>	<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-266 mm) [12 pts]	<u>30</u>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<u>15</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock 45(A) 21(B) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI
Metric
PointsSubstrate
Max = 4027

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS FAIRLY STEEP RIM

MAXIMUM POOL DEPTH (centimeters):

0Pool Depth
Max = 300

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

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

COMMENTS 3'

AVERAGE BANKFULL WIDTH (meters)

5Bankfull
Width
Max=305

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	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mining or Construction

COMMENTS DEFORESTED AREA

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

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

COMMENTS

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

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

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: 1/21/04 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) _____ 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)

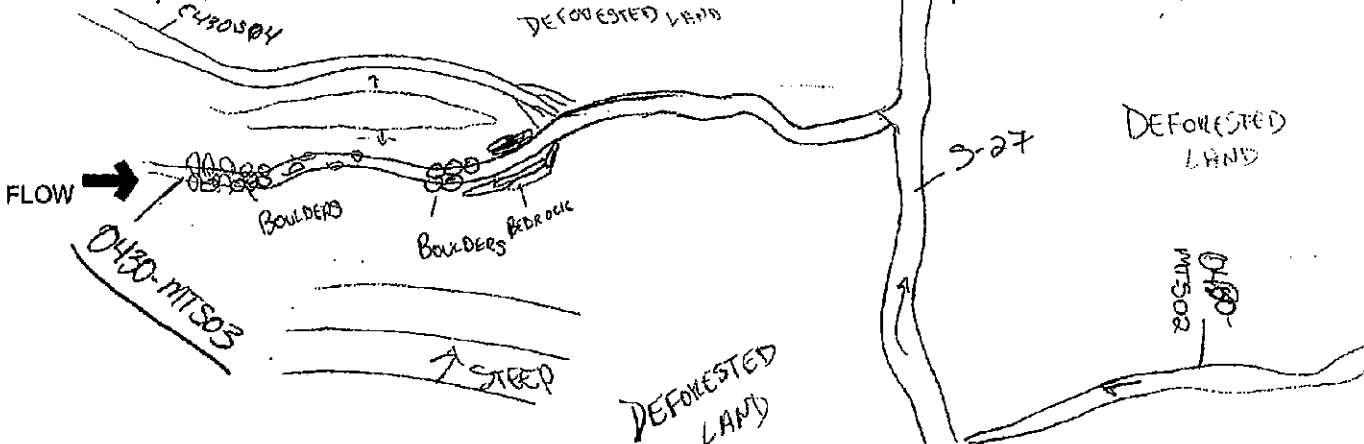
Fish Observed? (Y/N) _____ Voucher? (Y/N) _____ Salamanders Observed? (Y/N) _____ Voucher? (Y/N) _____

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





Primary Headwater Habitat Evaluation Form

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

23

SITE NAME/LOCATION CH-566

SITE NUMBER

RIVER BASIN

DRAINAGE AREA (mi²)

LENGTH OF STREAM REACH (ft)

LAT.

LONG.

RIVER CODE

RIVER MILE

DATE 04/30/08

SCORER B. Orto

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

☐

☐

☐

☐

☐

☐

☐

☐

BLDR SLABS [16 pts]

BOULDER (>256 mm) [16 pts]

BEDROCK [16 pt]

COBBLE (65-256 mm) [12 pts]

GRAVEL (2-64 mm) [9 pts]

SAND (<2 mm) [6 pts]

PERCENT

35

15

5

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

35

TYPE

☐

☒

☐

☐

☐

☐

☐

SILT [3 pt]

LEAF PACK/WOODY DEBRIS [3 pts]

FINE DETRITUS [3 pts]

CLAY or HARDPAN [0 pt]

MUCK [0 pts]

ARTIFICIAL [3 pts]

PERCENT

5

5

35

(A) 12

(B) 6

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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):

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)

HHEI Metric Points

Substrate
Max = 40

18

A + B

Pool Depth
Max = 30

0

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)

☐

☐

☒

☐

☐

☐

Wide >10m

Moderate 5-10m

Narrow <5m

None

FLOODPLAIN QUALITY

L

R

(Most Predominant per Bank)

☒

☒

☐

☐

☐

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)

COMMENTS

☐

☒

Moist Channel, isolated pools, no flow (Intermittent)

Dry channel, no water (Ephemeral)

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

☐

☒

☐

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: UKN Quantity: _____

Photograph Information: _____

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

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) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

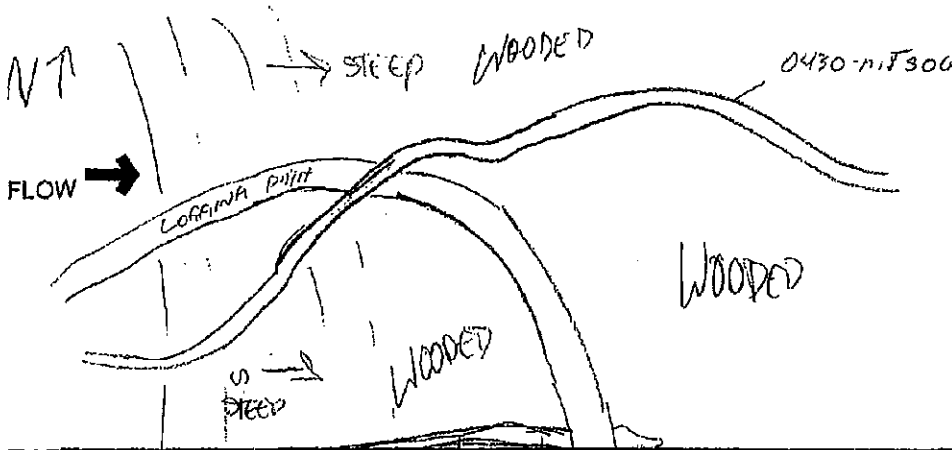
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

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





Primary Headwater Habitat Evaluation Form

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

44

SITE NAME/LOCATION ANP-OH Alternate Transmission Line
 SITE NUMBER 539 RIVER BASIN _____ DRAINAGE AREA (mi²) _____
 LENGTH OF STREAM REACH (ft) _____ LAT. _____ LONG. _____ RIVER CODE _____ RIVER MILE _____
 DATE 2-July-2008 SCORER M. Thumayo 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
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>10</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>5</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>60</u>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>20</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<u>15</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock0

(A)

9

(B)

5HHEI
Metric
PointsSubstrate
Max = 4014

A + B

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

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

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 3025

COMMENTS _____

MAXIMUM POOL DEPTH (centimeters):

6"

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

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

Bankfull
Width
Max=305

COMMENTS _____

AVERAGE BANKFULL WIDTH (meters)

3'

This information must also be completed

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

RIPARIAN WIDTH

<input checked="" type="checkbox"/> L R (Per Bank)	
<input checked="" type="checkbox"/> Wide >10m	
<input type="checkbox"/> Moderate 5-10m	
<input type="checkbox"/> Narrow <5m	
<input type="checkbox"/> None	

COMMENTS _____

FLOODPLAIN QUALITY

<input type="checkbox"/> L R (Most Predominant per Bank)	
<input type="checkbox"/> Mature Forest, Wetland	
<input checked="" type="checkbox"/> Immature Forest, Shrub or Old Field	
<input type="checkbox"/> Residential, Park, New Field	
<input type="checkbox"/> Fenced Pasture	

<input type="checkbox"/> L R	
<input type="checkbox"/> Conservation Tillage	
<input type="checkbox"/> Urban or Industrial	
<input type="checkbox"/> Open Pasture, Row Crop	
<input type="checkbox"/> Mining or Construction	

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

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

COMMENTS _____

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

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

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: Megs Township / City: _____

MISCELLANEOUS

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

Photograph Information: 2 photos

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) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

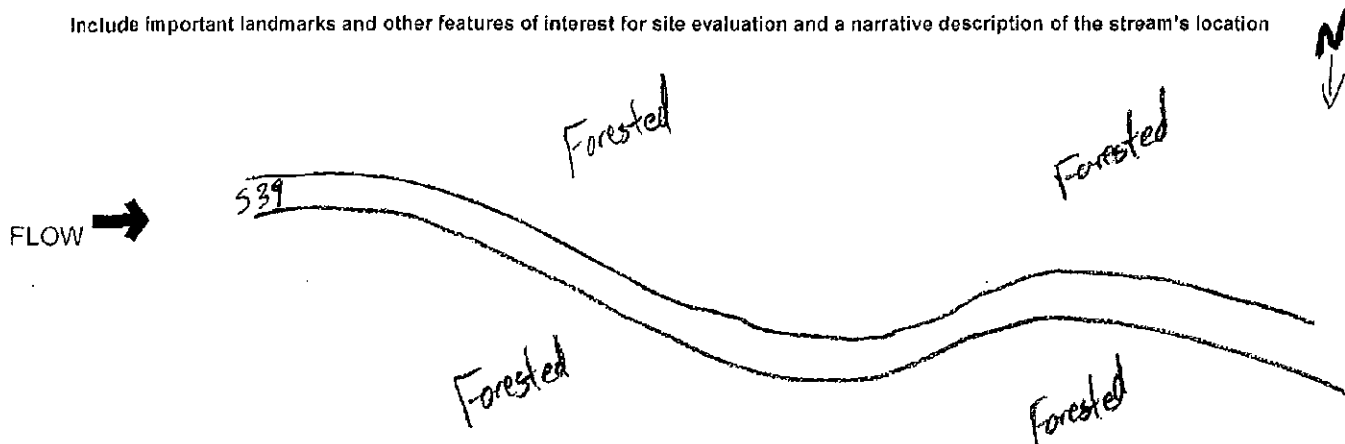
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

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





Primary Headwater Habitat Evaluation Form

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

28

SITE NAME/LOCATION AMP Ohio Alternate Transmission LineSITE NUMBER 540 RIVER BASIN _____ DRAINAGE AREA (mi²) _____

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

DATE 2 July 2008 SCORER M. Thomas COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDG SLABS [16 pts]	_____	<input type="checkbox"/> SILT [3 pt]	<u>10</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>20</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>55</u>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>10</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<u>5</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 (A) 3 (B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI
Metric
PointsSubstrate
Max = 40

8

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

15

COMMENTS _____ MAXIMUM POOL DEPTH (centimeters): 2"

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

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

Bankfull
Width
Max=30

5

COMMENTS _____ AVERAGE BANKFULL WIDTH (meters) 2'

This information must also be completed

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

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

COMMENTS _____

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

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

COMMENTS _____

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

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

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: Meigs Township / City: _____

MISCELLANEOUS

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

Photograph Information: 2 photos

Elevated Turbidity? (Y/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) _____ If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

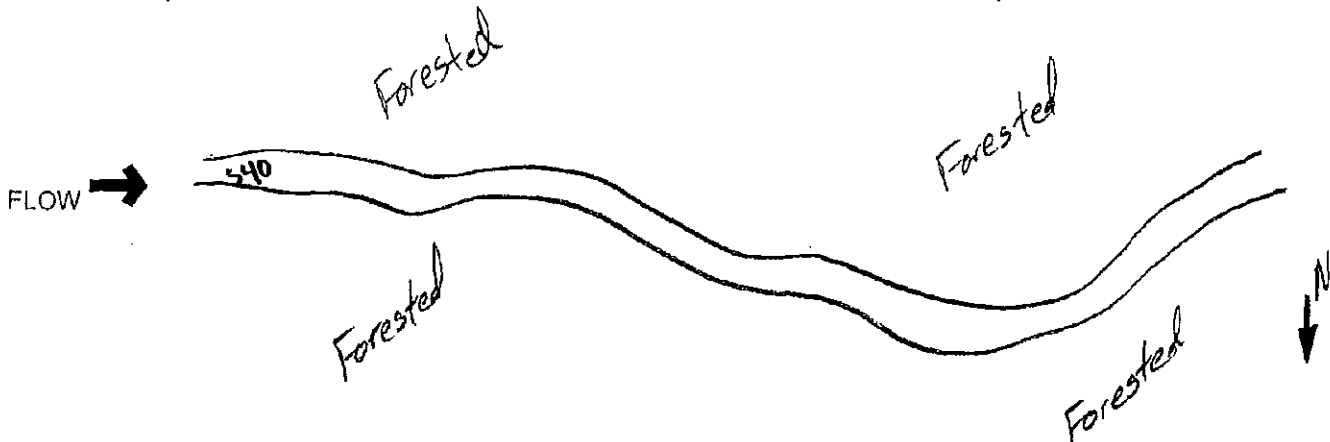
Performed? (Y/N): _____ (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

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



Stream 46



Primary Headwater Habitat Evaluation Form

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

37

Ch.
II

SITE NAME/LOCATION AMP OH Preferred Route Transmission

SITE NUMBER 089-Newstream RIVER BASIN _____ DRAINAGE AREA (mi²) _____

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

DATE 19 Aug 2008 SCORER M. Thayer COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH 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
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input type="checkbox"/> SILT [3 pt]	_____
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input checked="" type="checkbox"/> LEAF PACKWOODY DEBRIS [3 pts]	<u>10</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>30</u>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>30</u>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>10</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<u>20</u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock 30

(A) 12

(B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

**HHEI
Metric
Points**

Substrate
Max = 40

17

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):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

5

COMMENTS _____

MAXIMUM POOL DEPTH (centimeters):

50

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

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

Bankfull
Width
Max=30

15

COMMENTS _____

AVERAGE BANKFULL WIDTH (meters)

1.5

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)
Wide >10m
- ☐ Moderate 5-10m
- ☐ Narrow <5m
- ☐ None

FLOODPLAIN QUALITY

- ☒ (Most Predominant per Bank)
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)

ATTACHMENT D
Page 64 of 66

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: Meigs Township / City: _____

MISCELLANEOUS

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

Photograph Information: 2 photos; 1 upstream, 1 downstream

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

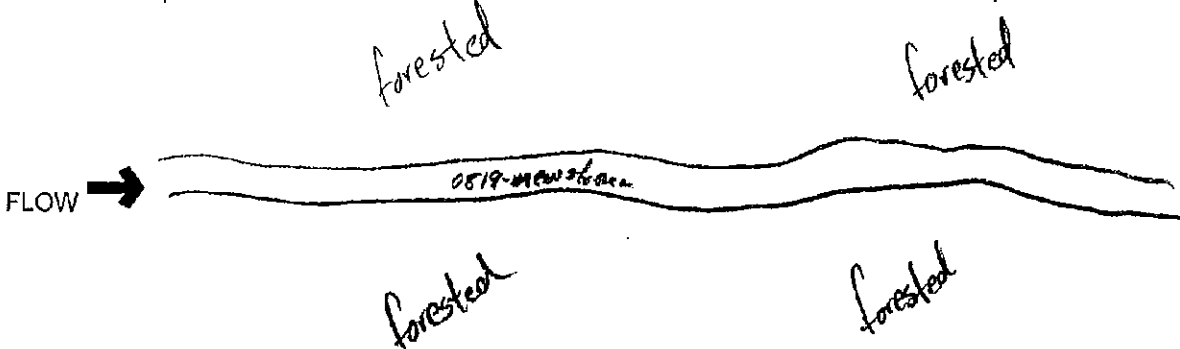
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N): 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





Primary Headwater Habitat Evaluation Form

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

21

Class
ISITE NAME/LOCATION AMP-OH Preferred Route TransmissionSITE NUMBER 188 Newstrm 2 RIVER BASIN _____DRAINAGE AREA (mi²) _____

LENGTH OF STREAM REACH (ft) _____

LAT. _____

LONG. _____

RIVER CODE _____

RIVER MILE _____

DATE 19 Aug 2008SCORER M. Thomaier

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
<input type="checkbox"/> BLDR SLABS [16 pts]		<input type="checkbox"/> SILT [3 pt]	
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>20</u>
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>40</u>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>30</u>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>10</u>	<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2 mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of
Blldr Slabs, Boulder, Cobble, Bedrock 40 (A)

(B)

HHEI
Metric
PointsSubstrate
Max = 40

16

A + B

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: 4

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

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

0

COMMENTS _____

MAXIMUM POOL DEPTH (centimeters): 0

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

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

Bankfull
Width
Max=30

5

COMMENTS _____

AVERAGE BANKFULL WIDTH (meters): 1.0

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)
☒ Wide >10m
☐ Moderate 5-10m
☐ Narrow <5m
☐ None

FLOODPLAIN QUALITY

- ☒ ☒ (Most Predominant per Bank)
☒ 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)

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: Meigs Township / City: _____

MISCELLANEOUS

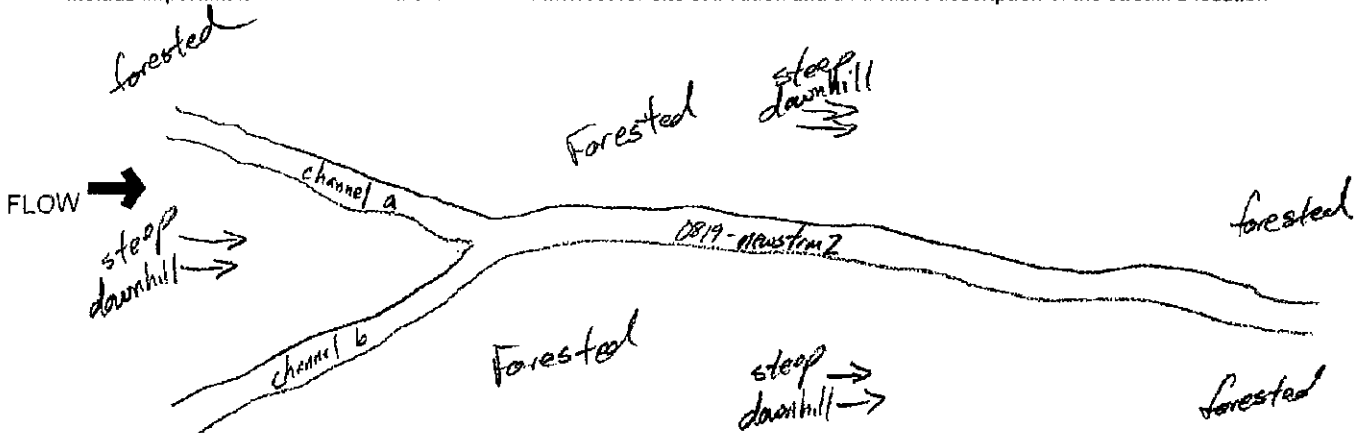
Base Flow Conditions? (Y/N): Y Date of last precipitation: unknown Quantity: _____
 Photograph Information: 3 photos; 1 upstream (branch a) 1 upstream (branch b), 1 downstream
 Elevated Turbidity? (Y/N): N Canopy (% open): _____
 Were samples collected for water chemistry? (Y/N): N (Note lab sample no. 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): 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



Attachment E

Photographic Record Preferred Transmission Route

PHOTOGRAPHIC RECORD

AMP-Ohio 345 kV Preferred Transmission
Line Route

Client Name:

American Municipal Power-Ohio (AMP-OH)

Site Location:

Meigs County, Ohio

Project No.

14946376

Photo Date:
April 30, 2008

Facing west across valley
containing streams S27, S35
and S36

HHEI for S27 scored 8/24/06
prior to landowner clearing



Photo Date:
April 30, 2008

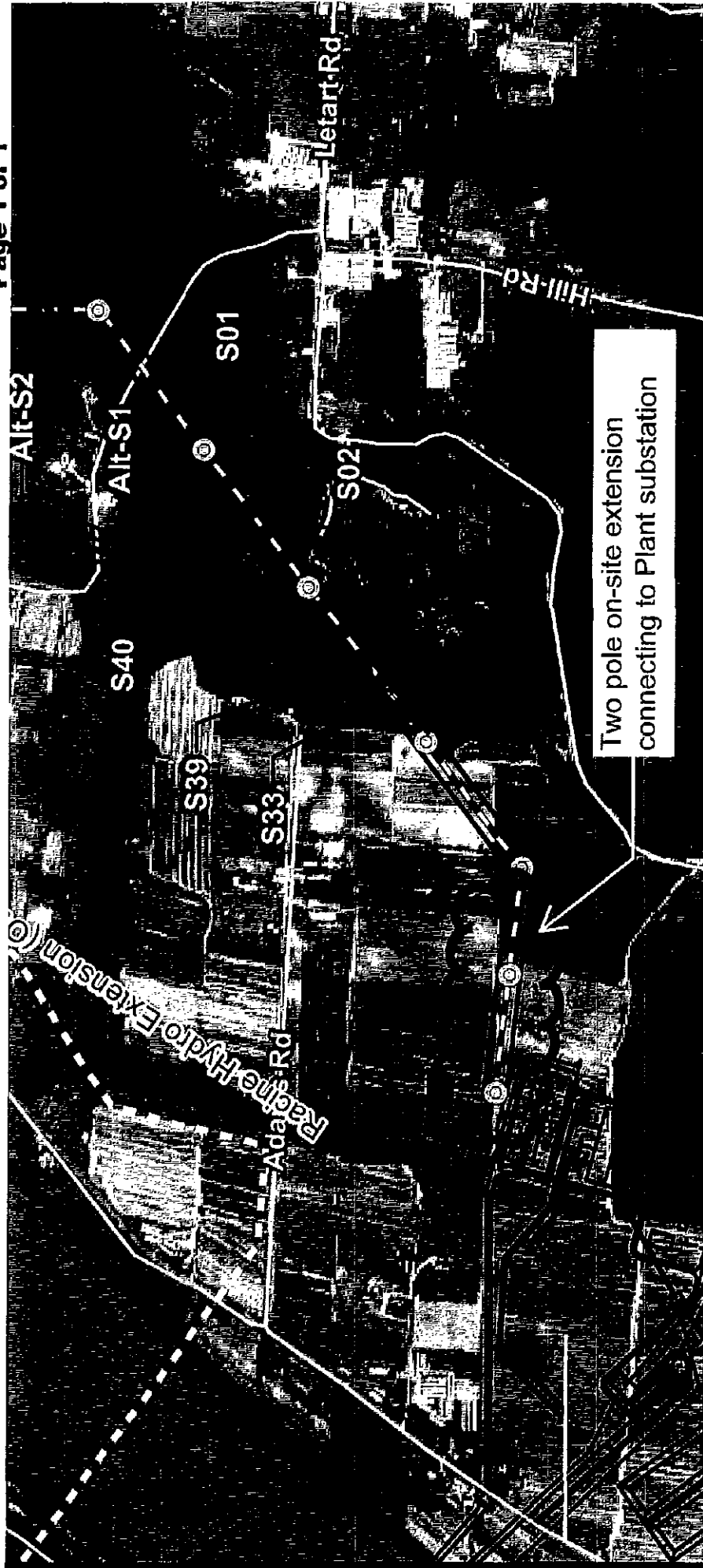
Facing south near S27

HHEI for S27 scored 8/24/06
prior to landowner clearing



Attachment F

Transmission Line Preferred and Alternate Routes Extension to Plant Substation



LEGEND:

- Preferred Route
- Preferred Route 150 ft Corridor
- Alternate Route
- Alternate Route 150 ft Corridor
- Preferred Route Poles
- Delineated Wetlands
- Delineated Streams
- Drainages

- Switchyard
- Existing Transmission Line
- Generation Station
- Streets

0 1,500 3,000



CASE #06-1357-EL-BTX
345 kV TRANSMISSION LINE
PREFERRED AND ALTERNATE ROUTES
EXTENSION TO PLANT SUBSTATION
(Approximately 1512 feet extension)