LARGE FILING SEPERATOR SHEET

CASE NUMBER: 06-1358-EL-BGN

FILE DATE: 5-4-07

SECTION: 4 45

NUMBER OF PAGES: 200

American Municipal Power

| ChigEPA Primary Headwater Habitat Evaluation Form |
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| SITE NAMELOCATION AMP-Ohio |
| SHE NAME/LOCATION APAP OT UP SHE NUMBER B M SSIB RIVER BASIN DRAINAGE AREA (mi ²) |
| |
| DATE 12-1-0'5 SCORER BEM COMMENTS |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions |
| STREAM CHANNEL DIRECOVERED DRECOVERING DRECENT OR NO RECOVERY |
| 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes |
| (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. |
| |
| |
| Image: BEDROCK [16 pt] Image: BEDROCK [16 pt]< |
| |
| |
| Total of Percentages of (A) (B) (A + B |
| Bidr Slabs, Bouider, Cobble, Bedrock 70 /0 2/ |
| 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 Pool Depth |
| evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30 |
| □ > 22.5 - 30 cm [30 pts] |
| |
| COMMENTS MAXIMUM POOL DEPTH (centimeters): |
| 3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): Bankfull > 4.0 meters (≥ 13) [30 pts] > 1.0 m - 1.5 m (≥ 3' 3" + 4'87) [15 pts] Width > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.0 m (≤ 3' 3") [5 pts] Max=30, |
| >1.5 m - 3.0 m (-2 9' 7* 4' 8') [20 pts] |
| |
| |
| This information must also be completed |
| RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆ <u>RIPARIAN WIDTH</u> <u>FLOODPLAIN QUALITY</u> |
| L/R/ (Per Bank) L R (Most Predominant per Bank) L R |
| Image: Image State |
| |
| Nerrow <5m OC Residential, Park, New Field Oc Crop |
| None I I Fenced Pasture I I Mining or Construction |
| COMMENTS |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Moist Channel, isolated pools, no flow (Intermittent) Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral) COMMENTS |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): |
| 🛄 None 📃 1.0 🛄 2.0 🖾 3.0 |
| |
| STREAM GRADIENT ESTIMATE Flat (0.5 N/100 ft) Flat to Moderate (2 N/100 ft) Moderate (2 N/100 ft) Severe (10 N/100 ft) |

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| ADDITIONAL STREAM INFORMATION (This information Must Also be Completed): | BM-S13 |
|--|---------------------------------------|
| QHEI PERFORMED? - 🗇 Yes 💢 No QHEI Score (if Yes, Attach Completed QHE | El Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| Distance from E | |
| CWH Name: Distance from E Distance from E Distance from E | |
| | |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY I ISGS Quadrangle Name: <u>News Haven, WV-OH</u> NRCS Soil Map Page: NRC | |
| county: Melgs Churty Township/City: Letart Fall | |
| MISCELLANEOUS | <u>, or would</u> |
| ase Flow Conditions? (Y/N): Date of last precipitation:Q9-05 Quantity: | iknown |
| hotograph Information: <u>Y-Photo #78 - Concord Camera</u> | |
| levated Turbidity? (Y/N): <u>N</u> Canopy (% open): <u>30</u> 7 <u>p</u> | |
| Vere samples collected for water chemistry? (Y/N): W (Note lab sample no. or id. and attach results) I | Lab Number: |
| ield Measures: Temp ("C) Dissolved Oxygen (mg/l) pH (S.U.) Conductiv | ity (µmhos/cm) |
| a the sampling reach representative of the stream (Y/N) | |
| Additional comments/description of pollution impacts: | |
| BIOTIC EVALUATION | |
| Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all vouche ID number. Include appropriate field data sheets from the Primary Headwater Ha | • |
| | |
| Comments Regarding Biology: | |
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| | |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This I | |
| Include important landmarks and other features of interest for site evaluation and a narrative des | cription of the stream's location |
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PHWH Form Page - 2

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| | | $BM-S14$ river basin drainage area (m ²) ≤ 1 | M |
| ATE 2- | | LAT LONG RIVER CODE RIVER MILE | |
| | • | COMMENTS drains into Stream BM S-13 | |
| | | rm - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc | |
| | | ATURAL CHANNEL D RECOVERED RECOVERING RECENT OR NO RECOV | /ERY |
| MODIFIC | ATIONS5 | | |
| | | very type of substrate present. Check ONLY two predominant substrate TYPE boxes | н |
| | | FENGENI IFE FENGENI | Me |
| | BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] | | Poi |
| 00 | BEDROCK [16 pt] | | Suba Max |
| | COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts]) | $\frac{10}{\sqrt{35}} \circ \Box \Box \text{clay of HARDPAN [0 pt]}$ | |
| | SAND (<2 mm) [8 pts] | | þd(|
| • | Total of Percentages of | | A I |
| | dr Slabs, Boulder, Cobble, Bedrock <u>(</u> TWO MOST PREDOMINATE SUB | $\frac{2}{5}$ | ~ |
| | | | |
| | | maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of a fload culverts or storm water pipes) (Check ONLY one box): | Pool Max |
| 🔲 > 3 | 0 centimeters [20 pts] 2.5 30 cm [30 pts] | >20 >5 cm - 10 cm [15 pts] 0 < δ cm [6 pts] | |
| | 0 • 22.5 cm [25 pts] | | 15 |
| CC | OMMENTS | MAXIMUM POOL DEPTH (centimeters): | |
| 3. B/ | ANK FULL WIDTH (Measured as th | he average of 3-4 measurements) (Check ONLY one box): | Bar |
| ># | .0 meters (> 13') [30 pts] .0 m - 4.0 m (> 9' 7"- 13') [25 pts] | □ > 1.0 m = 1.5 m (> 3' 3' - 4' 8') [15 pto] □ ≤ 1.0 m (≤ 3' 3'') [5 pto] | Wi Ma |
| | .5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | | |
| , C(| OMMENTS | AVERAGE BANKFULL WIDTH (meters) | d |
| | ····· | | |
| | | This information must also be completed | |
| | RIPARIAN ZONE AND FLOO | DPLAIN QUALITY ORNOTE: River Left (L) and Right (R) as looking downstream or | |
| | RIPARIAN ZONE AND FLOOR RIPARIAN WIDTH | FLOODPLAIN QUALITY | |
| | | | |
| L C | <u>RIPARIAN WIDTH</u> ./R / (Per Bank) | FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R Mature Forest, Wetland Mature Forest, Shrub or Old Mature Forest, Shrub or Old | |
| | RIPARIAN WIDTH /R/ (Per Bank) J J Wide >10m | FLOODPLAIN QUALITY L R Mature Forest, Wetland Mature Forest, Wetland Mature Forest, Shrub or Old Mature Forest, Shrub or Old Field Mature Forest, Shrub or Old Mature Forest, Shrub or Old | |
| | RIPARIAN WIDTH /R / (Per Bank) I J Wide >10m J J Moderate 5-10m J J Narrow <5m | FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R Mature Forest, Wetland Mature Forest, Shrub or Old Field Oner Pasture, Row | |
| | RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m | FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Mature Forest, Shrub or Old Field Residential, Park, New Field Open Pasture, Row Crop | |
| | RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of E | FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Mature Forest, Shrub or Old Mature Forest, Shrub or Old Residential, Park, New Field Penced Pasture Hining or Construction | |
| | RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of E Stream Flowing Subsurface flow with isolated p | FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Mature Forest, Shrub or Old Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Fenced Pasture Mining or Construction | |
| | RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of E Stream Flowing | FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Wetland Mature Forest, Shrub or Old Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Fenced Pasture Mining or Construction | |

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| | e from Evaluated Stream a from Evaluated Stream b from Evaluated Stream EARLY MARK THE SITE LOCATION NRCS Soil Map Stream Order F.M. Ohio and http://www. |
|---|---|
| WH Name: Distance WH Name: Distance WH Name: Distance Distance Distance SQuadrangle Name: Musc Koren, WY - OH NRSCELLANEOUS Township / City: e Flow Conditions? (V/N): Dete of last precipitation: [1-29-05] Information: Y- PhUtb #79 - Concord Carro (ca material transmission: rated Turbkitty? (Y/N): Canopy (% open): 30 72 re samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach d Messures: Temp (*C) Dissolved Dxygen (mg/i) pH (S.U.) itional commenta/description of pollution impacts: If not, please explain: itional commental/description of pollution impacts: Bitional commenta/description of pollution impacts: It not, please stress from the Primary Hee h Observed? (Y/N) Voucher? (YN) Aquistic Macroinvertebrake Observed? (YN) Voucher? (YN) go Tadpoles Observed? (YM) | e from Evaluated Stream from Evaluated Stream EARLY MARK THE SITE LOCATION NRCS Soil Map Stream Order FallsOhioareq filly: |
| WH Name: | tity: |
| WH Name: | EARLY MARK THE SITE LOCATIONNRCS Soil Map Stream Order Falls, Ohio areq tity: |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. C SS Quadrangie Name: <u>Musc Marcin, LW - 0H</u> NRCS Soil Map Page: | EARLY MARK THE SITE LOCATION NRCS Soil Map Stream Order Falls, Ohio areg tity: |
| the sampling reach representative of the stream (Y/N) ↓ If not, please explain: itional comments/description of pollution impacts: BIOTIC EVALUATION formed? (Y/N): // (If Yes, Record all observations. Voucher collections optional. NOTE: ID number. Include appropriate field data sheets from the Primary Hea h Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed mments Regarding Biology: | results) Lab Number: |
| BIOTIC EVALUATION formed? (Y/N): M (if Yes, Record all observations. Voucher collections optional. NOTE: ID number. Include appropriate field data sheets from the Primary Heath Dobserved? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? mments Regarding Biology: | |
| Include important landmarks and other features of interest for site evaluation and a name Steep Slope ow BFW: | II voucher samples must be labeled with the site Iwater Habitat Assessment Manual) her? (Y/N) |
| BFW=5' Steep Stope | · · · |
| | 41 BWS |
| ober 24, 2002 Revision PHWH Form Page - 2 | 41 BWS |
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| Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) : | 23 |
|--|-----------------------|
| SITE NAME ADCATION AMP-ONIO | |
| SITE NUMBER BIM-SLS RIVER BASINDRAINAGE AREA (mi ²) | |
| LENGTH OF STREAM REACH (R) 100 LAT. LONG. RIVER CODE RIVER MILE | |
| DATE 12/1/05 SCORER KOOSEY COMMENTS | |
| | |
| STREAM CHANNEL ON NONE / NATURAL CHANNEL OR RECOVERED RECOVERING RECENT OR NO R MODIFICATIONS: | COVERY |
| 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxet (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. | HHE |
| TYPE PERCENT TYPE PERCENT | Metric |
| BLDR SLABS [16 pts] Image: Silt [3 pt] Image: | Points |
| BEDROCK [16 pt] D FINE DETRITUS [3 pts] D COBBLE (65-256 mm) [12 pts] D CLAY or HARDPAN [0 pt] | Substrate Max = 40 |
| GRAVEL (2-64 mm) [9 pts] | 10 |
| Image: SAND (<2 mm) [6 pts] | 10. |
| Total of Percentages of (A) (B) (B) (B) (B) (B) (B) (B) (B) (B) (B | A+B |
| SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: | J |
| 2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box) | Pool Dapth |
| □ > 30 centimeters (20 pts) □ > 5 cm - 10 cm [15 pts] | Max = 30 |
| □ > 22.5 · 30 cm [30 pts] □ > 10 · 22.5 cm [25 pts] □ > 10 · 22.5 cm [25 pts] | |
| | |
| 3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] [15 pts] | Bankfuli Width |
| ⇒ 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 (≤ 3' 3") [5 pts] | Max=30 |
| COMMENTSAVERAGE BANKFULL WIDTH (motors) | 15 |
| | |
| This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ট NOTE: River Left (L) and Righl (R) as looking downstream의 | |
| RIPARIAN WIDTH FLOODPLAIN QUALITY | |
| LR (Per Bank) LR (Most <u>Predo</u> minant per Bank) LR VI Wide >10m VI <u>Mature Earest</u> , Wetland II Conservation Tillag | • |
| Moderate 5-10m O Immature Forest, Shrub or Old O O Urban or Industrial | |
| Narrow <5m Crop Open Pasture, Rov Crop | |
| O None O Fenced Pasture O Mining or Construct | ion |
| | |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box); Stream Flowing Moist Channel, isolated pools, no flow (Interstitial) Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral) | ent) |
| Subsurface flow with isolated pools (Interstitial) COMMENTS COMMENTS | |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box) | |
| Image: Constraint of the state of | |
| | |
| 🗇 Flat (0.5 M 100 M) 💭 Flat to Moderate 🧭 Moderate (2 M 100 M) 🗍 Moderate to Severe 🗍 Severe (1 | |

| CHE PERFORMED? - D vs. D No. CHE Some (I Yes, Alach Completed OHEL Form) DOVINSTREAM DESIGNATED USE(S) WWH Name: | DDITIONAL STREAM | INFORMATION (This information Must Also b | ie Comeleteci): | BM-SIS |
|--|--|--|--|---------------------------------|
| IVMAN Hame: | QHEI PERFO | RMED7 - D Yes D No QHEI Score | (If Yes, Attach Completed QHEI (| ² orm) |
| CMM Name: Distance from Evaluated Stream EVM Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION SGS Quadrangle Name: Name: MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION SGS Quadrangle Name: Name: MASCELLANEOUS Township / City. MASCELLANEOUS Date of last precipitation: INFORMATION: TERD Outpace Outpace MASCELLANEOUS Canopy (% open): SEE Flow Conditions? (VA): Date of last precipitation: INFORMATION: Terms (C) Dissolved Turbistly? (VA): N (Note lab sample no. or kl. and attach results) Lab Number: | DOWNSTRE/ | M DESIGNATED USE(S) | · . | |
| EWH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTINE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION SGS Quadrangle Name: Num: Mapping: Num: Mapping: NECE Soil Map Stream Order punty: | | | | |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION SGS Quadrangle Name: //wr/ Harren, / | | | | |
| SGS Quadrangle Name: <u>Num Hancens</u> , <u>WV-OM</u> NRCS Soil Map Page NRCS Soil Map Stream Order MBSCELLANEOUS are Flow Conditions? (YM) Date of last precipitation: <u>1)/21/05</u> Quantity: <u>untroom</u> motograph information: <u>TFBO</u> evaled Turbidity? (YM): <u>N</u> Canopy (% open). <u>SO</u> tree samples collected for water chemistry? (YM): <u>N</u> (Note lab sample no. or ld. and attach results) Lab Number: ald Measures: Temp (*C) Dissolved Oxygen (mg/) PH (SU) Conductivity (µmhos/cm) the sampling reach representative of the stream (YM) <u>Y</u> If not, please explain diditional comments/description of pollution impacts BIOTIC EVALUATION art Dumber. Include appropriate feed data sheets from the Primary Heedweter Habital Assessment Manual) and Observed? (YM) Voucher? (YM) Salamanders Observed? (YM) voucher? (YM) voucher? (YM) orga of Tadpoles Observed? (YM) Voucher? (YM) Voucher? (YM) voucher? (YM) oucher? (YM) voucher? (YM) orga of Tadpoles Observed? (YM) voucher? (YM) | EWH Name: | | Listance from Eva | usloo Siream |
| Sunty: | | | | |
| INSCELLANEOUS V see Flow Conditions? (YN): | SGS Quadrangle Nam | : New Harren, WV-04 1 | NRCS Soil Map Page: NRCS | Soil Map Stream Order |
| INSCELLANEOUS V see Flow Conditions? (YN): | ounty: Mer | 9A County Townshi | ip/city: Letart Falls | , Ohio area |
| notograph Information: IFBO evaded Turbidity? (YRI): | | ¥ | | • |
| notograph Information: IFBO evaded Turbidity? (YRI): | ase Slow Conditions? | | 21/05 QUARTING LUN | hanam |
| evaled Turbidity? (YAN): | | | | |
| tere samples collected for water chemistry? (Y/N): N (Note lab sample no. or kl. and attach results) Lab Number: ald Measures: Temp (*C) Dissolved Oxygen (mg/n) pH (S.U.) Conductivity (µmhos/cm) the sampling reach representative of the stream (Y/N), If not, please explain: dditional comments/description of pollution impacts: BIOTS: EVALUATION erformed? (Y/N): N (if Yes, Record all observations: Voucher: collections optional: NOTE: all voucher samples must be jabeled with the reprint of the stream of the stream's location 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 S - 14 S - 15 | | | | ····· |
| eld Measures: Temp (*C) | | \ | — | |
| the sampling reach representative of the stream (Y/N) If not, please explain | Vere samples collected | for water chemistry? (Y/N): <u>N</u> (Note lab s | ample no. or id. and attach results) La | b Number: |
| dditional comments/description of pollution impacts: BIOTIC EVALUATION enformed? (Y/N): N (I) Yes, Record all observations. Voucher collections optional NOTE: all voucher samples must be labeled with the sitil number. Include appropriate field data sheets from the Primary Headwater Habital Assessment Manual) sch Observed? (Y/N): Voucher? (Y/N): Salamanders Observed? (Y/N): Voucher? (Y/N): orgs or Tadpoles Observed? (Y/N): Voucher? (Y/N): omments Regarding Biology: Voucher? (Y/N): ORAWING 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 S-14 Tadpoles Y=LOW Tadpoles | ield Measures: Ter | ip ("C) Dissolved Oxygen (mg/l) | pH (S.U.) Conductivity | (µmhos/cm) |
| BIOTIC EVALUATION erformed? (Y/N): | s the sampling reach re | presentative of the stream (Y/N) If not, pl | lease explain: | |
| BIOTIC EVALUATION erformed? (Y/N): | | | | |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): Include Important landmarks and other features of Interest for site evaluation and a narrative description of the stream's location 5-14 The stream's location 5-14 5-14 5-15 | enformed? (Y/N): ish Observed? (Y/N) rogs or Tadpoles Obse | (Il Yes, Record all observations. Voucher o ID number. Include appropriate field data s Voucher? (Y/N) Salamanders Observed? (Y/N) Aquatic | sheets from the Primary Headwater Habi served? (Y/N) Voucher? (Y/N)_ : Macroinvertebrates Observed? (Y/N)_ | tal Assessment Manual) |
| Include Important landmarks and other features of Interest for site evaluation and a narrative description of the stream's location S-14 The stream's location S-14 S-14 S-14 S-15 | | | | |
| Include Important landmarks and other features of Interest for site evaluation and a narrative description of the stream's location S-14 The stream's location S-14 S-14 S-14 S-15 | · <u> </u> | | | |
| Include Important landmarks and other features of Interest for site evaluation and a narrative description of the stream's location S-14 The stream's location S-14 S-14 S-14 S-15 | | | | |
| LOW A S-14 | | | · | — · · |
| LOW -> S-14. Stime limbe over H A S-15 limb | lucione imborta | it landmarks and other reacties of interest for | | priori or the stream's tocation |
| LOW A S-15 limbe | | | | ۰. ۲ |
| LOW -> Contract over | | | and the second sec | 2-14 |
| H A S-15 limb | _ | stump | ···· | |
| H AA S-15 lumb | | I limbe | au | |
| 1 5-15 | | | - He | _)/ |
| 1 5-15 | | H | | |
| 7 | | | S-15 | |
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October 24, 2002 Revision

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ChieEPA Primary Headwater Habitat Evaluation Form (Loss I HHEI Score (sum of metrics 1, 2, 3): 40

| SITE NAME/LOCATION AMP-Ohio | | | ii. |
|--|--|--|--|
| StreamSITE NUMBER_BM | -SIG RIVER BASIN | DRAINAGE AREA (mi²) 4/mi | 2 |
| LENGTH OF STREAM REACH (R) 200 LA | NT LONG RIM | ER CODE RIVER MILE | |
| DATE 12-1-05 SCORER BEM | COMMENTS drains into : | Stream Bm: 5-13 | |
| NOTE: Complete All Items On This Form - | | | |
| STREAM CHANNEL IN NONE / NATURE MODIFICATIONS | | OVERING I RECENT OR NO RECOVERY | Y |
| (Max of 32). Add total number of significant | type of substrate present. Check ONLY two substrate types found (Max of 8). Final metric CENT TYPE SILT [3 pt] CENT LEAF PACK/WOODY CEAT FINE DETRITUS [3 CLAY or HARDPAN | been is sum of boxes A & B. PERCENT DEBRIS [3 pts] pts] | HEI etric oints ostrate x = 40 |
| GRAVEL (2-64 mm) (9 pts) Z | | —— II.a | 0 |
| Total of Percentages of Bidr Slabs, Boulder, Cobbie, Bedrock | ~ ~ [15] | | + B |
| evaluation. Avoid plunge pools from road o | | one box): Max | 1 Depth x = 30 |
| 3. BANK FULL WIDTH (Measured as the av 4.0 meters (> 137] [30 pts] 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] 3.1.5 m - 3.0 m (> 9' 7" - 4' 6") [20 pts] COMMENTS | 🔲 > 1.0 m = 1.5 m (> 3' | 3" - 4" 6") [16 pte] []] | nkfuli fidth 1x=30 |
| | | | |
| RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH | This information <u>must</u> also be complete AIN QUALITY \$NOTE: River Left (L) and <u>FLOODPLAIN QUALITY</u> | ed Right (R) as looking downstream 🕯 | |
| L R (Per Bank) I W Wide >10m | L R (Most Predominant per Bank) | L R | |
| Moderate 5-10m | Immature Forest, Shrub or Old | Urban or Industrial | |
| 🗍 🗍 Narrow <5m | Field Field Residential, Park, New Field | Open Pasture, Row | |
| | | Crap Mining or Construction | |
| FLOW REGIME (At Time of Evaluation of Evalua | Moist Chan | nel, isolated pools, no flow (Intermittent) I, no water (Ephemeral) | |
| SINUOSITY (Number of bends per None 0.5 | r 61 m (200 ft) of channel) (Check OWLY one 1.0 | 3.0 | |
| | 1.5 🗍 2.5 | ∐ >3 | |

| ADDITIONAL STREAM INFORMATION (This information Must Also be Completed): BM-516 |
|--|
| QHEI PERFORMED? - Ves Vo QHEI Score (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) DWWH Name: |
| 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, WV-OH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| county: <u>Merge Conty</u> Township/ City: Letart Ills, Ohio area |
| MISCELLANEOUS Base Flow Conditions? (Y/N): <u>Y</u> Date of last precipitation: <u>11-29-05</u> Quantity: <u>unknom</u> |
| Photograph information: Y-Photo # 8.3 - concord camera_ |
| Elevated Turbidity? (Y/N): N Canopy (% open): 46% |
| Were samples collected for water chemistry? (Y/N): (Note tab 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 |
| 1/201 Streem |
| FLOW A DE DE BENEROVI BENEROVI BENEROVI BENEROVI BENEROVI BENEROVI BENEROVI BENEROVI |
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PHWH Form Page - 2

ChieEPA Primary Headwater Habitat Evaluation Form (Lass HHEI Score (sum of metrics 1, 2, 3):

| | BM-ST PRIVER BASIN | DRAINAGE AREA (mi?) 4/mi2 |
|--|---|--|
| LENGTH OF STREAM REACH (ft) | LATLONG RIVER C | |
| | 1 comments drama into 5 | |
| NOTE: Complete All Items On This Fo | rm - Refer to "Field Evaluation Manual for Ohio | 's PHWH Streams" for Instructions |
| STREAM CHANNEL NONE / N MODIFICATIONS | | |
| • • | very type of substrate present. Check ONLY two predo ficant substrate types found (Max of 8). Final metric scon | |
| TYPE | PERCENT TYPE | PERCENT Metric Points |
| BOULDER (>256 mm) [16 pts], | | |
| BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts] | | |
| COBBLE (65-256 mm) [12 pts] | $\frac{2}{\sqrt{-80}}$ 3 3 3 3 3 3 3 3 3 3 | |
| SAND (<2 mm) (6 pts) | | |
| Total of Percentages of | 30.9 (A) | (B) A+B |
| Bidr Siabs, Boukier, Cobble, Bedrock | | |
| 2. Maximum Pool Depth (Measure the | maximum pool depth within the 61 meter (200 ft) eval | luation reach at the time of Pool Depth |
| evaluation. Avoid plunge pools from re | pad culverts or storm water pipes) (Check ONLY one b | ox): Max = 30 |
| 30 centimeters [29 pts] > 22:5 - 30 cm [30 pts] | >5 cm - 10 cm [15 pts] < < 5 cm [5 pts] | |
| > 10 - 22.5 cm [25 pts] | NO WATER OR MOIST | CHANNEL [0 pts] |
| COMMENTS | MAXIMUM POOL | DEPTH (centimeters): |
| | | |
| 3. BANK FULL WIDTH (Measured as th | the average of 3-4 measurements) (Check ON | (LY one hox): Sankfuß |
| 3. BANK FULL WIDTH (Measured as the second s | na se esta de la companya de la comp | |
| | ⊠ > 1.0 m → 1.5 m (> 3' 3" → 4 □ ≤ 1.0 m (< 3' 3")[8 ptm] | B") [15 pts] Width |
| >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 □ ≤ 1.0 m (≤ 3'3") [5 pts] | Width Max=30 3.7.1 |
| > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 8' 7" - 13') [25 pts] | ⊠ > 1.0 m - 1.5 m (≥ 3'3" - 4 □ ≤ 1.0 m (≤ 3'3") [5 pts] | B") [15 pts] Width |
| >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 □ ≤ 1.0 m (≤ 3'3") [5 pts] | Width Max=30 3.7.1 |
| > 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] COMMENTS | AVERAGE BANKI AVERAGE BANKI This information must also be completed OPLAIN QUALITY \$\frac{1}{2}NOTE: River Left (L) and Righ | FB) [16 pts] Width Max=30 /5 FULL WIDTH (meters) |
| > 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] COMMENTS | AVERAGE BANKI AVERAGE BANKI This information must also be completed OPLAIN QUALITY \$\frac{1}{2}NOTE: River Left (L) and Righ FLOODPLAIN QUALITY L R (Most Predominant per Bank) | FB) [15 pts] Width Max=30 5 FULL WIDTH (meters) X (R) as looking downstream☆ L R |
| > 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] COMMENTS | This information must also be completed DPLAIN QUALITY ANOTE: River Left (L) and Righ FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland | F8") [15 pts] Width Max=30 5 FULL WIDTH (meters) 5 t (R) as looking downstream \$ 5 L R Conservation Tillage |
| > 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] COMMENTS | This information must also be completed DPLAIN QUALITY ANOTE: River Left (L) and Righ FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland | FB) [15 pts] Width Max=30 5 FULL WIDTH (meters) X (R) as looking downstream☆ L R |
| > 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] COMMENTS | Image: State Stat | FB) [15 pts] Width FULL WIDTH (meters) 71 FULL WIDTH (meters) 5 t (R) as looking downstream \$\$ 5 t (R) as looking downstream \$\$ 5 U R Conservation Tillage U Urban or Industrial Open Pasture, Row |
| A.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] COMMENTS | Image: State Sta | FB) [15 pte] Width Max=30 5 FULL WIDTH (meters) 5 t (R) as looking downstreams t (R) as looking downstreams L R O Conservation Tillage O Urban or Industrial |
| > 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] COMMENTS | AVERAGE BANKI AVERAGE BANKI This information must also be completed AVERAGE BANKI DPLAIN QUALITY ANOTE: River Left (L) and Righ FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Evaluation) (Check ONLY one box): Moist Channel, is | K (R) as looking downstream☆ L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop |
| > 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] COMMENTS | > 1.0 m - 15 m (> 3' 3' - 4 > 1.0 m (< 3' 3') [5 pts] | FB) [15 pts] Width Max=30 5 FULL WIDTH (meters) 5 It (R) as looking downstream fr 5 L R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction It (R) ools, no flow (Intermittent) water (Ephemeral) |
| > 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] COMMENTS RIPARIAN ZONE AND FLOO RIPARIAN WIDTH L R (Per Bank) I Yvide >10m Image: Stream Flowing I None COMMENTS None COMMENTS FLOW REGIME (At Time of E Stream Flowing Subsurface flow with isolated p COMMENTS SINUOSITY (Number of bend None None | Image: Second state sta | FB) [15 pea] Width Max=30 5 FULL WIDTH (meters) 5 Image: State of the stat |
| > 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] COMMENTS | > 1.0 m - 15 m (> 3' 3' - 4 > 1.0 m (< 3' 3') [5 pts] | FB) [16 pts] Width Max=30 5 FULL WIDTH (meters) 5 It (R) as looking downstream from the second se |

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| DITIONAL STREAM INFORMATION (This information Must Also be Completed): | BM-S17 |
|---|--|
| QHEI PERFORMED? - DYes No QHEI Score (If Yes, Att | tach 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 WATERSHE | |
| SGS Quadrangle Name: New Koven, UV-OH NRCS Soil Map | |
| sunty: <u>mer as county</u> Township / City: Let | Int Falls, Ohio area |
| NISCELLANEOUS | |
| ase Flow Conditions? (Y/N): $\underline{\checkmark}$ Date of last precipitation: $\underline{11-29-05}$ | Quantity: un mon |
| notograph Information: photo # 82 _ concord c | ame 10 |
| evated Turbidity? (Y/N): Canopy (% open): | |
| iere samples collected for water chemistry? (Y/N):/ (Note lab sample no. or id. | and attach results) Lab Number: |
| ield Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) | Conductivity (µmhos/cm) |
| s the sampling reach representative of the stream (Y/N) If not, please explain: | |
| dilional comments/description of pollution impacts: | |
| | |
| BIOTIC EVALUATION | |
| | |
| Performed? (Y/N): (If Yes, Record all observations. Voucher collections option ID number. Include appropriate field data sheets from the l | nal. NOTE: all voucher samples must be labeled with the site Primary Headwater Habitat Assessment Manual) |
| ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) | • |
| rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinverteb | rates Observed? (Y/N) Voucher? (Y/N) |
| Comments Regarding Biology: | |
| | |
| | |
| | ······································ |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM | |
| Include important landmarks and other features of interest for site evaluation BmS | and a narrative description of the stream's location |
| Bints 11 | |
| 1.144 | -Dez |
| FLOW | C. |
| NH AT | 35. |
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| BFNtz, BFW=5. | Those . |
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PHWH Form Page - 2

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| Primary H | leadwater Habitat Evalua [:] HHEI Score (a | tion Form um of metrics 1, 2, 3) : 24 |
|---|---|--|
| SITE NAME/LOCATION AMP - Oh iD | | |
| SITE NUMBER B | M-SIB RIVER BASIN | DRAINAGE AREA (mi²) |
| LENGTH OF STREAM REACH (fl) | | |
| DATE 12/1/05 SCORER KOOSET | | |
| NOTE: Complete All Items On This Form | - Refer to "Field Evaluation Manual for Of | nio's PHWH Streams" for Instructions |
| | | |
| MODIFICATIONS: Recently | exposed, was under ground | |
| | y type of substrate present. Check ONLY two pre- int substrate types found (Max of 8). Final metric sc | |
| | ERCENT TYPE | PERCENT Metric |
| BLDR SLABS (16 pts) | SILT (3 pt) | Points |
| | | s) 5 Substrate |
| COBBLE (65-256 mm) [12 pts] | CLAY OF HARDPAN [0 | pt] Max = 40 |
| □ 22 GRAVEL (2-64 mm) [9 pts] 22 GRAVEL (2-64 mm) [9 pts] | 15 00 MUCK (0 pts) 75 00 ARTIFICIAL (3 pts) | 19 |
| | | |
| Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock | B (A) 15 | (B) 4 A+B |
| SCORE OF TWO MOST PREDOMINATE SUBS | TRATE TYPES: TOTAL NUMBER | OF SUBSTRATE TYPES: |
| | aximum pool depth within the 61 meter (200 ft) e | |
| evaluation. Avoid plunge pools from road > 30 centimeters [29 pts] | culverts or storm water pipes) (Check ONLY on 5 cm - 10 cm [15 pts | |
| > 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts] | 5 cm [6 pts] | |
| | | |
| 3. BANK FULL WIDTH (Measured as the | | ONLY one box): Bankfull |
| U > 4.0 meters (> 13') [30 pts] 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] | □ / > 10 m → 15 m (> 3'3" □ ≤ 1.0 m (≤ 3'3")[5 pts | ·· 4` 8") [15 pts] Width .] Max=30 |
| □ > 1.5 m - 3.0 m (> 9'7" - 4'8") [20 pts] | | 45 5 |
| COMMENTS | AVERAGE BAN | (KFULL WIDTH (meters) |
| | | |
| RIPARIAN ZONE AND FLOODF | This information <u>must</u> also be completed CAIN QUALITY ☆NOTE: River Left (L) and R: | ight (R) as looking downstreamជា |
| RIPARIAN MDTH | FLOODPLAIN QUALITY | - |
| L/R/ (Per Bank) 2 0 Wide >10m | L R / (Mosl Predominant per Bank) | Conservation Tillage |
| Moderate 5-10m | Field | Urban or Industrial |
| DD Narrow <5m | Residential, Park, New Field | Open Pasture, Row |
| | Penced Paslure | Crop CT Mining or Construction |
| COMMENTS | | - |
| FLOW REGIME (At Time of Eva | | t included and an Annual termination |
| Subsurface flow with isolated poor COMMENTS | | I, isolated pools, no flow (Intermittent) 10. water (Ephemeral) |
| SINUOSITY (Number of bends a | er 61 m (200 ft) of channel) (Check ONLY one bo | nx) |
| | 1.0 D 2.0 1.5 D 2.5 | |
| STREAM GRADIENT ESTIMATE | | |
| Flat (0 5 w100 ft) Fial to Moderate | Moderate (2 iv 100 m D Moderate to | Severe D Severe (10 fiv100 h) |
| | | |

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| | (if Yes, Attach Completed QHEI Form) |
|---|---|
| DOWNSTREAM DESIGNATED USE(S) | |
| WWH Name: | Distance from Evaluated Stream |
| CWH Name: | |
| EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE V | NATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| SGS Quadrangle Name: New Haven WV-OH NRC | S Soli Map Page: NRCS Soil Map Stream Order |
| unity: Meigh County Township/(| |
| MISCELLANEOUS | |
| ase Flow Conditions? (Y/N): \underline{Y} Date of last precipitation: $\underline{11/29/}$ | 05 Quantity: unknorm |
| hotograph Information:84 | |
| levated Turbidity? (Y/N): N Canopy (% open): 35 | |
| ere samples collected for water chemistry? (Y/N): (Note lab samp | e no. or id. and attach results) Lab Number: |
| eld Measures: Temp (*C) Dissolved Oxygen (mg/) | pH (S.U.) Conductivity (µmhos/cm) |
| | |
| the sampling reach representative of the stream (Y/N) Y If not, please | |
| dilianal comments/description of pollution impacts: | |
| | ctions optional. NOTE all voucher samples must be labeled with the s |
| BIOTIC EVALUATION enformed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee | ctions optional. NOTE all voucher samples must be labeled with the sits from the Primary Headwater Habital Assessment Manual) |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee ish Observed? (Y/N) Salamanders Observ | ctions optional. NOTE all voucher samples must be labeled with the si its from the Primary Headwater Habitat Assessment Manual) ed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observ rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Mar | ctions optional. NOTE all voucher samples must be labeled with the si its from the Primary Headwater Habitat Assessment Manual) ed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION enformed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee sh Observed? (Y/N) Voucher? (Y/N) Salamanders Observ rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Mar | ctions optional. NOTE all voucher samples must be labeled with the si its from the Primary Headwater Habitat Assessment Manual) ed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION enformed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observ rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Mar | ctions optional. NOTE all voucher samples must be labeled with the si its from the Primary Headwater Habitat Assessment Manual) ed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION Performed? (Y/N): N (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee Sish Observed? (Y/N) Voucher? (Y/N) Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Comments Regarding Biology: | ctions optional. NOTE all voucher samples must be labeled with the sits from the Primary Headwater Habital Assessment Manual) ed? (Y/N) Voucher? (Y/N) croinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observ rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Mar | ctions optional. NOTE all voucher samples must be labeled with the sits from the Primary Headwater Habital Assessment Manual) ed? (Y/N) Voucher? (Y/N) croinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION Performed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee Sish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? Progs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Mar Comments Regarding Biology: | ctions optional. NOTE all voucher samples must be labeled with the sits from the Primary Headwater Habitat Assessment Manual) ed? (Y/N) Voucher? (Y/N) croinvertebrates Observed? (Y/N) Voucher? (Y/N) STREAM REACH (This must be completed); |
| | ctions optional. NOTE all voucher samples must be labeled with the side from the Primary Headwater Habital Assessment Manual) ed? (Y/N) |
| | ctions optional. NOTE all voucher samples must be labeled with the sits from the Primary Headwater Habitat Assessment Manual) ed? (Y/N) Voucher? (Y/N) croinvertebrates Observed? (Y/N) Voucher? (Y/N) STREAM REACH (This must be completed); |
| BIOTIC EVALUATION Performed? (Y/N): | ctions optional. NOTE all voucher samples must be labeled with the side from the Primary Headwater Habital Assessment Manual) ed? (Y/N) |
| | ctions optional. NOTE all voucher samples must be labeled with the side from the Primary Headwater Habital Assessment Manual) ed? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): | ctions optional. NOTE all voucher samples must be labeled with the side from the Primary Headwater Habital Assessment Manual) ed? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): | ctions optional. NOTE all voucher samples must be labeled with the side from the Primary Headwater Habital Assessment Manual) ed? (Y/N) Voucher? (Y/N) croinvertebrates Observed? (Y/N) Voucher? (Y/N) croinvertebrates Observed? (Y/N) Voucher? (Y/N) STREAM REACH (This must be completed): evaluation and a narrative description of the stream's location |
| BIOTIC EVALUATION rformed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data shee sh Observed? (Y/N) Voucher? (Y/N) Salamanders Observ ogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Mai comments Regarding Biology: ORAWING AND NARRATIVE DESCRIPTION OF Include important landmarks and other features of interest for site Q. Alba Q. Alba Q. Alba | clions optional. NOTE all voucher samples must be labeled with the sits from the Primary Headwater Habital Assessment Manual) ed? (Y/N) Voucher? (Y/N) voucher? (Y/N) croinvertebrates Observed? (Y/N) Voucher? (Y/N) STREAM REACH (This must be completed): evaluation and a narrative description of the stream's location |

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ChieEPA Primary Headwater Habitat Evaluation Form (Lass T HHEI Score (sum of metrics 1, 2, 3) :

| LENGTH OF STREAM REACH (11) 1001 DATE $12 - 1 - 05$ scorer BEY | M-519 RIVER BASIN LATLONG RIVER | CODE RIVER MILE |
|--|---|---|
| | | ERING CORECENT OR NO RECOVERY |
| (Max of 32). Add total number of significa | | re is sum of boxes A & B.PERCENTHHEIMetricPERCENT $\sqrt{70}$ SubstrateNew 5 40 |
| Maximum Pool Depth (Measure the mevaluation. Avoid plunge pools from road > 30 centimeters [20 pts] > 22:5 - 30 cm [30 pts] > 10:-22:5 cm [25 pts] COMMENTS | | boxý: |
| 3. BANK FULL WIDTH (Measured as the > 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' B') [20 pts] COMMENTS | ☐ >1.0 m (≤ 3 3") [5 pts] | |
| Stream Flowing Subsurface flow with isolated por COMMENTS | FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Wetland Immature Forest, Shrub or Old Field Immature Forest, New Field Imm | |
| STREAM GRADIENT ESTIMATE | 1.0 2.0 1.5 2.5 Moderate (21//100 /l) Moderate to S | 3.0 3 3 ievere (10 fr/100 ft) |

and the second s

| ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed | <u>a:</u> 13M-519 |
|---|---|
| CHEI PERFORMED? - DYes No QHEI Score (If Yes, . | Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| WWH Name: | |
| CWH Name: | |
| D EWH Name: | |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTIRE</u> WATERSI | HED AREA. CLEARLY MARK THE SITE LOCATION |
| USGS Quadrangle Name: NRCS Soil M | lap Page: NRCS Soil Map Stream Order |
| County: Melga County Township / City: | <u></u> |
| MISCELLANEOUS | - |
| Base Flow Conditions? (Y/N): Date of last precipitation: | Quantity: |
| Photograph information: 1- Photo # 81 - Concord (| Camera |
| Elevated Turbidity? (Y/N): Canopy (% open): | |
| i i | r id. and attach results) Lab Number: |
| Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U | J.) Conductivity (µmhos/cm) |
| Is the sampling reach representative of the stream (Y/N) $\sqrt{2}$ If not, please explain |); |
| (| |
| Additional comments/description of pollution impacts: | |
| | |
| BIOTIC EVALUATION | |
| Performed? (Y/N): (If Yes, Record all observations. Voucher collections op ID number. Include appropriate field data sheets from the | ational. NOTE: all voucher samples must be labeled with the site he Primary Headwater Habital Assessment Manual) |
| Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N | |
| Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinverk | lebrates Observed? (Y/N) Voucher? (Y/N) |
| Comments Regarding Biology: | |
| | |
| | |
| DRAWING AND NARRATIVE DESCRIPTION OF STREA | AM REACH (This <u>must</u> be completed): |
| Include Important landmarks and other features of interest for site evaluation | ion and a narrative description of the stream's location |
| | |
| | |
| | |
| FLOW - A - A - A - A - A - A - A - A - A - | |
| FLOW | |
| PAT BMS-16 | |
| BENEL' BEWESFE | |
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| Str. X | · · · · · · · · · · · · · · · · · · · |
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| PHWH Form Page - 2 | 2 |

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ChieEPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3): 33

| SITE NAME/L | OCATION AMP Obio | | | | |
|---|---|--|---|---|---------------------------|
| | | | l | DRAINAGE AREA (mi²) | Imiz |
| | STREAM REACH (R) 200 | | | | |
| | <u>- OS</u> SCORER <u>REM</u> | | | | ····· |
| | mplete All Items On This For | m - Refer to "Field Evalu | ation Manual for Ohio's I | PHWH Streams" for Instru | ictions |
| STREAM C MODIFICA | | TURAL CHANNEL . 🗍 REC | OVERED. CRECOVERIN | | VERY |
| | STRATE (Estimate percent of ev | | | | |
| (Max TYPE | t of 32). Add total number of signific I | PERCENT TYPE | - | PERCENT | HHEI Metrie |
| | BLDR SLABS [16 pis] | | | | Point |
| | 30ULDER (>256 mm) [16 pts] 3EDROCK [16 pt] | | EAF PACKWOODY DEBRIS | | Substra |
| | COBBLE (66-256 mm) [12 pts] | | INE DETRITUS [3 pts] LAY or HARDPAN [0 pt] | | Max = 4 |
| | 3RAVEL (2-64 mm) [9 pts] . SAND (<2 mm) [6 pts] . | | AUCK [0 pts] RTIFICIAL [3 pts] | · · · · · · · · · · · · · · · · · · · | -18 |
| | | | A | | |
| | Total of Percentages of Slabs, Boulder, Cobble, Bedrock _ | [{ · · } | | (B) 3 | A+B |
| SCORE OF 1 | | STRATE TYPES: | TOTAL NUMBER OF SU | BSTRATE TYPES: | |
| | imum Pool Depth (Measure the r | | | | Pool De |
| | uation. Avoid plunge pools from roa centimeters [20 pts] | i 💭 🖓 🖉 | c) (Check OVLY one box) > 5 cm - 10 cm [15 pts] | | <u>Max = :</u> |
| | | | | | |
| | 5 - 30 cm [30 pts] - 22 5 cm [25 pts] | | < 5 cm [5 pts] NO WATER OR MOIST CHA | NNEL IO otel | $ \bigcirc$ |
| >10 | 5 - 30 cm (30 pts) - 22.5 cm (25 pts) MMENTS | | < 5 cm [5 pts] NO WATER OR MOIST CHA MAXIMUM POOL DEF | | 0 |
| > 10 COM 3BAN | - 22.5 cm (25 pts) MIENTS JK FULL WIDTH (Measured as th | | NO WATER OR MOIST CHA | TH (centimeters): | |
| → 10 COM 3. BAN □ > 4.0 □ > 3.0 | - 22.5 cm (25 pts) | | NO WATER OR MOIST CHA | TH (centimeters): | Width |
| □ > 10 COM 3. BAM □ > 4.0 □ > 3.0 | - 22.5 cm (25 pts) MIENTS JK FULL WIDTH (Measured as th meters (> 13) (30 pts) | e average of 3-4 measureme | MAXIMUM POOL DEF MAXIMUM POOL DEF mts) (Check ONLY > 1.0 m - 1.5 m (> 3"3" - 4"8") | TH (centimeters): | Width |
| □ > 10 COM 3. BAN □ > 3.0 □ > 3.0 □ > 1.5 | - 22.5 cm [25 pts] MIENTS | e average of 3-4 measureme | MAXIMUM POOL DEF MAXIMUM POOL DEF mts) (Check ONLY > 1.0 m - 1.5 m (> 3"3" - 4"8") | one box):) [15 pts] | Bankfu Width Max=30 |
| □ > 10 COM 3. BAN □ > 3.0 □ > 3.0 □ > 1.5 | - 22.5 cm [25 pts] MIENTS | e average of 3-4 measureme | NO WATER OR MOIST CHA MAXIMUM POOL DEF mts) (Check ONLY > 1.0 m 1.5 m > 3"3" 4 8" < 1.0 m | one box):) [15 pts] | Width |
| □ > 10 COM 3. BAN □ > 3.0 □ > 3.0 □ > 1.5 | - 22.5 cm [25 pts] MIENTS | e average of 3-4 measureme | NO WATER OR MOIST CHA MAXIMUM POOL DEF mts) (Check ONLY > 1.0 m 1.5 m > 3"3" 4 8" < 1.0 m | TH (centimeters): one box):) [15 pts] L WIDTH (meters) | Width |
| □ > 10 COM 3. BAN □ > 3.0 □ > 3.0 □ > 1.5 | - 22.5 cm [25 pts] MIENTS | E average of 3-4 measurements This information mu PLAIN QUALITY CHOOT | NO WATER OR MOIST CHA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m 1.5 m > 3" 4 8" < 1.0 m | TH (centimeters): one box):) [15 pts] L WIDTH (meters) | Width |
| □ > 10 COM 3. BAN □ > 3.0 □ > 3.0 □ > 1.5 | - 22.5 cm [25 pts] MIENTS | E average of 3-4 measurements This information mu PPLAIN QUALITY TRNOT FLOODPLAIN QUALITY | NO WATER OR MOIST CHA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m 1.5 m > 3" 4 8" < 1.0 m | TH (centimeters): one box):)[15 pts] L WIDTH (meters) | Width |
| □ > 10 COM 3. BAN □ > 3.0 □ > 3.0 □ > 1.5 COM | - 22.5 cm [25 pts] MMENTS JK FULL WIDTH (Measured as th meters (> 13') [30 pts] m - 4.0 m (> 9' 7" - 13') [26 pts] m - 3.0 m (> 9' 7" - 4' 8") [20 pts] MMENTS RIPARIAN ZONE AND FLOOD RIPARIAN VIDTH R (Per Bank) Wide > 10m | This information mu PLAIN QUALITY THOT FLOOPLAIN QUALITY L R (Most Predom Mature Forest, Immature Forest, | NO WATER OR MOIST CHA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m 1.5 m > 3" 4 8" < 1.0 m | PTH (centimeters): one box):) [15 pts] L WIDTH (meters)) as looking downstream A R Conservation Tillage | Width |
| □ > 10 COM 3. BAN □ > 4.0 □ > 3.0 □ > 1.5 COM | - 22.5 cm [25 pts] MENTS JK FULL WIDTH (Measured as th meters (> 13') [30 pts] m - 4.0 m (> 9' 7" - 13') [26 pts] m - 3.0 m (> 9' 7" - 4' 8") [20 pts] MMENTS RIPARIAN ZONE AND FLOOD RIPARIAN WIDTH (Per Bank) UNde > 10m Moderate 5-10m | E average of 3-4 measureme This information <u>mu</u> DPLAIN QUALITY \$PNOT <u>FLOODPLAIN QUALITY</u> L R (Most Predom Mature Forest, | NO WATER OR MOIST CHARA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m 1.5 m (> 3" 3" + 4" 8") ≤ 1.0 m (< 3" 3") [5 pts] | TH (centimeters): one box): (15 pts) L WIDTH (meters)) as looking downstream 1 Conservation Tillage Urban or Industrial Open Pasture, Row | Width |
| □ > 10 COM 3. BAN □ > 3.0 □ > 3.0 □ > 1.5 COM | - 22.5 cm [25 pts] MENTS | PLAIN QUALITY ANOT FLOODPLAIN QUALITY L R (Most Predom Mature Forest, Immature Fore Field | NO WATER OR MOIST CHA MAXIMUM POOL DEF mts) (Check ONLY > 1.0 m 1.5 m > 3 3 - 4 8 3 < 1.0 m | PTH (centimeters): one box): (15 pts) L WIDTH (meters) as looking downstream \$r R Conservation Tillage Urban or Industrial Open Pasture, Row Crop | Width |
| □ > 10 COM 3. BAN □ > 4.0 □ > 3.0 □ > 1.5 COM □ □ □ □ □ □ □ □ □ □ □ □ □ | - 22.5 cm [25 pts] MMENTS IK FULL WIDTH (Measured as th meters (> 13') [30 pts] m - 4.0 m (> 9' 7" - 4' 8") [20 pts] m - 3.0 m (> 9' 7" - 4' 8") [20 pts] MMENTS RIPARIAN ZONE AND FLOOD RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m Narrow <5m | e average of 3-4 measureme This information mu DPLAIN QUALITY FLOODPLAIN QUALITY L R (Most Predom) Mature Forest, Immature Fore Field | NO WATER OR MOIST CHA MAXIMUM POOL DEF ints) (Check ONLY > 1.0 m - 1.5 m (> 3" 3" - 4' 6") ≤ 1.0 m (≤ 3" 3") [6 pts] ≤ 1.0 m (≤ 3" 3") [6 pts] AVERAGE BANKFUL st also be completed E: River Left (L) and Right (R inant per Bank) L Wetland □ 1 ark, New Field □ 1 | PTH (centimeters): one box): (15 pts) L WIDTH (meters) as looking downstream \$r R Conservation Tillage Urban or Industrial Open Pasture, Row Crop | Width |
| □ > 10 COM 3. BAM □ > 3.0 □ > 3.0 □ > 1.5 COM □ □ □ □ □ □ □ □ □ □ □ □ □ | - 22.5 cm [25 pts] MMENTS JK FULL WIDTH (Measured as th meters (> 13') [30 pts] m - 4.0 m (> 9' 7" - 4' 8") [20 pts] m - 3.0 m (> 9' 7" - 4' 8") [20 pts] MMENTS RIPARIAN ZONE AND FLOOD RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Ev | e average of 3-4 measureme Image: State of the state of t | NO WATER OR MOIST CHA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m< 1.5 m (> 3" 3" - 4' 6") ≤ 1.0 m (≤ 3" 3") [5 pts] ≤ 1.0 m (≤ 3" 3") [5 pts] AVERAGE BANKFUL st also be completed E: River Left (L) and Right (R inant per Bank) L Wetland I ark, New Field I ps | PTH (centimaters): one box): (15 pts) L WIDTH (meters) as looking downstream \$r R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction | Width Max=3 |
| □ > 10 COM 3. BAN □ > 4.0 □ > 3.0 □ > 1.5 COM □ □ 0 □ 0 □ 0 □ 0 □ 0 □ 0 □ 0 | - 22.5 cm [25 pts] MMENTS JK FULL WIDTH (Measured as th meters (> 13') [30 pts] m - 4.0 m (> 9' 7" - 4' 8") [20 pts] m - 3.0 m (> 9' 7" - 4' 8") [20 pts] MMENTS RIPARIAN ZONE AND FLOOD RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Ev Stream Flowing Subsurface flow with isolated po | This information <u>mu</u> DPLAIN QUALITY TNOT <u>FLOODPLAIN QUALITY</u> L R (Most Predomi Mature Forest, Immature Forest, Immature Fore Field Fenced Pasture reluation) (Check ONLY one | NO WATER OR MOIST CHA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m< 1.5 m (> 3" 3" - 4' 6") ≤ 1.0 m (≤ 3" 3") [5 pts] ≤ 1.0 m (≤ 3" 3") [5 pts] AVERAGE BANKFUL st also be completed E: River Left (L) and Right (R inant per Bank) L Wetland I ark, New Field I ps | PTH (centimaters): one box): (15 pts) (15 pts) L WIDTH (meters) as looking downstream \$r R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ted pools, no flow (Intermittent) | Width Max=3 |
| □ > 10 COM 3. BAM □ > 3.0 □ > 3.0 □ > 1.5 COM □ □ □ □ □ □ □ □ □ □ □ □ □ | - 22.5 cm [25 pts] MENTS | This information <u>mu</u> PLAIN QUALITY TO FLOODPLAIN QUALITY L R (Most Predomi Mature Forest, Mature Forest, | NO WATER OR MOIST CHA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m - 1.5 m (> 3' 3' - 4' 8") ≤ 1.0 m (≤ 3' 3') [6 ptn] ≤ 1.0 m (≤ 3' 3') [6 ptn] AVERAGE BANKFUL st also be completed E: River Left (L) and Right (R inant per Bank) L Wetland I ark, New Field I ark, New Field I box): Moist Channel, isolat Dry channel, no wate I | PTH (centimaters): one box): (15 pts) (15 pts) L WIDTH (meters) as looking downstream \$r R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ted pools, no flow (Intermittent) | Width Max=3 |
| □ > 10 COM 3. BAN > 4.0 > 3.0 □ > 3.0 □ > 1.5 COM □ □ □ □ □ □ □ □ □ □ □ □ □ | - 22.5 cm [25 pts] MMENTS JK FULL WIDTH (Measured as th meters (> 13') [30 pts] m - 4.0 m (> 9' 7" - 4' 8") [20 pts] m - 3.0 m (> 9' 7" - 4' 8") [20 pts] MMENTS RIPARIAN ZONE AND FLOOD RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Ev Stream Flowing Subsurface flow with isolated po | This information <u>mu</u> PLAIN QUALITY TO FLOODPLAIN QUALITY L R (Most Predomi Mature Forest, Mature Forest, | NO WATER OR MOIST CHA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m - 1.5 m (> 3' 3' - 4' 8") ≤ 1.0 m (≤ 3' 3') [6 ptn] ≤ 1.0 m (≤ 3' 3') [6 ptn] AVERAGE BANKFUL st also be completed E: River Left (L) and Right (R inant per Bank) L Wetland I ark, New Field I ark, New Field I box): Moist Channel, isolat Dry channel, no wate I | PTH (centimaters): one box): (15 pts) L WIDTH (meters) as looking downstream \$r R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ted pools, no flow (Intermittent) | Width Max=3 |
| □ > 10 COM 3. BAN > 3.0 > 3.0 > 1.5 COM □ > 1.5 COM | - 22.5 cm [25 pts] MMENTS JK FULL WIDTH (Measured as the meters (> 13') [30 pts] m - 4.0 m (> 9' 7" - 4' 8") [20 pts] m - 3.0 m (> 9' 7" - 4' 8") [20 pts] MMENTS RIPARIAN ZONE AND FLOOD RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m None COMMENTS FLOW REGIME (At Time of Events Stream Flowing Subsurface flow with isolated per COMMENTS SINUOSITY (Number of bends | This information <u>mu</u> PLAIN QUALITY PROT <u>FLOOPLAIN QUALITY</u> L R (Most Predom Mature Forest, Mature Fores | NO WATER OR MOIST CHA MAXIMUM POOL DEF Ints) (Check ONLY > 1.0 m< 1.5 m (> 3' 3'' + 6'') ≤ 1.0 m (< 3' 3'') [5 pts] | PTH (centimaters): one box): one box): (15 pts) L WIDTH (meters) as looking downstream \$ R Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction ted pools, no flow (Intermittent) er (Ephemeral) | Width Max=34 |

| ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): BM - S 20 |
|--|
| QHEI PERFORMED? - 🗍 Yes 📈 No QHEI Score (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) |
| WWH Name: Distance from Evaluated Stream O 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 Hoven, WV-OH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| county: Meigh courty Township/ City: Letart Julia, Ohioarea |
| MISCELLANEOUS |
| Base Flow Conditions? (Y/N): Y Date of last precipitation: 11-29-05 Quantity: with norm |
| Photograph Information: $y - Phota \neq 85$ |
| Elevated Turbidity? (Y/N): N Canopy (% open): 40% |
| 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) |
| Additional comments/description of pollution impacts: |
| 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 |
| FLOW BRUE 2' BFWE 2' BFWE 2' BFWE 2' BFWE 2' |

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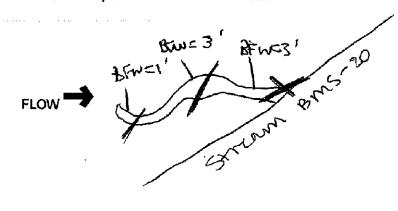
ChigEPA Primary Headwater Habitat Evaluation Form معمد HHEl Score (sum of metrics 1, 2, 3) :

| SITE NAME/LOCATION | | |
|--|--|--|
| STEAM SITE NUMBER BM | | |
| LENGTH OF STREAM REACH (#) | T LONG RIVER | R CODE RIVER MILE |
| DATE 2-1-05 SCORER BEM | COMMENTS drams into strea | m Bms-20 |
| NOTE: Complete All items On This Form - | | |
| STREAM CHANNEL ONONE / NATUR | | |
| | type of substrate present. Check ONLY two pr | |
| | substrate types found (Max of 8). Final metric so <u>CENT</u> <u>TYPE</u> | PERCENT Metric |
| BLDR SLABS [16 pts] | | |
| | | Substrate |
| COBBLE (65-256 mm) [12 pts] | | |
| □ ☑ GRAVEL (2-64 mm) [9 pts] □ ☑ SAND (<2 mm) [6 pts] ∠ | | |
| | | |
| Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock | ATE TYPES: 15 TOTAL NUMBER | (B) A + B |
| | imum pool depth within the 61 meter (200 ft) (| evaluation reach at the time of Pool Depth |
| evaluation. Avoid plunge pools from road c | ulverts or storm water pipes) (Check ONLY or | ne box): Max = 30 |
| > 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts] | ☐ > 5 cm - 10 cm [15 pt ☐ < 5 cm [5 pts] | s) |
| D > 10 - 22.5 cm [26 pts] | | |
| COMMENTS | MAXIMUM POO | DL DEPTH (centimeters): |
| 3. BANK FULL WIDTH (Measured as the av | verage of 3-4 measurements) (Check | ONLY one box): Bankfull |
| □ > 4.0 meters (> 13') [30 pts] □ > 3.0 m + 4.0 m (> 9' 7" + 13') [25 pts] | 💭 > 1.0 m - 1.5 m (> 3 3 | -4 87) [15 pts] Width |
| □ > 1.5 m - 3.0 m (> 9' 7" - 4'8") [20 pts] | ⊠ ≤ 1.0 m (≤ 3°3") [6 pt | |
| COMMENTS | AVERAGE BAI | |
| | | |
| | This information must also be completed | |
| RIPARIAN ZONE AND FLOODPL/ RIPARIAN WIDTH | AIN QUALITY ☆NOTE: River Left (L) and R FLOODPLAIN QUALITY | Right (R) as looking downstream ⊈ |
| L/R / (Per Bank) | L R (Most Predominant per Bank) | LR |
| ⊡ ⊡ Wide >10m | Mature Forest, Wetland | Conservation Tillage |
| D D Moderate 5-10m | Field | Urban or Industrial |
| □ □ Narrow <5m | Residential, Park, New Field | Open Pasture, Row Crop |
| | Fenced Pasture | Mining or Construction |
| FLOW REGIME (At Time of Evalue Stream Flowing Subsurface flow with isolated pools COMMENTS | Moist Channe | el, isolated pools, no flow (Intermittent) no water (Ephemeral) |
| SINUOSITY (Number of bends per | 61 m (200 fi) of channel) (Check ONLY one ba | ox): |
| None O 0.5 | 1.0 (1) 2.0 1.5 (1) 2.5 | . 3 .0 3 .0 |
| | 1.9 2,9 | · · · |
| STREAM GRADIENT ESTIMATE | Moderate (2 ft/100 ft) OModerate to | |

| | (If Yes, Attach Completed QHEI Form) |
|--|---|
| DOWNSTREAM DESIGNATED USE(S) | |
|] www.H 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 | |
| SGS Quadrangle Name: <u>New Harren, WV-OH</u> NRO | CS Soil Map Page: NRCS Soil Map Stream Order |
| iounty: Margel Calaty Township/ | city: Letart Falls, Ohio are |
| MISCELLANEOUS | |
| ase Flow Conditions? (Y/N): γ Date of last precipitation: <u>11-24</u> | -05_ Quantity: university |
| hotograph information: <u>Y- pho to 86</u> | |
| | |
| ilevated Turbidity? (Y/N): <u>N</u> Canopy (% open): <u>30</u> 00 | - |
| Vere samples collected for water chemistry? (Y/N): _// (Note lab sam | ple no. or id. and attach results) Lab Number: |
| ield Measures: Temp (*C) Dissolved Oxygen (πg/l) | pH (S.U.) Conductivity (umbos/cm) |
| | •••••••••••••••••••••••••••••••••••••• |
| the sampling reach representative of the stream (Y/N) If not, please | e explain: |
| · · · · · · · · · · · · · · · · · · · | |
| Additional comments/description of pollution impacts: | |
| Contract Contraction of policition impacts. | |
| | |
| BIOTIC EVALUATION | |
| Performed? (Y/N): (If Yes, Record all observations. Voucher colle ID number. Include appropriate field data she | ections optional. NOTE: all voucher samples must be labeled with ets from the Primary Headwater Habitat Assessment Manual) |
| Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Obser Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Ma | ved? (Y/N) Voucher? (Y/N) |
| TOgs of Laupoies Observed's (TIN) Vouchers (TIN), Aqualic MR | The second |

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) ;

modified Class I

and a strategy of the strategy

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SITE NAME/LOCATION AMPON RIVER BASIN DRAINAGE AREA (mi²) _ LENGTH OF STREAM REACH (II) _ LAT. LONG. RIVER CODE RIVER MILE Loufly SCORER N. DATE 29 COMMENTS NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions DINONE / NATURAL CHANNEL DIRECOVERED RECOVERING DIRECENT OR NO RECOVERY STREAM CHANNEL **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric TYPE PERCENT 40 PERCENT Points BLDR SLABS [16 pts] SILT [3 pt] 00 LEAF PACK/WOODY DEBRIS [3 pts] 00 BOULDER (>256 mm) [16 pts] \mathbf{x} Substrate 00 00 FINE DETRITUS [3 pts] BEDROCK [16 pt] Max# 40 00 00 COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 00 00 20 MUCK [0 pts] GRAVEL (2-64 mm) [9 pts] ØO 00 ARTIFICIAL [3 pts] SAND (<2 mm) [6 pts] Total of Percentages of (8) (Al A+B O Bidr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of **Pool Depth** 2. evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max # 30 > 30 centimeters [20 pts] Ο > 5 cm - 10 cm [15 pts] ٥ ſ > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] O > 10 - 22.5 cm [25 pts] D NO WATER OR MOIST CHANNEL [0 pts] るい CURVARY አንዲት/ MAXIMUM POOL DEPTH (centimeters): Falming COMMENTS BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): Bankfull 3 Ο 8 > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width > 4.0 meters (> 13') [30 pts] Ο > 3.0 m > 4.0 m (> 9'7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3') [5 pts] Max=30 > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] COMMENTS AVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY なNOTE: River Left (L) and Right (R) as looking downstreamな RIPARIAN WIDTH FLOODPLAIN QUALITY (Per 8ank) (Most Predominant per Bank) R ŌΟ 00 Mature Forest, Wetland Conservation Tillage ПΓ Wide >10m Immature Forest, Shrub or Old 00 ΠΠ XX Urban or Industrial Moderate 5-10m Field Open Pasture, Row 00 00 00 Residential, Park, New Field Narrow <5m Cmg 00 00 00 None Fenced Pasture Mining or Construction COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box); Moist Channel, isolated pools, no flow (intermittent) Stream Flowing Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral) COMMENTS_ SINUOSITY (Number of bands per 61 m (200 ft) of channels, (Check ONLY one box): None 1.0 2.0 3.0 \square n п 2.5 0.5 1.5 >3 STREAM GRADIENT ESTIMATE X Moderate to Severe Severe (10 m/100 h) Flat (0.5 nv100 ll) Fiat to Moderate Moderate (2 (V100 /I))

| | BS-1 |
|--|---|
| ADDITIONAL STREAM INFORMATION (This information Must Also be | Completed): |
| | (If Yes, Attach Completed QHEt Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIR | E WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| USGS Quadrangle Name: New Haven, WV-OHN | RCS Soil Map Page: NRCS Soil Map Stream Order |
| USGS Quadrangle Name: <u>New Kaven, WV-OH</u> N County: <u>Meigh</u> Township | 1011 Letart Falls, Ohio area |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of tast precipitation:/ | 19/05 quantity: untinon |
| Photograph Information: YIS | |
| Elevated Turbidity? (Y/N): $\frac{\sigma N}{N}$ Canopy (% open): <u>25</u> | ```*• |
| Were samples collected for water chemistry? (Y/N): <u>N</u> (Note lab sa | mple no. or id. and attach results) Lab Number |
| Field Measures: Temp (°C) Dissolved Oxygen (mg/l) | pH (S.U.) Conductivity (umhos/cm) |
| Is the sampling reach representative of the stream (Y/N) If not, ple | |
| | |
| Additional comments/description of pollution impacts: | |
| | _ |
| BIOTIC EVALUATION | |
| | Rections optional. NOTE; all voucher samples must be labeled with the site |
| | eets from the Primary Headwater Habital Assessment Manual) |
| Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? | eved? (Y/N) Voucher? (Y/N) |
| Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic I | Ascroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Comments Regarding Biology: | |
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| | F STREAM REACH (This must be completed): ite evaluation and a narrative description of the stream's location |
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October 24, 2002 Revision

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modified Class IT Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3); 40

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| SITE NAMELOCATION | | | |
|--|---|---|------------------|
| | _ RIVER BASIN | | /mi²) |
| | | | |
| LENGTH OF STREAM REACH (R) LAT. | MMENTS 14, 37 | · · · · · · · · · · · · · · · · · · · | |
| NOTE: Complete All items On This Form - Refer to | 6 | | |
| • | | | |
| STREAM CHANNEL IN NONE / NATURAL CHAP MODIFICATIONS: | NNEL LI RECOVERED COMME | | NO RECOVERY |
| | P* | · | |
| 1. SUBSTRATE (Estimate percent of every type of se | | ••••••••••••••••••••••••••••••••••••••• | |
| (Max of 32). Add total number of significant substrate TYPE PERCENT | types found (Max of 8). Final metri TYPE. | c score is sum of boxes A & B. PERCEN | T Metric |
| U BLOR SLABS [16 pts] | | 40 | |
| Image: Second system S | | | Substrate |
| COBBLE (65-256 mm) [12 pts] | CLAY or HARDPAN | [0 pt] | Max = 40 |
| GRAVEL (2-64 mm) [9 pts] | MUCK [0 pts] | 70 | 25 |
| □ □ | 🗍 🗍 🛛 ARTIFICIAL (3 pts) | | |
| Total of Percentages of Bidr Slabs, Boukler, Cobble, Bedrock | (A) 19 | (8) | / A+B |
| SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYP | | ER OF SUBSTRATE TYPES: | Le |
| 2. Maximum Pool Depth (Measure the maximum pool | ol depth within the 61 meter (200 | ft) evaluation reach at the time | of Pool Depth |
| evaluation. Avoid plunge pools from road culverts or | storm water pipes) (Check ONL) | one box): | Max = 30 |
| > 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts] | ☐ > 5 cm - 10 cm [14 ☐ _ < 5 cm (5 pts] | o ptsj | |
| □ > 10 - 22.5 om [25 pts] | | IOIST CHANNEL [0 pts] | \odot |
| COMMENTS | | POOL DEPTH (centimeters): | |
| 3BANK FULL WIDTH (Measured as the average of | | ck ONLY one box]: | Bankfull |
| └ > 4.0 meters (> 13') [30 pts] □ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] | ∑ZK > 1.0 m - 1.5 m (>: □ ≤ 1.0 m (≤ 3*3*)]5 | | Width Max=30 |
| □ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | | | 116 |
| COMMENTS | AVERAGE | BANKFULL WIDTH (meters) | 12 |
| | | | |
| This i RIPARIAN ZONE AND FLOODPLAIN QUAL | information <u>must</u> also be comple .ITY ☆NOTE: River Left (L) an | ted d Right (R) as looking downstre | fzme |
| RIPARIAN WIDTH FLOODF | LAIN QUALITY | | |
| L R (Per Bank) Wide >10m | (Most Predominant per Bank) Mature Forest, Welland | L R Conservation | Tillage |
| Moderate 5-10m | Immature Forest, Shrub or Old | Urban or Indu | • |
| | Field Residential, Park, New Field | Open Pasture | , Row |
| | Fenced Pasture | Crop D Mining or Con | struction |
| COMMENTS | | | |
| FLOW REGIME (At Time of Evaluation) (C | heck ONLY one box): | | |
| Stream Flowing Subsurface flow with isolated pools (interstitie | | nnel, isolated pools, no flow (inf et. np. water (Ephemeral) | ermittent) |
| COMMENTS | | | |
| SINUOSITY (Number of bends per 61 m (20 | 0 ft) of channel) <u>(Check ONLY</u> on | e box): | |
| None 1.0 0.5 1.5 | 2.0 | | |
| | × | 1. 28 - 19 | |
| STREAM GRADIENT ESTIMATE | erale (2 10100 m) Oderati | e to Severe 🛛 Sev | efe (10 m/100 #) |
| <i>[</i> | | | |

| DUTUNAL STREAM INFORMATION IN the Information Must Also be Completed: Del PERFORMED7 - [] 'ts' [] /ts' [] /ts | | BS-1-2 | |
|--|--|--|--------------------|
| OHER PERFORMED? - [] Yes _ Leo Chill Score | DDITIONAL STREAM INFORMATION (This Information Must Also be Compl | etad): | |
| DOWNSTREAM DESIGNATED USE(5) Distance from Evaluated Stream DWH Hame: Distance from Evaluated Stream DEWN Hame: Distance from Evaluated Stream DEWN Hame: Distance from Evaluated Stream DEWN Hame: MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE EXTIRE WATERSHIP AREA. CLEAR: WARK THE STE LOCATION JSGB Guadangle Name: Township / CBy: Township / CBy: MISSEELLANEOUS Township / CBy: Township / CBy: States Flow Conditions? (VNN): Date of tast precipitation: 1 49/10 5 Guanetity: UFA Canety (4 open): DE Hotograph Information: J EA Canety (4 open): DE Nette samples colleded for water chemistry? (YNI): N (Note tab sample no. or id. and attach results) Lab Number: | | | |
| Diverse implicit of the stream Distance from Evaluated Stream ONH Name Distance from Evaluated Stream DVH Name Distance from Evaluated Stream DVH Name Distance from Evaluated Stream DVH Name Distance from Evaluated Stream DISOS Quadrange Name <u>How C MAPS</u> , HOLUDING THE <u>ENTINE</u> WATERSHED AREA. CLEARLY MARK THE STEE LOCATION JSGE Quadrange Name <u>How C MAPS</u> , HOLUDING THE <u>ENTINE</u> WATERSHED AREA. CLEARLY MARK THE STEE LOCATION JSGES Quadrange Name <u>How C MAPS</u> , HOLUDING THE <u>ENTINE</u> WATERSHED AREA. CLEARLY MARK THE STEE LOCATION JSGES Quadrange Name <u>How C MAPS</u> , HOLUDING THE <u>ENTINE</u> WATERSHED AREA. CLEARLY MARK THE STEE LOCATION JSGES Quadrange Name <u>How C MAPS</u> , HOLUDING THE <u>ENTINE</u> WATERSHED AREA. CLEARLY MARK THE STEE LOCATION JSGES Cluadrange Name <u>MISCELLANEOUS</u> Sales Flow Conditions? (VIN) Date of last precipitation | · · · · · · · · · · · · · · · · · · · | es, Allach Completed Crici Pontij | |
| Dight Hame: | | | |
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| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTERS</u> WATERSHED AREA. CLEARLY MARK THE SITE LOCATION ISOS Quadrange Name: Num: Num: Num: Num: Num: Num: Num: Num | | | |
| BSGS Quadrangle Name: ?/WW / How ? My / OH NRCS Soil Map Page:NRCS Soil Map Stream Order County: | J CWR Name: | | |
| Sourty: | ** | | |
| MISCELLANEOUS Tote of list preceptation: | ISGS Quadrangle Name: / UW / Howen, , WV - UH NRCS So | I Map Page: NRCS Soil Map Stream Order | |
| hotograph information: idevated Turbidity? (V/N): | County: <u>Meigh</u> Township / City:_ | | |
| hotsgraph information: | MISCELLANEOUS | 105 | |
| <pre>served Turbidity? (YNN): Canopy (% open):</pre> | ase Flow Conditions? (Y/N): Date of last precipitation: | Quantity: UN MOM | |
| Nere samples collected for water chemisky? (Y/N): | | | |
| Field Measures: Temp (*C) Dissolved Oxygen (mg/i) pH (S.U) Conductivity (umhos/cm) as the sampling reach representative of the stream (Y/N) If not, please explain: | | | |
| s the sampling reach representative of the stream (Y/N) ↓ If not, please explain: | | | |
| Inditional comments/description of pollution impacts: EKOTIC EVALUATION Performed? (YnN): M (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 Habital Assessment Manual) Performed? (YnN): Voucher? (VnN) Salamanders Observed? (YnN) Voucher? (VnN) Voucher? (VnN) Voucher? (VnN) Voucher? VnN Include important landmarks and other features o | | | |
| BIOTIC EVALUATION Performed? (Y/N): | s the sampling reach representative of the stream (Y/N) If not, please exp | lain: | |
| Performed? (Y/N): | dilicinal comments/description of pollution impacts: | | |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): Include important landmarks and other features of Interest for site evaluation and anarrative description of the stream's location (hMm ⁰) FLOW | Performed? (Y/N): | m the Primary Headwater Habitat Assessment Manual) Y/N) Voucher? (Y/N) | • |
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| FLOW > Alle patety for the spin of the spi | Include important landmarks and other features of Interest for site evalu | ation and a narrative description of the stream's location | 1 |
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October 24, 2002 Revision

Primary Headwater Habitat Evaluation Form

| | HME! Score (su | m of metrics 1, 2, 3) : |
|---|---|--|
| SITE NAME/LOCATIONAMY - OF | | |
| | S-1-3 RIVER BASIN | |
| LENGTH OF STREAM REACH (ft) | LAT LONG RIVER | CODE RIVER MILE |
| DATE 1/04 05 SCORER MAL | - | |
| - | Refer to "Field Evaluation Manual for Ohics of the second seco | |
| STREAM CHANNEL | URAL CHANNEL CRECOVERED DRECOVE | RING DRECENT OR NO RECOVERY |
| MODIFICATIONS: | | |
| (Max of 32). Add total number of significa TYPE Pi BLDR SLABS [16 pts] Pi BOULDER (>256 mm) [16 pts] Pi BEDROCK [16 pt] Pi COBBLE (65-256 mm) [12 pts] Pi | ry type of substrate present. Check ONLY two prevent substrate types found (Max of 8). Final metric sco | re is sum of boxes A & B. PERCENT 2.0 BRIS [3 pts] BRIS [3 pts] HHEI Metric Points Substrate May # 40 |
| GRAVEL (2-64 mm) [9 pts] | <u>20</u> □ □ MUCK [0 pts] <u>()</u> □ □ ARTIFICIAL [3 pts] | <u> </u> |
| Total of Percentages of | | (B) A+B |
| Bidr Slabs, Boulder, Cobble, Bedrock | D $ q $ | 15 1 11 |
| | | F SUBSTRATE TYPES: |
| | aximum pool depth within the 61 meter (200 ft) ev 1 culverts or storm water pipes) (Check ONLY one 5 cm - 10 cm [15 pts] | box): |
| 3BANK FULL WIDTH (Measured as the | average of 3-4 measurements) (Check O | NLY one box): Bankfull |
| > 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" - ↓ ≤ 1.0 m (≤ 3'3") [5 pts] | 4' 8'') [15 pts] Width |
| | , D | 15 |
| COMMENTS Chapped wher | stright o-ATICALY AVERAGE BANK | (FULL WIDTH (meters) |
| RIPARIAN ZONE AND FLOODF RIPARIAN WIDTH | This information <u>must</u> also be completed LAIN QUALITY ☆NOTE: River Left (L) and Rig <u>FLOODPLAIN QUALITY</u> L.R. (Most Predominant per Bank) | ht (R) as looking downstream와 |
| Wide >10m | Mature Forest, Wetland | Conservation Tillage |
| Moderate 5-10m | Field | Urban or Industrial |
| O O Narrow <5m | Residential, Park, New Field | Open Pasture, Row Crop |
| COMMENTS | Fenced Pasture | Mining or Construction |
| FLOW REGIME (At Time of Eva Stream Flowing Subsurface flow with isolated poc COMMENTS | is (Interstitial) | isolated pools, no flow (Intermittent) water (Ephemeral) |
| SINUOSITY (Number of bends) | ber 61 m (200 ft) of channel) (Check ONLY one box 1.0 2.0 1.5 1.5 |): |
| STREAM GRADIENT ESTIMATE | Moderate 12 IU 100 m | ievere 🗍 Severe (10 tv100 ti) |

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| ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) th Observed? (Y/N) | | <u>Completed):</u> |
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| Observed? (VM) Observed? (VM) If not, please stream (VM) BIOTIC EVALUATION (W excert of postulated appropriate field cate stream) Observed? (VM) BIOTIC EVALUATION (W excert ? VM) If not, please stream (VM) BIOTIC EVALUATION (W excert ? VM) If not, please stream (VM) Closerved? (VM) (VM) If not, please stream (VM) With not, please stream (VM) BIOTIC EVALUATION (W excert and stream (VM) If not, please explain: Bitmed restream Mapping BIOTIC EVALUATION (W excert and stream (VM) If not, please explain: Bitmed restream Mapping BIOTIC EVALUATION (W excert and stream (VM) If not, please stream of the stream Mapping Vocation and stream Mapping BIOTIC EVALUATION (W excert and stream (VM) If not, please explain: Bitmed restream Mapping BIOTIC EVALUATION (W excert and stream (VM) If not, please explain: Bitmed stream Mapping BIOTIC EVALUATION (W excert and stream (VM) If not, please explain: Bitmed stream Mapping BIOTIC EVALUATION (W excert and stream VM) Mapping of Teaples and stream Mapping Vocation (VM) Not the stream's location of the st | - | (# Yes, Attach Completed UHEL Form) |
| CMH Name: | | Distance from Evaluated Stream |
| EWH Name: | | |
| MARPHNG: ATTACH COPIES OF MAPS, INCLUDING THE ENTITE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION GB Causdrungie Name: Must Hower, MV - OHNRC'S Gal Map Page | | |
| GS Quadragie Name: <u>How Howen</u> , <u>WV-OH</u> NRCS Soil Map Page:NRCS Soil Map Stream Order | | |
| Inty: | | |
| MBCELLANEOUS be Flow Conditions? (Y/N): Date of last precipitation | | |
| MBCELLANEOUS be Flow Conditions? (Y/N): Date of last precipitation | unty: Meigh Township, | 1011 Litart Falls, Ohio are |
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| biograph information: | se Finer Conditions? (Y/N): | 29/05 quantity unhangen |
| valed Turbidity? (YN): | , | CIT CO CONTRACTOR CONT |
| It is amples collected for water chemistry? (Y/N): N (Note teb sample no. or id. and attach results) Lab Number: It Measures: Temp (*C) Dissolved Oxygen (mg/l)pH (S.U.) Conductivity (umhos/cm) | otograph Information: | |
| It is amples collected for water chemistry? (Y/N): N (Note teb sample no. or id. and attach results) Lab Number: It Measures: Temp (*C) Dissolved Oxygen (mg/l)pH (S.U.) Conductivity (umhos/cm) | evated Turbidity? (Y/N): <u>N1</u> Canopy (% open): <u>50</u> | _ |
| he sampling reach representative of the stream (YA) if not, please explain: b Ton NAN Toed ChanNJ12ed and A A A A A A A A A A A A A A A A A A A | are samples collected for water chemistry? (Y/N): (Note tab sam | nple no. or id. and attach results) Lab Number: |
| he sampling reach representative of the stream (YA) if not, please explain: b Ton NAN Toed ChanNJ12ed and A A A A A A A A A A A A A A A A A A A | Hol Measures: Temp (*C) Dissolved Oxvaen (ma/l) | pH (S.U.) Conductivity (umhos/cm) |
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| diffional comments/description of pollution impacts: BiOTIC EVALUATION rformed? (Y/N): N (if Yes, Record all observations, Voucher collections optional. NOTE: all voucher samples must be labeled with the liD number. Include appropriate field data sheets from the Primary Headwater Habital Assessment Manual) th Observed? (Y/N) Voucher? (Y/N) you conter? (Y/N) Voucher? (Y/N) ogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) you conter? (Y/N) Voucher? (Y/N) provide the stream of the features of interest for site evaluation and a narrative description of the stream's location you conter? You conter? you conter? You conter? you conter? | | ise explain: USH Var TWAP 70-0 (1931)0. C |
| BIOTIC EVALUATION rformed? (Y/N): | and tall of little | |
| BIOTIC EVALUATION rformed? (Y/N): | | |
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| Include Important landmarks and other features of interest for site evaluation and a narrative description of the stream's location W W W W W W W W W W W W W W W W W W W | | |
| Include Important landmarks and other features of interest for site evaluation and a narrative description of the stream's location W W W W W W W W W W W W W W W W W W W | DRAWING AND NARRATIVE DESCRIPTION OF | E STREAM REACH (This must be completed): |
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October 24, 2002 Revision

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Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) : 48

| SITE NUMBER GS-Q RIVER BASIN ORAINAGE AREA (mf) LENGTH OF STREAM REACH (m) 100 Lm LONG. RIVER CODE RIVER MILE DATE 11/29/05 SCORER K205(' COMMENTS NOTE: Complete Ail Items On This Form - Refer to "Field Evaluation Manual for Ohlo's PHWH Streams" for Instructions STREAM CHANNEL INONE / NATURAL CHANNEL RECOVERED Incover of the control |
|--|
| DATE 11/29/05 SCORER 40051 COMMENTS NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohlo's PHWH Streams" for instructions STREAM CHANNEL NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY MODIFICATIONS: photos 27-20 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONL Y type 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 TYPE BLDR SLABS (16 pts) PERCENT PERCENT BOULDER (>256 mm) [16 pts] Image: Clay or HARDPAN [0 pt] Image: Clay or HARDPAN [0 pt] Image: Clay or HARDPAN [0 pt] BOULDER (<266 mm) [16 pts] |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohlo's PHWH Streams" for instructions STREAM CHANNEL INONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVERY MODIFICATIONS: Dhotes 27-28 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 & 8. HHEI 1. SUBSTRATE (Estimate percent of every type of substrate types found (Max of 8). Final metric score is sum of boxes A & 8. HHEI 1. SUBSTRATE (Estimate percent of significant substrate types found (Max of 8). Final metric score is sum of boxes A & 8. HHEI 1. SUBSTRATE (Estimate percent of significant substrate types found (Max of 8). Final metric score is sum of boxes A & 8. HHEI 1. BOULDER (>256 mm) [16 pts] Image: Sill T [3 pt] Image: Sill T [3 pt] Image: Sill T [3 pt] 1. BOULDER (>256 mm) [12 pts] Image: Sill T [3 pt] Image: Sill T [3 pt] Image: Sill T [3 pt] Substrate 1. GRAVEL (>264 mm) [9 pts] Image: Sill T [3 pt] Image: Sill T [3 pt] Image: Sill T [3 pt] Substrate 1. Score OF TWO MOST PREDOMINATE SUBSTRATE TYPES: Image: Sill T [3 pt] Image: |
| STREAM CHANNEL INONE / NATURAL CHANNEL RECOVERING RECOVERING RECENT OR NO RECOVERY MODIFICATIONS: |
| MODIFICATIONS: photos 27-28 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI Image: Decomposition of the present of every type of substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI Image: Decomposition of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI Image: Decomposition of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI Image: Decomposition of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI Image: Decomposition of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI Image: Decomposition of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI Image: Decomposition of significant substrate types for the maximum point of the present of the maximum point of the present form road culveris or storm water pipes form for the maximum point of the present form for the maximum point of the present for the maximum point of the present form for the present form for the present preses form for the maximum point culver |
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| 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI 1. SUBSTRATE (Estimate percent of every type of substrate types found (Max of 8). Final metric score is sum of boxes A & B. PERCENT 1. SUBSTRATE (Estimate percent of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. PERCENT 1. BLDR SLABS [16 pts] PERCENT TYPE 1. BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] 75 1. GRAVEL (2-64 mm) [12 pts] 10 CLAY or HARDPAN [0 pt] 5 1. GRAVEL (2-64 mm) [9 pts] 10 ATTIFICIAL [3 pts] 5 1. SAND (<2 mm) [6 pts] |
| (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. HHEI TYPE PERCENT TYPE BOULDER (>256 mm) [16 pts] Image: Sill T [3 pt] Image: Sill T [3 pt] BOULDER (>256 mm) [16 pts] Image: Sill T [3 pt] Image: Sill T [3 pt] Image: Sill T [3 pt] BOULDER (>256 mm) [16 pts] Image: Sill T [3 pt] BOULDER (>256 mm) [12 pts] Image: Sill T [3 pt] Image: Sill T [3 pt]< |
| BLDR SLABS [16 pts] Image: Sill T [3 pt] |
| BEDROCK [15 pt] Image: Substrate of the subst |
| COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 5 GRAVEL (2-64 mm) [9 pts] 0 CLAY or HARDPAN [0 pt] 5 SAND (<2 mm) [6 pts] |
| SAND (<2 mm) [6 pts] |
| Total of Percentages of Bidr Siabs, Boulder, Cobble, Bedrock QO (A) Q4 (B) Q4 (B) Q4 A+B SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: 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 ONL Y one box): > 5 cm - 10 cm [15 pts] Pool Depth Max = 30 2. > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] O > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] O |
| Bidr Stabs, Boulder, Cobble, Bedrock Q4 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 ONL Y 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] |
| SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: Pool Depth 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 ONL Y one box): Pool Depth > 30 centimeters (20 pts) 0 > 5 cm - 10 cm (16 pts) Max = 30 > 22.5 - 30 cm [30 pts] 0 > 5 cm (5 pts) O > 10 - 22.5 cm [25 pts] 0 NO WATER OR MOIST CHANNEL 10 pts) O |
| 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] NO WATER OR MOIST CHANNEL [0 pts] |
| > 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] |
| |
| |
| |
| □ > 4.0 meters (> 13') [30 pts] □ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width |
| □ / > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] □ ≤ 1.0 m (≤ 3' 3") [5 pts] Max=30 □ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] |
| |
| |
| This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY গেNOTE: River Left (L) and Right (R) as looking downstream分 |
| RIPARIAN WIDTH FLOODPLAIN QUALITY |
| L R (Per Bank) L R (Most Predominant per Bank) L R V Wide >10m D D Mature Forest, Wetland D D Conservation Tillage |
| Moderale 5-10m MC Immature Forest, Shrub or Old Urban or Industrial |
| Important of field Field Field Open Pasture, Row Open Pasture, Row |
| Image: Comp to the second s |
| COMMENTS |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing |
| 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 3.3 |
| STREAM GRADIENT ESTIMATE |
| Fiat (0.5 w100 ft) Fiat to Moderate Moderate (2 w100 ft) Severe Severe (10 w100 ft) |

| BS | -a |
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| DDITIONAL 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 St | |
| CWH Name: Distance from Evaluated St EWH Name: Distance from Evaluated St | |
| | |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTIRE</u> WATERSHED AREA. CLEARLY MARK THE | |
| SGS Quadrangle Name: New Harren, WV-OH NRCS Soil Map Page: NRCS Soil Mar | Stream Order |
| ounty: Mugs Township/City: Letart Falle, C | this area |
| MISCELLANEOUS | |
| ase Flow Conditions? (Y/N): Y Date of last precipitation: $11/22/05$ Quantity: unhore | - ww |
| hotograph information:(27+28) | |
| :levaled Turbidity? (Y/N): N Canopy (% open): 20 | |
| /ere samples collected for water chemistry? (YN): N (Note lab sample no. or id. and atlach results) Lab Numbe | r: |
| ield Measures: Temp (*C) Dissolved Oxygen (mgA) pH (S.U.) Conductivity (umhosA | cm) |
| s the sampling reach representative of the stream (Y/N) \sum If not, please explain: | |
| dditional comments/description of pollution impacts: | |
| BIOTIC EVALUATION | |
| Performed? (Y/N): | |
| 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) Vo | ucher? (Y/N) |
| Comments Regarding Biology | |
| | |
| | |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be Include important landmarks and other features of interest for site evaluation and a narrative description of | |
| | |
| | |
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| -LOW mut - | |
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| | |
| | |
| | |

class II

| SILE NAME/LC | CATION AMP-OF | | | | | |
|-----------------------|--|------------------------|----------------------|--|---|--|
| | SITE NUMB | IER BS-2-2 | | SIN | DF | AINAGE AREA (mi²) |
| LENGTH OF S | TREAM REACH (ft) | | | | | |
| | | co | MMENTS | <u> </u> | | |
| NOTE: Con | nplete All Items On Thi | s Form - Refer t | o "Field Eve | luation Manual | for Ohio's PHV | VH Streams" for inst |
| STREAM CH | | E / NATURAL CHA | | | RECOVERING [| DRECENT OR NO REC |
| MODIFICAT | IONS: BUR P.LAN | 1- 33 | An | 1142-5 | - 711 | |
| | الما مان المحرب ويون معيا الأن الناب ويربين | | | | | |
| | TRATE (Estimate percent of 32). Add total number of 1 | | | | | |
| TYPE | | PERCENT | TYPE | | | PERCENT |
| ПО ві ØО ві | _DR SLABS [16 pts] DULDER (>256 mm) [16 pt | s) <u>35</u> | | SILT [3 p() LEAF PACKAWO | ODY DEBRIS [3 p | ts]Û |
| ОО, ы | DROCK [16 pt] | 20 | 00 | FINE DETRITUS | | |
| | DBBLE (65-256 mm) [12 pt | • | | CLAY or HARDP | AN [0 pf] | 10 |
| | RAVEL (2-64 mm) [9 pts] AND (<2 mm) [6 pts] | | | MUCK [0 pts] ARTIFICIAL [3 p | ts) | |
| | Total of Passasianas of | | (A) | | - | (B) |
| Bidr S | labs, Boulder, Cobble, Bed NO MOST PREDOMINATE | | 23 | | | 5 |
| | | | | ····· | WHER OF SUBST | |
| | num Pool Depth (Measure ation. Avoid plunge pools fo | | | | | each at the lime of |
| 🔲 > 30 o | entimeters [20 pts] | | 0 | > 5 cm - 10 cm | | |
| | - 30 cm [30 pts] 22.5 cm [25 pts] | | Ő | < 5 cm [6 pts] NO WATER OF | R MOIST CHANNE | L [0 pts] |
| COM | MENTS Ideal to | .: | | MAXIMU | M POOL DEPTH | (centimeters): |
| | FULL WIDTH (Measured | as the average of | | | | |
| > 4.0 n $ > 3.0 n$ | neters (> 13') [30 pts] n - 4.0 m (> 9'7" - 13') [25 p | ots] | Ģ | > 1.0 m - 1.5 m ≤ 1.0 m (≤ 3' 3" | (> 3' 3" - 4' 8") [15) [5 pts] | pts] |
| 🗍 > 1.5 n | n - 3.0 m (> 9' 7" - 4' 8") [20 | pts] | | | | |
| COM | MENTS | <u>_</u> | | AVERAG | E BANKFULL W | DTH (meters) |
| | | | | | | |
| | RIPARIAN ZONE AND F | | | <u>must</u> also be com OTE: River Left (L) | | looking downstreamstr |
| | RIPARIAN WDTH | <u>FLOOD</u> L R | PLAIN QUALI | | | |
| ėć | (Per Bank) Wide >10m | ĠÔ | Mature Fore | minant per Bank) est, Wetland | ΰĎ | Conservation Tillage |
| 00 | Moderale 5-10m | 00 | Immature Fr Field | orest, Shrub or Old | 00 | Urban or Industrial |
| 00 | Narrow <5m | 00 | | Park, New Field | 00 | Open Pasture, Row |
| | | 00 | Fenced Pas | | | Crop Mining or Construction |
| | COMMENTS 3 | C-14-1 | ز~′ | | | |
| | FLOW REGIME (At Time | e of Evaluation) (C | Check ONLY o | | | |
| - | Stream Flowing | ated pools (Injgrstili | ial) | _ | Channel, isolated p annel, no-water (E | ools, no flow (Intermitten) phemeral) |
| 8 | aupouriave now with ISOIS | | <u>.</u> | | | |
| | COMMENTS | 1. J. J. A. | | | | |
| 0 | COMMENTS | bends per 61 m (20 | 00 ft) of channe | | 'one bax): | 1 ,, |
| | COMMENTS | , | 00 ft) of chann | el) (Check ONL Y 2.0 2.5 | (one box): (|] 3.0] >3 |

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BS-2-2

| QHEI PERFORMED? - LI Yes 🗠 No QHEI Score | (If Yes, Attach Completed QHEI Form) |
|--|---|
| DOWNSTREAM DESIGNATED USE(S) | A |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE E | ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| SGS Quadrangle Name: New Haven, VV-01 | H NRCS Soll Map Page: NRCS Soil Map Stream Order |
| ounty: Marga Tow | unship / City: Letart Falls, Ohio area |
| 0 Miscellaneous | |
| ase Flow Conditions? (Y/N): Date of last precipitation: | 11/29/05 Quentity: Untrom |
| holograph information: $\gamma_{g0} = H_{3} \gamma_{-}$ | · · · |
| levated Turbidity? (Y/N): Canopy (% open):O | |
| Vere samples collected for water chemistry? (Y/N): (Note I | lab sample no. or id. and attach results) Lab Number: |
| ield Measures: Temp (*C) Dissolved Oxygen (mg/l) | pH (S.U.) Conductivity (µmhos/cm) |
| · · · · · · · · · · · · · · · · · · · | ot, please explain: |
| | ot, piease explain: |
| ditional comments/description of pollution impacts: | |
| | |
| BIOTIC EVALUATION | |
| | ther collections optional. NOTE: all voucher samples must be labeled with the si |
| | late sheets from the Primary Headwater Habitat Assessment Manual) |
| | s Observed? (Y/N) Voucher? (Y/N) uatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| omments Regarding Biology | |
| | |

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

13 -12 R5-5 B5-FLOV 2 Ani woods

Class I

Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) :

| SITE NAME/LOCATION _ APP - OH | <u> </u> | · · · · · · · · · · · · · · · · · · · | | | |
|---|---------------------|---|------------------------------|---|-----------|
| | | | | | |
| LENGTH OF STREAM REACH (ft) | AT | LONG RIVE | R CODE | RIVER MILE | - v 70.00 |
| DATE 11/29/05 SCORER KOUSE | | | | | |
| NOTE: Complete All Items On This Form | - Refer to "Fiel | d Evaluation Manual for C | hio's PHW | H Streams" for Instru | uctions |
| STREAM CHANNEL DINONE / NATI MODIFICATIONS: | JRAL CHANNEL | | VERING 🗍 | RECENT OR NO RECO | VERY |
| 1. SUBSTRATE (Estimate percent of ever (Max of 32). Add total number of significa | | | | | HHE |
| | ••• | PE | | PERCENT | Metri |
| 00 BLOR SLABS [16 pts] | | 🔲 SiLT [3 pt] | | | Poin |
| BOULDER (>256 mm) [16 pts] | | | | | Substr |
| BEDROCK [16 pt] BEDROCK [16 pt] COBBLE (65-256 mm) [12 pts] | | FINE DETRITUS (3 p) | | 80 | Max = |
| | | CLAY or HARDPAN [| r pij | | |
| Image: Second control in the second control | | ARTIFICIAL [3 pts] | | | 118 |
| | | | | | |
| Total of Percentages of Bidr Slabs, Bouider, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST | | 15 TOTAL NUMBER | | | A+8 |
| | | | | | |
| Maximum Pool Depth (Measure the ma evaluation. Avoid plunge pools from road | • • | | | ach at the time of | Pool De |
| evaluation. Avoid plunge pools from road 30 centimeters [20 pts] | converts of storm v | vater pipes) (Check OvyLy or > 5 cm - 10 cm [15 pt | | | Max = |
| > 22.5 - 30 cm [30 pts] | | | | | 0 |
| [] > 10 - 22.5 cm [26 pts] | | O NO WATER OR MOI | ST CHANNE | L [0 pts] | |
| COMMENTS Loss of Rain | | MAXIMUM PO | OL DEPTH (| centimeters): | |
| 3 BANK FULL WIDTH (Measured as the a | | | ONLY one b | ox): | Bankfu |
| > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 15 m - 2.0 m (> 0' 7" - 13') [25 pts] | | > 1.0 m → 1.5 m (> 3'3 ≤ 1.0 m (≤ 3'3") (5 pt | " - 4' 8") (15 p 1 | ts] | Width |
| □ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | | Co Σtronitzoolioph | e) | | Max=3 |
| | | | | | 5 |
| COMMENTS | | AVERAGE BA | NKFULL WIC | OTH (meters) | |
| RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH | LAIN QUALITY | | tight (R) as io | oking downstreams? | • |
| | | Predominant per Bank) | ΰÔ | Conson + 5++ 7# | |
| | Inc | e Forest, Welland lure Forest, Shrub or Old | | Conservation Tillage | |
| Moderate 5-10m | D Imma Field | | 00 | Urban or industrial | |
| 🗖 🗖 Narrow <5m | 00 Resid | enlial, Park, New Field | 00 | Open Pasture, Row Crop | |
| | DD Fence | ed Pasture | 00 | Mining or Construction | |
| FLOW REGIME (At Time of Eval Stream Flowing Subsurface flow with isolated pool COMMENTS | | _ | | ols, no flow (Intermitient) hemeral) | |
| SINUOSITY (Number of bends p | er 61 m (200 ft) of | channel) (Check ONLY one b | ox): | | |
| None Q | 1.0 | 2.0 | | 3.0 | |
| | 1.5 | . 2.5 | | >3 | |
| 1.) | 1.4 | · ····· p | | | |
| STREAM GRADIENT ESTIMATE | D Moderate (2 | | | 🗍 Severe (10 iu/10 | |

<u>BS-3</u>

| DITIONAL STREAM INFORMATION (This Information Must Also be | |
|---|--|
| QHEI PERFORMED? - DYes WNo QHEI Score | (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
|) WWH Name: | |
| CWH Name: | |
| | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE | · , |
| GS Quadrangle Name: <u>News Haven, UV-OH</u> NR | |
| ounty: <u>Meigh</u> Township | 1011. Letart Falls, Ohio area |
| MISCELLANEOUS | |
| ase Flow Conditions? (Y/N): Date of last precipitation:11/6 | 19/05 Quantity: unknown |
| hotograph information: | |
| levated Turbidity? (Y/N): <u>N</u> Canopy (% open): <u>25%</u> | |
| lere samples collected for water chemistry? (Y/N): (Note lab sam | nple no. or id. and attach results) Lab Number: |
| gld Measures: Temp (*C) Dissolved Oxygen (mg/l) | _ pH (S.U.) Conductivity (µmhos/cm) |
| the sampling reach representative of the stream (Y/N) / If not, plea | se explain: |
| | |
| | |
| ish Observed? (Y/N) Voucher? (Y/N) Salamanders Obse | llections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual) rvert? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher col ID number. Include appropriate field data she isb Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? | llections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual) rvert? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher col ID number. Include appropriate field data she | llections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual) rvert? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher col ID number. Include appropriate field data sho ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observeds of Tadpoles Observed? (Y/N) Aquatic M | llections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual) rvert? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher col ID number. Include appropriate field data sho ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Aquatic M | llections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual) rvert? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher col ID number. Include appropriate field data sho ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Aquatic M | lections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual) rved? (Y/N) Voucher? (Y/N) lacroinvertebrates Observed? (Y/N) Voucher? (Y/N) F STREAM REACH (This must be completed): |
| BIOTIC EVALUATION erformed? (Y/N): N | lections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual) rved? (Y/N) Voucher? (Y/N) lacroinvertebrates Observed? (Y/N) Voucher? (Y/N) F STREAM REACH (This must be completed): |
| BIOTIC EVALUATION serformed? (Y/N): | lections optional. NOTE: all voucher samples must be labeled with the si sets from the Primary Headwater Habitat Assessment Manual) rved? (Y/N) Voucher? (Y/N) lacroinvertebrates Observed? (Y/N) Voucher? (Y/N) F STREAM REACH (This must be completed): |
| BIOTIC EVALUATION erformed? (Y/N): | Ilections optional. NOTE: all voucher samples must be labeled with the sile aets from the Primary Headwater Habitat Assessment Manuel) rved? (Y/N) Voucher? (Y/N) lacroinvertebrates Observed? (Y/N) Voucher? (Y/N) F STREAM REACH (This must be completed): te evaluation and a narrative description of the stream's location |
| BIOTIC EVALUATION erformed? (Y/N): (If Yes, Record all observations. Voucher col ID number. Include appropriate field data sho ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Aquatic M comments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION OF Include Important landmarks and other features of interest for sit Stricts Stricts Stricts (m P 2 | Ilections optional. NOTE: all voucher samples must be labeled with the sile aets from the Primary Headwater Habitat Assessment Manuel) rved? (Y/N) Voucher? (Y/N) lacroinvertebrates Observed? (Y/N) Voucher? (Y/N) F STREAM REACH (This must be completed): te evaluation and a narrative description of the stream's location |

class I

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Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) : 15

| SITE NAME/LOCATION AMP-OH | | | | | |
|---|----------------------------------|--|---------------------------------------|--|-----------------------|
| | S- Y RIVER BA | SIN | DRAI | NAGE AREA (mi ²) | |
| LENGTH OF STREAM REACH (ft) _ 2 2 | | | | | |
| DATE 11/21/05 SCORER Koss | | | | | |
| NOTE: Complete All Items On This Form | | | | | uctions |
| | | | | | |
| | DRAL CHANNEL DIE | | ERING UP | CECENT OR NO RECU | VERY |
| MODIFICATIONS: | | | | | |
| 1. SUBSTRATE (Estimate percent of ever | v type of substrate pre | sent. Check ONLY two or | adominant sub | strate TYPE boxes | |
| (Max of 32). Add total number of significa | nt substrate types found | | | | HHEI |
| TYPE PE | | SILT (3 pt) | | PERCENT | Metric Points |
| BOULDER (>258 mm) [16 pts] | <u> </u> | LEAF PACK/WOODY D | EBRIS (3 pts) | | |
| BEDROCK [16 pt] | | FINE DETRITUS (3 pt | • | 40 | Substrate Max = 40 |
| COBBLE (65-256 mm) [12 pts] | | CLAY of HARDPAN [0 | pt] | _40_ | |
| GRAVEL (2-64 mm) [9 pts] G Ø SAND (<2 mm) [6 pts] | 10 00 | MUCK [0 pts] ARTIFICIAL [3 pts] | | ······································ | 10 |
| | | | | | |
| Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock | 0 14 6 | | | (B) 4 | A+B |
| SCORE OF TWO MOST PREDOMINATE SUBST | RATE TYPES: | TOTAL NUMBER | OF SUBSTRA | TE TYPES: | |
| 2. Maximum Pool Depth (Measure the ma | ximum pool depth with | in the 61 meter (200 ft) e | valuation reac | th at the time of | Pool Depth |
| evaluation. Avoid plunge pools from road | cuiverts or storm water | | | | Max = 30 |
| ↓ > 30 centimeters [20 pts] □ > 22.5 - 30 cm [30 pts] | B | > 5 cm - 10 cm [15 pt _ < 6 cm [5 pts] | 6] | | |
| > 10 - 22.5 cm [26 pts] | <u>B</u> | NO WATER OR MOIS | T CHANNEL | [0 pts] | \Box |
| COMMENTS Loss of the | | | L DEPTH (ce | ntimeters): | |
| 3BANK FULL WIDTH (Measured as the | everage of 3.4 measure | ments) /Chack | ONI Yone bo | w)- | Bankfull |
| | | > 1.0 m • 1.5 m (> 3' 3' | - 4' 8") [15 pts | | Width |
| └ > 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 (≤ 3' 3") [5 pts |] | | Max=30 |
| | | | | | 5 |
| | <u> </u> | AVERAGE BAN | IKFULL WIDT | 'H (meters) | |
| | This information | | | | |
| RIPARIAN ZONE AND FLOODP | | <u>must</u> also be completed ЮТЕ: River Left (L) and R | ight (R) as looi | king downstream បំ | |
| RIPARIAN WIDTH | FLOODPLAIN QUAL | | | | |
| L R (Per Bank) Wide >10m | | ominant per Bank) est, Wetland | | Conservation Tillage | |
| Moderate 5-10m | | orest, Shrub or Old | ~~ | Urban or Industrial | |
| | Field Residential | Dad. Mary Field | 00 9 | Open Pasture, Row | |
| UU Narrow <5m | ~~ | , Park, New Field | | Crop | |
| | $\bigcup \bigcup Fenced Pa$ | | | Mining or Construction | _ |
| FLOW REGIME (At Time of Eval | | - | | | |
| Stream Flowing | • | Moist Channe | l. isolated pool | is, no flow (Intermittent) | I |
| Subsurface flow with isolated pool COMMENTS | ls (Interstitial) | Dry channel, r | io water (Ephi | emeral) | |
| | | | · · · · · · · · · · · · · · · · · · · | | - |
| SINUOSITY (Number of bends p None | er 61 m (200 ft) of chanr 1.0 | iel) (Check ONLY one bi | x): | 3.0 | |
| | 15 | 1 2.5 | ŏ | >3 | |
| STREAM GRADIENT ESTIMATE | | ~ | | | |
| Flat (0.5 N/100 h) Flat to Moderate | Moderate (2 /// 100 + |) Moderate to | Severe | Severe (10 iu) | 00 A) |
| | | | | | |

| | (Il Yes, Attach Completed QHE! Form) |
|--|--|
| DOWNSTREAM DESIGNATED USE(S) | |
| | Distance from Evaluated Stream |
| J CWH Name: | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENT | IRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| SGS Quadrangle Name: New Kanen, WV - OH | NRCS Soil Map Page: NRCS Soil Map Stream Order |
| county: <u>Marga</u> Townsh | 10/City: Letant Falls, Ohio area |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of last precipitation: | 1/29/05 Quantity untrom |
| Photograph Information: | |
| Elevated Turbidily? (Y/N): Canopy (% open): | 2 |
| Nere samples collected for water chemistry? (Y/N): (Note tab s | sample no. or id, and attach results) Lab Number: |
| Field Measures: Temp (°C) Dissolved Oxygen (mg/i) | pH (S.U.) Conductivity (µmhos/cm) |
| s the sampling reach representative of the stream (Y/N) Y If not, p | Nasea avaisia. |
| a ne sembing reserve preserve or the streets (114 | |
| | |
| ID number. Include appropriate field data Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic | c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Performed? (Y/N): (If Yes, Record all observations. Voucher ID number, Include appropriate field data Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Performed? (Y/N): (If Yes, Record all observations. Voucher ID number, Include appropriate field data Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Performed? (Y/N): (If Yes, Record all observations. Voucher ID number, Include appropriate field data Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Verformed? (Y/N): | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Performed? (Y/N): (If Yes, Record all observations. Voucher ID number, Include appropriate field data Tish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Comments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): |
| Performed? (Y/N): (If Yes, Record all observations. Voucher ID number, Include appropriate field data Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Comments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Performed? (Y/N): (If Yes, Record all observations. Voucher ID number, Include appropriate field data Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Comments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): |
| Performed? (Y/N): (If Yes, Record all observations. Voucher ID number, Include appropriate field data Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Comments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION Include important landmarks and other features of interest for | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): |
| Performed? (Y/N): | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): |
| Performed? (Y/N): | sheets from the Primary Headwater Habitat Assessment Manual) oserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): site evaluation and a narrative description of the stream's location |
| Performed? (Y/N): | sheets from the Primary Headwater Habitat Assessment Manual) oserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): site evaluation and a narrative description of the stream's location |
| Performed? (Y/N): | sheets from the Primary Headwater Habitat Assessment Manual) oserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): site evaluation and a narrative description of the stream's location |
| Performed? (Y/N): | sheets from the Primary Headwater Habitat Assessment Manual) oserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): site evaluation and a narrative description of the stream's location |
| Performed? (Y/N): | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) voucher? (Y/N) OF STREAM REACH (This must be completed): site evaluation and a narrative description of the stream's location |
| Performed? (Y/N): N (If Yes. Record all observations. Voucher ID number. Include appropriate field data Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Ob Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Comments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION Include important landmarks and other features of interest for | sheets from the Primary Headwater Habitat Assessment Manual) pserved? (Y/N) Voucher? (Y/N) voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) voucher? (Y/N) OF STREAM REACH (This must be completed): site evaluation and a narrative description of the stream's location |
| Performed? (Y/N): | sheets from the Primary Headwater Habitat Assessment Manual) oserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): site evaluation and a narrative description of the stream's location |

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October 24, 2002 Revision

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Primary Headwater Habitat Evaluation Form

| | | Cl | ass I |
|---|---|---|------------------------|
| Primary H | eadwater Habitat Eva | | 19 |
| | | ore (sum of metrics 1, 2, 3) : | |
| SITE NAME/LOCATION AMP - ON SITE NUMBER | | | |
| LENGTH OF STREAM REACH (#) 50 - L | AT. LONG | | |
| DATE 11/21/05 SCORER 16005-C | COMMENTS | | |
| NOTE: Complete All Items On This Form | | | tructions |
| | | | COVERY |
| MODIFICATIONS: Scapt 355 | | 14 | |
| | huna of authority annout Charle OAH | | |
| 1. SUBSTRATE (Estimate percent of every (Max of 32). Add total number of significant | | | HHEI |
| <u>ТҮРЕ РЕІ</u> ВLDR SLABS (16 pts) | RCENT TYPE | PERCENT | Points |
| BOULDER (>256 mm) [16 pts] | | DODY DEBRIS [3 pts] | Substrate |
| COBBLE (65-256 mm) [12 pts] | | | Max = 40 |
| GRAVEL (2-64 mm) [9 pts] | | | 14- |
| | | pts] | |
| Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock | 20 19 | (8) 5 | A+B |
| SCORE OF TWO MOST PREDOMINATE SUBSTR | | MBER OF SUBSTRATE TYPES: | ■ |
| 2. Maximum Pool Depth (Measure the max | • • | • | Pool Depth |
| evaluation. Avoid plunge pools from road o | 🗍 🦳 > 5 cm - 10 cm | 1 [15 pts] | Max = 30 |
| | NO WATER C | R MOIST CHANNEL [0 pts] | |
| COMMENTS | MAXIM | JM POOL DEPTH (centimeters): | |
| 3BANK FULL WIDTH (Measured as the a | verage of 3-4 measurements) (| Check ONLY one box): | Bankfuli |
| > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7'' - 13') [25 pts] | L > 1.0 m - 1.5 m Substantiation (≤ 3*3 | n (> 3' 3" - 4' 8") [15 pts] ") [5 pts] | Width <u>Max=30</u> |
| > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | , | | |
| COMMENTS | AVERA | GE BANKFULL WIDTH (meters) | 5 |
| | This Information must also be con | nistad | |
| | AIN QUALITY TYNOTE: River Left (L |) and Right (R) as looking downstreams | |
| EIPARIAN WIDTH | FLOODPLAIN QUALITY <u>L</u> R_ (Most Predominant per Bank) | | |
| 2 D Wide > 10m | Mature Forest, Wetland | Conservation Tillage | |
| D D Moderate 5-10m | Field | | |
| D D Narrow <5m | Residential, Park, New Field | Crop | |
| COMMENTS | Fenced Pasture | Mining or Constructi | on |
| FLOW REGIME (At Time of Evalu | alion) (Check ONLY one box): | | |
| Stream Flowing Subsurface flow with isolated pools COMMENTS | | Channel, isolated pools, no flow (Intermitte annel, no water (Ephemeral) | :nt> |
| SINUOSITY (Number of bends pe | r 61 m (200 ft) of channel) _(Check ONL | Y one box): | |
| P None D ☐ 0.5 D | 1.0 Q 2.0 1.5 Q 2.5 | | |
| STREAM GRADIENT ESTIMATE | -/ | | |
| Flat (0.5 M100 ft) D Flat to Moderate | Moderate (2 livi loo li) | erate to Severe O Severe (10 | 10100 H) |

October 24, 2002 Revision

| · · · · · · · · · · · · · · · · · · · | 53-5 |
|--|--|
| DDITIONAL STREAM INFORMATION (This information Must Also be Co | mpleted): |
| | (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | , |
| | Distance from Evaluated Stream |
| CWH Name: | |
| DEWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WA | ATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| ISGS Quadrangle Name: New Haven, WV-OH NRCS | Soil Map Page: NRCS Soil Map Stream Order |
| County: Megs Township / Ci | • • • • • • • • • • • • • • • • • • • |
| ∂ MISCELLANEOUS | · · · |
| tase Flow Conditions? (Y/N): Y Date of last precipitation: $11/29$ | 10.5 Quantily: unknown |
| holograph Information: <u>yll</u> IF33 | / |
| Elevated Turbidity? (Y/N): Canopy (% open): O | |
| Vere samples collected for water chemistry? (Y/N): N (Note lab sample | |
| | 3 |
| leid Measures: Temp (*C) Dissolved Oxygen (mg/l) [| pH (S.U.) Conductivity (µmhos/cm) |
| s the sampling reach representative of the stream (Y/N) If not, please | explain: |
| difficient commente/deposition of collution immenter | |
| Additional comments/description of pollution impacts: | |
| BIOTIC EVALUATION | |
| Performed? (Y/N): V (IFYes, Record all observations. Voucher collect | |
| | iions optional. NOTE: all voucher samples must be labeled with the site i from the Primary Headwater Habitat Assessment Manual) |
| Fish Observed? (Y/N) Salamanders Observed | |
| rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macr | reinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| | |
| Comments Regarding Biology: | |

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

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

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Primary Headwater Habitat Evaluation Form

Class I

| Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) : | 11 |
|---|-------------------|
| SITE NAME/LOCATION AMP-OH | |
| SITE NUMBER BS- G RIVER BASIN DRAINAGE AREA (mi ²) | |
| LENGTH OF STREAM REACH (R) LAT LONG RIVER CODE RIVER MIL | |
| LENGTH OF STREAM REACH (R) LAT. LONG. RIVER CODE RIVER MILL DATE SCORER MOL COMMENTS INFORMATION | |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for It | nstructions |
| STREAM CHANNEL ON NONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO F | ECOVERY |
| 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxe | |
| (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. | HHEI |
| TYPE PERCENT TYPE PERCENT U BLOR SLABS [16 pts] U SiLT [3 pt] U U | Metric Points |
| BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] | Substrate |
| Image: SedRock [16 pt] Image: SedRock [16 pt]< | Max = 40 |
| GRAVEL (2-64 mm) (9 pts) G G G G G MUCK (0 pts) <u>36</u> | |
| SAND (<2 mm) [6 pts] | |
| Total of Percentages of (A) Bidr Slabs, Boulder, Cobble, Bedrock (A) 3 | A+B |
| SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: | L |
| 2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of | Pool Depth |
| 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] | Max = 30 |
| □ > 22.5 - 30 cm (30 pts) □< 5 cm (5 pts) | |
| > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] | |
| COMMENTS Very Stre, NO PUUS MAXIMUM POOL DEPTH (continueters): | ····· |
| BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 6") [15 pts] | Bankfull Width |
| □ > 3.0 m - 4.0 m (> 9' 7" - 13") [25 pts] ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ | Max=30 |
| □ > 1.5 m - 3.0 m (> 9' 7" - 4" 8") [20 pts] | 5 |
| | |
| This information must also be completed | |
| RIPARIAN ZONE AND FLOODPLAIN QUALITY WONTE: River Left (L) and Right (R) as looking downstreams | r |
| RIPARIAN WIDTH FLOODPLAIN QUALITY L_R_ (Most Predominant per Bank) L_R_ | |
| XIZ, Wide >10m ATX Mature Forest, Wetland D Conservation Tillag | e |
| Field | |
| Narrow <5m Residential, Park, New Field Open Pasture, Rov Crop | 1 |
| COMMENTS COMMENTS Construct Construct | tion |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Stream Flowing Subsurface flow with isolated pools (Interstitial) Dry channel, isolated pools (Ephemeral) COMMENTS Official (At Time of Evaluation) | lent) |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): | |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$ | |
| STREAM GRADIENT ESTIMATE | |
| □ Flat (0.5 // 100 m) □ Flat to Moderate □ Moderate (2 // 100 m) □ Moderate to Severe | 0 N/100 A) |
| | |

BS-6

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| . / | Completed): |
|---|---|
| | (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
|] WWH Name: | |
| CWH Name: | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIR | |
| ISGS Quadrangle Name: New Haven, WU-OH N | RCS Soli Map Page: NRCS Soli Map Stream Order |
| county: Township | roin Letart Falls, Ohio area |
| MISCELLANEOUS | |
| ase Flow Conditions? (Y/N): Z Date of last precipitation: 1118 | 9135 Quantity: untrearm |
| holograph Information: | |
| levated Turbidity? (Y/N): N Canopy (% open): 25 | |
| Vere samples collected for water chemistry? (Y/N): N (Note lab sa | |
| х. <i>У</i> | pH (S.U.) Conductivity (µmhos/cm) |
| s the sampling reach representative of the stream (Y/N) If not, ple | ase explain: |
| Additional comments/description of pollution impacts: <u>56vevely</u> | product banks |
| | offections optional. NOTE: all voucher samples must be labeled with the site neets from the Primary Headwater Habitat Assessment Manual) erved? (Y/N) Voucher? (Y/N) Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| | |
| | |
| DRAWING AND NARRATIVE DESCRIPTION O | F STREAM REACH (This must be completed): |
| | DF STREAM REACH (This <u>must</u> be completed): ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
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| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |
| Include important landmarks and other features of Interest for s | ite evaluation and a narrative description of the stream's location |

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PHWH Form Page - 2

Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) :

modified class I

| Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) : 16 | |
|--|------------------------------------|
| SITE NAME/LOCATIONAN - ONSITE NUMBER BS RIVER BASIN DRAINAGE AREA (m ²) | |
| LENGTH OF STREAM REACH (R) LAT LONG RIVER CODE RIVER MILE DATE | lions |
| STREAM CHANNEL ONONE / NATURAL CHANNEL OR RECOVERED RECOVERING OR RECENT OR NO RECOVER MODIFICATIONS: | :RY |
| TYPE PERCENT TYPE PERCENT N | HHEI Metric Point |
| BOULDER (>256 mm) [16 pts] Image: Control of the state o | iubstral <u>Max = 4</u> |
| SAND (<2 mm) [6 pts] | ю А+В |
| 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] NO WATER OR MOIST CHANNEL [0 pts] | bol Dep Max = 34 5 |
| COMMENTS moist charas after 5204 MAXIMUM POOL DEPTH (continuetors): | |
| > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] | Bankfuli Width <u>Max=30</u> |
| | |
| This Information <u>must</u> also be completed RIPARIAN 20NE AND FLOODPLAIN QUALITY 과 아이폰: River Left (L) and Right (R) as looking downstream와 <u>RIPARIAN WIDTH FLOODPLAIN QUALITY</u> | |
| L R (Most Predominant per Bank) L R Vide >10m Image Image Moderate 5-10m Image Image Hoderate 5-10m Image Image | |
| Narrow <5m | |
| 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 Comments | |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONL Y one box): None 1.0 2.0 3.0 0.5 1.5 2.5 3 | |
| STREAM GRADIENT ESTIMATE Stream GRADIENT ESTIMATE Stream Gradiente (2 1/100 /l) OModerate to Severe (10 /l/100 /l) | I |

PHWH Form Page - 1

BS-8

| CHELPERFORMED? - DYES THAN OHF | # Score (If Yes, Atlach Completed QHEI Form) |
|---|---|
| | (I TBS, PRACE CONFIDENCE CITED TO THE |
| DOWNSTREAM DESIGNATED USE(S) 7 WWH Name: | Distance from Evaluated Stream |
| J CWH Name: | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| | JDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| SGS Quadrangle Name: New Haven, 4 | V - OH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| ounty: Min 3 | Township/ City: Letart Falls, ohio nea |
| MISCELLANEOUS | · · · · |
| ase Flow Conditions? (Y/N): Date of last pred | sipitation: 11/29/05 Quantity: unknown |
| hotograph information: YLC #39 | |
| levated Turbidity? (Y/N): N Ganopy (% op | hen): |
| | (Note lab sample no. or id. and attach results) Lab Number: |
| ield Measures: Temp ('C) Dissolved Oxyge | en (mg/l) pH (S.U.) Conductivity (µmhos/cm) |
| the sampling reach representative of the stream (Y/N) | If not, please explain: |
| BIOTIC EVALUATION | |
| ID number. Include appro ish Observed? (Y/N) Voucher? (Y/N) S rogs of Tadpoles Observed? (Y/N) Voucher? (Y/ | opriate field data sheets from the Primary Headwater Habitat Assessment Manual) Salamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| ID number. Include appro Fish Observed? (Y/N) Voucher? (Y/N) S Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/ | opriate field data sheets from the Primary Headwater Habitat Assessment Manual) Salamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| ID number. Include appro Sish Observed? (Y/N) Voucher? (Y/N) S Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/ Comments Regarding Biology: | pprizte field data sheets from the Primary Headwater Habilat Assessment Manual) Satamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| ID number. Include appro Fish Observed? (Y/N) Voucher? (Y/N) S Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/ Comments Regarding Biology: DRAWING AND NARRATIVE DES | Salamanders Observed? (Y/N) Voucher? (Y/N) N) Aqualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| ID number. Include appro Fish Observed? (Y/N) Voucher? (Y/N) S Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/ Comments Regarding Biology: DRAWING AND NARRATIVE DES | Salamanders Observed? (Y/N) Voucher? (Y/N) N) Aqualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Scription of Stream REACH (This <u>must</u> be completed): |
| ID number. Include appro Fish Observed? (Y/N) Voucher? (Y/N) S Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/ Comments Regarding Biology: DRAWING AND NARRATIVE DES Include Important landmarks and other features | salamanders Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) N) Aqualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/M) SCRIPTION OF STREAM REACH (This <u>must</u> be completed): a of interest for site evaluation and a narrative description of the stream's location Hin Shut |
| ID number. Include appro Sish Observed? (Y/N) Voucher? (Y/N) S Frogs of Tadpoles Observed? (Y/N) Voucher? (Y/ Comments Regarding Biology: DRAWING AND NARRATIVE DES Include Important landmarks and other features Bolt Ippint/ | Salamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Scription of Stream REACH (This <u>must</u> be completed): s of interest for site evaluation and a narrative description of the stream's location |
| ID number. Include appro ish Observed? (Y/N) Voucher? (Y/N) S rogs of Tadpoles Observed? (Y/N) Voucher? (Y/ comments Regarding Biology: DRAWING AND NARRATIVE DES Include Important landmarks and other features Bolt Ippint/ | ppriate field data sheets from the Primary Headwater Habilat Assessment Manual) Salamanders Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Voucher? (Y/N) SCRIPTION OF STREAM REACH (This <u>must be completed)</u> : s of interest for site evaluation and a narrative description of the stream's location the stream's location the stream's location |

Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) :

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| Primary He | adwater Habitat Evaluat HHEI Score (su | ion Form m of metrics 1, 2, 3) : |
|--|--|---|
| SITE NAME/LOCATION A MP-OH | | |
| SITE NUMBER_KS | 9RIVER BASIN | DRAINAGE AREA (mi²) |
| LENGTH OF STREAM REACH (II) LAT DATE 11/29/05 SCORER MBL | COMMENTS NECTION | |
| NOTE: Complete All Items On This Form - I | | |
| | | |
| MODIFICATIONS: | | •• |
| 1. SUBSTRATE (Estimate percent of every to | ype of substrate present. Check ONLY two prec | onvinant substrate TYPE boyes |
| (Max of 32). Add total number of significant a | substrate types found (Max of B). Final metric sco | re is sum of boxes A & B. HHE |
| TYPE PERC Image: Display state BLDR SLABS [16 pts] | | 73 Point |
| BOULDER (>256 mm) [16 pts] | D.X LEAF PACKWOODY DE | Substra |
| COBBLE (65-256 mm) [12 pts] | | |
| GRAVEL (2-84 mm) [9 pts] SAND (<2 mm) [6 pts] | [] [] MUCK [0 pts] [] [] ARTIFICIAL [3 pts] | |
| Total of Percentages of | | (B) A+B |
| Bidr Slabs, Boulder, Cobble, Bedrock | ATE TYPES: TOTAL NUMBER O | F SUBSTRATE TYPES: |
| | mum pool depth within the 61 meter (200 ft) ev | |
| evaluation. Avoid plunge pools from road cu 30 centimeters [20 pts] | <pre>ilverts or storm water pipes) (Check ONLY one</pre> | |
| > 22.5 · 30 cm [30 pts] > 10 - 22.5 cm [25 pts] | S cm [\$ pts] NO WATER OR MOIST | |
| | MAXIMUM POOL | . DEPTH (centimeters): |
| | erage of 3-4 measurements) (Check O | NLV one box): Bankfu |
| 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | | Max=30 |
| | AVERAGE BANK | |
| | | |
| RIPARIAN ZONE AND FLOODPLA | This information <u>must</u> also be completed | hl (R) as looking downstreams |
| RIPARIAN WIDTH | FLOODPLAIN QUALITY | |
| | Mature Forest, Wetland | Conservation Tillage |
| D Moderate 5-10m | Field | Urban or Industrial |
| | C C Residential, Park, New Field | Open Pasture, Row Crop |
| COMMENTS | | Mining or Construction |
| FLOW REGIME (At Time of Evaluat Stream Flowing Subsurface flow with isolated pools (COMMENTS | Moist Channel, | isolated pools, no flow (Intermittent) water (Ephemeral) |
| | 61 m (200 ft) of channel) (Check ONLY one box |): 3.0 |
| | 1.5 1.7 2.5 | ☐ ×3 |
| STREAM GRADIENT ESTIMATE | Moderate (21/100 II) | |
| Flat (0.5 h/100 h) | Moderate (21/100 II) Diderate to S | evere Severe (10 tv 100 tr) |

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| ADDITIONAL STREAM INFORMATION (This information Must Also be Completed) | |
|--|---|
| QHEI PERFORMED? - O Yes KNo QHEI Score (II Yes, Al | ttach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| WWH Name: CWH Name: | |
| D EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTIRE</u> WATERSHE | ID AREA. CLEARLY MARK THE SITE LOCATION |
| USGS Quadrangia Name: New Howen, WV-ON NRCS Soll Map | o Page: NRCS Soil Map Stream Order |
| County: Nelgs Township / City: | tart Julle, Ohio area |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of last precipitation:) | quantity: unknown |
| Photograph Information: yes # 40 | |
| Elevated Turbidity? (Y/N): Canopy (% open): | |
| Were samples collected for water chemistry? (Y/N): (Note tab sample no. or id | I. and attach results) Lab Number: |
| Field Measures: Temp ("C) Dissolved Oxygen (mg/l) pH (S.U.) | |
| Is the sampling reach representative of the stream (YAN) $\frac{1}{1}$ If not, please explain: | |
| entire length (~80ft) in surry and | • |
| Additional comments/description of pollution impacts: | |
| | |
| BIOTIC EVALUATION | · · · · · · · · · · · · · · · · · · · |
| Performed? (Y/N): (II Yes, Record all observations. Voucher collections option ID number. Include appropriate field data sheets from the | nal. NOTE: all voucher samples must be labeled with the site Brimony Mandarator Habitat Assessment Manuali |
| Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) | |
| Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinverteb | |
| Comments Regarding Biology: | |
| | |
| | |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAD | |
| Include important landmarks and other features of interest for site evaluation | and a narrative description of the stream's location |
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| 2 20 | |
| They may | X |
| FLOW | a l |
| | June - |
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| PHWH Form Page - 2 | |

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PHWH Form Page - 2

Class II

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Severe (10 m/100 m)

| Primary I | Headw | ater Habitat Evalu HHEI Score | | | 54 |
|---|------------|--|--|---|---|
| SITE NAME/LOCATION AMP - OH | | | | | |
| | | RIVER BASIN | DR/ | | |
| LENGTH OF STREAM REACH (f) 200 DATE 11/29/05 SCORER 15000 | LAT | LONG RI | | RIVER MILE | |
| NOTE: Complete All Items On This For | | | | | uctions |
| | | NNEL PRECOVERED DRE | | | DVERY |
| BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] BOULDER (>256 mm) [16 pts] BEDROCK [16 pt] | | Types found (Max of 8). Final metric TYPE SILT [3 pt] LEAF PACKWOOD FINE DETRITUS [3 CLAY or HARDPAN | ic score is sum o DY DEBRIS [3 pt 3 pts] | f boxes A & B. PERCENT | HHEI Metric Points Substrate Max = 40 |
| Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBS | 30 | (A) | ER OF SUBSTR | (B) 4 | 19 A+B |
| Maximum Pool Depth (Measure the metabulation. Avoid plunge pools from roa > 30 centimeters [20 pts] > 22.5 - 30 cm (30 pts) > 10 - 22.5 cm (25 pts) | • | • | Y one box): 5 pts] | . [0 pts] | Pool Depth Max = 30 |
| COMMENTS | | MAXIMUM | POOL DEPTH (c | entimeters): 15 | |
| 3. BANK FULL WIDTH (Measured as the > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.6 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | average of | 3-4 measurements) (Cha ☐ > 1.0 m - 1.5 m (> ☐ ≤ 1.0 m (≤ 3'3") [5 | | | Bankfull Width Max=30 |
| COMMENTS | | AVERAGE | BANKFULL WIC | TH (meters) | 29 |
| RIPARIAN ZONE AND FLOOD RIPARIAN WIDTH | PLAIN QUAL | information <u>must</u> also be comple ITY \$2NOTE: River Left (L) an 2LAIN QUALITY | | oking downstreams? | |
| L R (Per Bank) | | (Most Predominant per Bank) Mature Forest, Wetland | | Conservation Tillage | |
| DDY Moderate 5-10m | বের | Immature Forest, Shrub or Old Field | 00 | Urban or Industrial | |
| O O Narrow <5m | οd | Residential, Park, New Field | | Open Pasture, Row Crop | |
| COMMENTS | | Fenced Pasture | 00 | Mining or Construction | - |
| FLOW REGIME (At Time of Ev. Stream Flowing Subsurface flow with isolated po COMMENTS | | 🔟 Moist Cha | nnel, isolated po iel, no water (Ep | ols, no flow (intermittent) hemeral) | |

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Fiat (0.5 w 100 h)

October 24, 2002 Revision

None 0.5

STREAM GRADIENT ESTIMATE at (0.5 kr/100 kr) D Flat to Moderate

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PHWH Form Page - 1

2.0 2.5

Moderate to Severe

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

 None
 1.0
 2.0

 0.5
 1.5
 2.5

D Moderate (2 IV100 II)

1.0 1.5

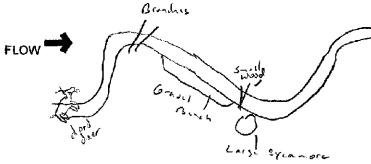
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| ADDITIONAL STREAM INFORMATION (This Infor | rmation lifust Aiso be Completed): |
|--|---|
| | QHEI Score (if Yes, Attach Completed QHE) Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
|] EWH Name: | Distance from Evaluated Stream |
| ISGS Quadrangle Name: <u>New Haven</u> , | NCLUDING THE <u>ENTIRE</u> WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| county: | Township / City: Letart Falls, Ohio area |
| MISCELLANEOUS | |
| | t precipitation: 11/24/05 Quantity: unbinom |
| hotograph Information: | · |
| levaled Turbidity? (Y/N): Canopy (| % open): <u>(5⁰/b</u> |
| Vere samples collected for water chemistry? (Y/N): | (Note tab sample no. or id. and attach results) Lab Number: |
| | |
| | Oxygen (mg/l) pH (S.U.) Conductivity (umhos/cm) (Y/N) If not, please explain: |
| dditional comments/description of pollution impacts | ls: |
| BIOTIC EVALUATION | |
| Performed? (Y/N): (If Yes, Record all ob ID number, Include a | bservations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) |
| Fish Observed? (Y/N) Voucher? (Y/N) Frogs or Tadpoles Observed? (Y/N) Voucher | Satamanders Observed? (Y/N)Voucher? (Y/N) ? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Comments Regarding Biology: | |
| | |
| | |
| | |
| DRAWING AND NARRATIVE | DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): |
| Include important landmarks and other lease | stures of interest for site evaluation and a narrative description of the stream's location |
| ······ | |
| | |
| Branches | |
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| | Sides |



Class III

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Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) :

| TYPE BLDR SLABS (16 pta) FERCENT TYPE SILT (3 pt) FERCENT BOULDER (256 mm) (16 pts) | | | Dre (sum of metrics 1, 2, 3) : | 55 |
|--|---|---|---|---|
| LENGTH OF STREAM REACH (N) / CO_ LAT. LONG. RIVER CODE RIVER MILE | | | | |
| DATE 112121203 SCORER COMMENTS NOTE: Comments Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction STREAM CHANNEL Image: Comments Image: Comments Image: Comments Image: Comments SUBSTRATE Estimate percent of every type of substrate present. Check ONLY type percentions Image: Comments Image: Comments <tdimage: comments<="" td=""> <tdimage: comments<="" td=""></tdimage:></tdimage:> | | | | |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction STREAM CHANNEL STREAM CHANNEL INONE / NATURAL CHANNEL RECOVERED RECOVERING RECOVERING RECENT OR NO RECOVER MODIFICATIONS: 1. SUBSTRATE (Estimate percent of every type of aubstrate present. Check OVIL Y type percentinant 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 & 8. Final metric score is sum of boxes A & 8. YPE BLOR SLABS (16 pts) PERCENT PERCENT PERCENT BLOR SLABS (16 pts) PERCENT PERCENT PERCENT BCOULDER (256 mm) (15 pts) CLAY or HARDPAN (8 pts) PERCENT COBBLE (65:265 nm) (12 pts) CLAY or HARDPAN (8 pts) PERCENT COBBLE (65:265 nm) (12 pts) CLAY or HARDPAN (8 pts) PERCENT SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: Stantimeter (20 pts) Stantianter (20 pts) 2. Maximum Pool Depth (Massure de maximum pool depth within the 51 meter (200 f) evaluation reach at the time of evaluation. Avoid ptimge pools from read cubrits or stom was profes) COEM ONIST CHANNEL [9 pts] Stantianter (23 3) [9 pts] Stantianter (23 3) [9 pts] Stantianter (23 3) [9 pts] Stantion (13 3) [9 pts] Stantianter (13 3) [9 pts] | | | | |
| STREAM CHANNEL INONE / MATURAL CHANNEL RECOVERED RECOVERING RECOVENDING RECOVENDING | | | | |
| MODIFICATIONS: SUBSTRATE (Estimate percent of every type of substrate present. Check OVI, / Yog 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 SUCR SLASS [16 pts] EERCENT | | | | |
| (Max of 32). Add total number of significant solatiste types found (Max of 8). Final metric score is sum of boxes A 8. Image: State of the state of | | URAL CHANNEL CRECOVERED | | OVERY |
| TYPE BLDR SLABS [16 pts] PERCENT TYPE SULT [3 pt] PERCENT PERCENT BOULDER (=256 mm) [16 pts] BLDR SLABS [16 pts] Scon 10 cm [15 pts] Scon [15 pts] Scon [15 pts] Scon [15 p | | | | HHEI |
| BOULDER (>250 mm) [15 pts] IDA PARAWOODY DEBRIS [3 pts] BOULDER (>250 mm) [12 pts] IDA PARAWOODY DEBRIS [3 pts] COBBLE (65-266 mm) [12 pts] IDA PARAPAN [0 pt] GRAVEL (24 mm) [15 pts] IDA PARAPAN [0 pt] BOULDER (>526 mm) [12 pts] IDA PARAPAN [0 pt] BOULDER (>526 mm) [12 pts] IDA PARAPAN [0 pt] GRAVEL (24 mm) [15 pts] IDA PARAPAN [0 pt] BOULDER (>526 mm) [12 pts] IDA PARAPAN [0 pt] BOULDER (>526 mm) [12 pts] IDA PARAPAN [0 pt] Stab. Boulder, Coble. Bedrock, IDA S (A) Stab. Stab. Boulder, Coble. Bedrock, IDA S (A) Stab. Boulder, Coble. Bedrock, IDA S (Check ONLY one box): Stab. Dollar, IDA S (A) <td>TYPE PE</td> <td>ERCENT TYPE</td> <td></td> <td>Metric</td> | TYPE PE | ERCENT TYPE | | Metric |
| BEDROCK [16 pt] FINE DETRITUS [3 pts] COBBLE [65:266 mm] [12 pts] Image: Class of HARDPAN [0 pt] GRAVEL (2-4 mm) [16 pts] Image: Class of HARDPAN [0 pt] SAND (-2 mm) [16 pts] Image: Class of HARDPAN [0 pt] BUT Slabs, Boulder, Cabble, Bedrock Image: Class of HARDPAN [0 pt] SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: Image: Class of HARDPAN [0 pt] 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 water profes) (Check ONL Y one box): > 30 centimeters [20 pts] Image: Score of Two [15 pts] Image: Score of Two [15 pts] > 25 der. 10 or [15 pts] Image: Score of Two [15 pts] Image: Score [15 pts] > 25 der. 10 or [15 pts] Image: Score [15 pts] Image: Score [15 pts] > 30 ensister (13) [20 pts] Image: Score [15 pts] Image: Score [15 pts] > 40 on (-9'7 - 13) [26 pts] Image: Score [15 pts] Image: Score [15 pts] > 40 on (-9'7' - 4'9') [20 pts] Image: Score [15 pts] Image: Score [16 pts] > 40 on (-9'7' - 13) [26 pts] Image: Score [16 pts] Image: Score [16 pts] > 40 on (-9'7' - 13) [26 pts] Image: Score [16 pts] Image: Score [16 pts] < | | | DODY DEBRIS 13 pts1 | Points |
| COBBLE (65-25 mm) [12 pts] 2 GRAVEL (2-64 mm) [15 pts] 2 MUCK (10 pts] MUCK (10 pts] SAND (-2 mm) [5 pts] 0 Bitr Slabs. Boulder. Cabble. Bedrock. 2.5 SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: 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 water pfles) (Check ONL Y one box): > 30 centimeters (20 pts] > 5 cm - 10 cm (15 pts] > 5 cm - 10 cm (15 pts] > 2.2. So m (25 pts) 0 mode of pts] > 5 cm - 10 cm (15 pts] > 2.3.0 om (30 pts] 0 mode of pts] > 5 cm - 10 cm (15 pts] > 2.2.5 cm (25 pts) 0 mode of pts] 0 mode of pts] COMMENTS MAXIMUM POOL DEPTH (centimeters): 1.5 3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONL Y one box): > 4.0 meters (+ 13) [30 pts] > 10 m - 1.5 m (+ 33 * 4 #) [15 pts] > 10 m + 1.5 m (+ 33 * 5 #) [15 pts] > 3.0 m (+ 97 * -14 *) [20 pts] 1 modult TY AVERAGE BANKFULL WIDTH (meters) COMMENTS AVERAGE BANKFULL WIDTH (meters) 1 mode of conservation Tillage Note come 1 mof | BEDROCK [16 pt] | | S [3 pts] | Substrate Max = 40 |
| SAND (<2 mm) [6 pts] | COBBLE (65-256 mm) [12 pts] | | PAN [0 pt] | |
| Total of Percentages of Bidr Stabs. Boulder, Cobble. Bedrock A (a) (b) SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: (b) 2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation meach at the time of evaluation. Avoid plunge pools from road culvets or storm water propes) (Check ONLY one box): > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 cm [25 pts] > 22.5 cm [25 pts] > 5 cm - 10 cm [15 pts] < 5 cm [5 pts] | | | pts] | 25 |
| Bidr Stabs. Boulder. Cobble. Bedrock. Image: Comparison of 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 prices). TOTAL NUMBER OF SUBSTRATE TYPES: Image: Comparison reach at the time of evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water prices). Comparison reach at the time of evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water prices). Comparison reach at the time of evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water prices). So continue to the time of evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water prices). So continue to the time of evaluation reach at the time of evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water prices). > 30 centimeters [20 pts] > 5 cm (15 pts) So cm [15 pts] So cm [15 pts] > 22.5 - 30 cm [30 pts] | | | | A+B |
| evaluation. Avoid plunge pools from road culverts or storm water pifes) (Check ONLY one box): > 30 centimeters [20 pts] > 5 cm -10 cm [16 pts] > 25 cm -10 cm [16 pts] < 5 cm (5 pts] | Bidr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST | | | |
| > 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 | | | | Pool Dept |
| > 10 - 22.5 cm [25 pts] INO WATER OR MOIST CHANNEL [9 pts] [15] COMMENTS MAXIMUM POOL DEPTH (centimeters): [15] 3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check OALY one box): [15] > 4.0 meters (> 13) [30 pts] [15] > 1.0 m - 1.5 m (> 3' 3' - 4' 8') [15 pts] [15] > 3.0 m - 4.0 m (> 9' 7' - 4' 8') [20 pts] [15] > 1.0 m (\$ 3' 3') [5 pts] [16] > 1.5 m - 3.0 m (> 9' 7' - 4' 8') [20 pts] [16] x VERAGE BANKFULL WIDTH (meters) [16] This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY This information must also be completed Ripharkian WaDTH FLOODPLAIN QUALITY x NOTE: River Left (L) and Right (R) as looking downstream\$ RIPARIAN ZONE AND FLOODPLAIN QUALITY x NOTE: River Left (L) and Right (R) as looking downstream\$ [16] Wide >10m [17] Mature Forest, Wetland [18] [18] [18] [19] [19] [11] [11] [18] [16] [16] [16] [16] [19] [16] [16] [16] [16] [16] [19] [16] [16] | | > 5 cm - 10 cm | n (15 pts) | Max = 30 |
| CONMENTS MAXIMUM POOL DEPTH (centimeters): [/5] 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 (> 9*7* - 4*6*) [20 pts] > 1.0 m (> 3*3* - 4.8) [15 pts] > 1.5 m - 3.0 m (> 9*7* - 4*6*) [20 pts] AVERAGE BANKFULL WIDTH (meters) COMMENTS AVERAGE BANKFULL WIDTH (meters) RIPARIAN ZONE AND FLOODPLAIN QUALITY XNOTE: River Left (L) and Right (R) as looking downstream\$* RIPARIAN MDTH FLOODPLAIN QUALITY X Were a to move the forest of the status of the completed RIPARIAN WDTH FLOODPLAIN QUALITY Mature Forest, Wetland Conservation Tillage Moderate 5-10m Immature Forest, Shinb or Old Utban or industrial Natrow <5m | | | | 15 |
| > 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' - 4' 8') [15 pts] > 3.0 m - 4.0 m (> 9' 7' - 4' 6'') [20 pts] AVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY L R. (Per Bank) L M ELOOPPLAIN QUALITY XNOTE: River Left (L) and Right (R) as looking downstreams? RIPARIAN ZONE AND FLOODPLAIN QUALITY XNOTE: River Left (L) and Right (R) as looking downstreams? RIPARIAN WDTH FLOOPPLAIN QUALITY L R Ø Wide >10m Moterate 5-10m Mature Forest, Shrub or Old Immature Forest, Shrub or Old Urban or Industrial Field Open Pasture. Row Open Pasture. Row Crop Nane Fenced Pasture Vining or Construction Mining or Construction Stream Flowing Check ONLY one box) Stream Flowing Moist Channel, isolated pools, no flow (intermittent) Subsurface Row with isolated pools (interslitial) Dry channel, no water (Ephemerai) COMMENTS | | | 15 | |
| > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] \$ 1.0 m (\$ 3' 3'') [5 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 6") [20 pts] AVERAGE BANKFULL WIDTH (meters) COMMENTS | | average of 3-4 measurements) (| Check ONLY one box): | Bankfull |
| AVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY Image: Riper Left (L) and Right (R) as looking downstreams? RIPARIAN WDTH FLOODPLAIN QUALITY Image: Riper Left (L) and Right (R) as looking downstreams? RIPARIAN WDTH FLOODPLAIN QUALITY Image: Riper Left (L) and Right (R) as looking downstreams? RIPARIAN WDTH FLOODPLAIN QUALITY Image: Riper Left (L) and Right (R) as looking downstreams? RIPARIAN WDTH FLOODPLAIN QUALITY Image: Riper Left (L) and Right (R) as looking downstreams? RIPARIAN WDTH FLOODPLAIN QUALITY Image: Riper Left (L) and Right (R) as looking downstreams? Image: Riper Left (L) and Right (R) as looking downstreams? Image: Riper Left (L) and Right (R) as looking downstreams? Image: Riper Left (L) and Right (R) as looking downstreams? Image: Riper Left (L) and Right (R) as looking downstreams? Image: Riper Left (L) and Right (R) as looking downstreams? Image: Riper Left (R) Ri | > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] | | | Width Max=30 |
| AVERAGE BANKFULL WIDTH (meters) This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY L R (Per Bank) L R (Most Predominant per Bank) L R Vide >10m Mature Forest, Wetland Conservation Tillage Moderate 5-10m Immature Forest, Wetland Conservation Tillage Narrow <5m | LJ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | | | 15 |
| RIPARIAN ZONE AND FLOODPLAIN QUALITY TNOTE: 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 Image: | COMMENTS | AVERA | GE BANKFULL WIDTH (meters) | |
| L R (Per Bank) L R (Most Predominant per Bank) L R Ø Wide >10m Imature Forest, Wetland Imature Forest, Wetland Imature Forest, Shrub or Old | RIPARIAN ZONE AND FLOODP | | | |
| Image: Wide >10m Image: Mature Forest, Wetland Image: Conservation Tillage Image: Moderate 5-10m Image: Image | | | | |
| Field Field Open Pasture, Row Crop Narrow <5m | | | | |
| Narrow <5m | Moderate 5-10m | | d 🔲 🗍 Urban or Industrial | |
| None Penced Pasture Mining or Construction COMMENTS | DD Narrow <5m | a a | | 1. mar |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Image: Subsurface flow with isolated pools (interstitial) Subsurface flow with isolated pools (interstitial) Image: Subsurface flow with isolated pools (interstitial) COMMENTS COMMENTS | None | | | |
| Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS | COMMENTS | | | - |
| | Stream Flowing Subsurface flow with isolated poo | Moist (| • |) |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): | SINUOSITY (Number of bends o | per 61 m (200 ft) of channel) (Check ONL) | Yone box): | |
| None 1.0 2.0 3.0 0.5 1.5 2.5 1.5 | | 1.0 🖸 2.0 | | |
| STREAM GRADIENT ESTIMATE Fiat (0.5 ki/100 m) Fiat to Moderate M | STREAM GRADIENT ESTIMATE | | | |

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PHWH Form Page - 1

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| DITIONAL STREAM INFORMA | TION (This Information Must Also | o be Completed): | | | |
|---|--|--|---------------------------------------|----------------|---------------------|
| QHEI PERFORMED? - | Yes No QHEI Score | (If Yes, Attach C | ompleted QHEL Form) | | |
| | | | stance from Evaluated | Stream | |
| | PIES OF MAPS, INCLUDING THE EN | | | | _ |
| | | | | | |
| | Town, WV-OH | | | | |
| 0 MISCELLANEOUS | | | | | |
| se Flow Conditions? (Y/N): | Date of last precipitation: | 11/29/05 | Quantity: untr | om | |
| otograph Information: | LQ | | | | _ |
| •••• | Canopy (% open): / 0 4 | | | | |
| ere samples collected for water | chemistry? (Y/N): <u>N</u> (Note Ial | b sample no. or id. and a | ttach results) Lab Nun | 1ber: | |
| eid Measures: Temp (*C) | Dissolved Oxygen (mg/l) | pH (S.U.) | Conductivity (µmh | os/cm) | _ |
| the sampling reach representati | ive of the stream (Y/N) If not, | , please explain: | | | |
| ditional comments/description o | of pollution impacts: | | <u></u> | | |
| anformed? (Y/N): (II | Yes, Record all observations. Vouch I number. Include appropriate field dat | | | | h e sile |
| sh Observed? (Y/N) V ogs or Tadpoles Observed? (Y/ | oucher? (Y/N) Salamanders (N) Voucher? (Y/N) Aqua | Observed? (Y/N) alic Macroinvertebrates (| Voucher? (Y/N))bserved? (Y/N) | Voucher? (Y/N) | |
| omments Regarding Biology: | | | | | <u></u> |
| | | | | | <u></u> |
| | | , | | | |
| | NARRATIVE DESCRIPTION | | · · · · · · · · · · · · · · · · · · · | | on |
| 11111111111111111111111111111111111111 | | | | | |
| | Ron Bring | | | | |
| | Routes Ros | | | | |

二

class II

Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) :

| Primary H | leadwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) ; 43 | 3 |
|--|---|----------------------|
| SITE NAME/LOCATION AMP -O | | |
| | S-12_ RIVER BASIN DRAINAGE AREA (mi²) | |
| LENGTH OF STREAM REACH (ft) L | | |
| DATE 11/2905 SCORER MAL | ATLONG RIVER CODE RIVER MILE | |
| | - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for instruction | |
| | URAL CHANNEL FRECOVERED BRECOVERING BRECENT OR NO RECOVER | RY |
| MODIFICATIONS: | 7 | |
| | | |
| | | IHEI |
| TYPE PEI BLDR SLABS (16 pts) | | ietric oints |
| BOULDER (>256 mm) [16 pts] | LEAF PACK/WOODY DEBRIS [3 pts] | |
| BEDROCK [16 pt] | | ubstrate lax = 40 |
| COBBLE (65-256 mm) [12 pts] | | <u> </u> |
| SAND (<2 mm) [6 pts] | 6 ARTIFICIAL [3 pts] | 0 |
| Total of Percentages of | | A + B |
| Bidr Slabs, Bouider, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBST | | |
| | | |
| | culverts or storm water pipes) (Check ONLY one box): | ol Depth lax = 30 |
| > 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts] | > 5 cm - 10 cm [15 pts] <.5 cm [5 pts] | 15 |
| 0 > 10 - 22.5 cm [26 pts] | NO WATER OR MOIST CHANNEL [0 pts] | |
| COMMENTS | MAXIMUM POOL DEPTH (centimeters): | |
| BANK FULL WIDTH (Measured as the a > 4.0 meters (> 13) [30 pts] | | lankfull Width |
| > 3.0 m - 4.0 m (≥ 9' 7" - 13') [25 pts] | | lax=30 |
| ≥ 1.5 m - 3.0 m (> 9' 7" - 4' 6") [20 pts] | | 2 |
| COMMENTS | AVERAGE BANKFULL WIDTH (meters) | \mathbf{O} |
| | This information must also be completed | |
| RIPARIAN ZONE AND FLOODPL RIPARIAN <u>WDTH</u> | LAIN QUALITY SNOTE: River Left (L) and Right (R) as looking downstreams | |
| (Per Bank) | FLOODPLAIN QUALITY LB- (Most Predominant per Bank) LR | |
| Wide >10m | Mature Forest, Welland D Conservation Tillage | |
| D D Moderate 5-10m | Field Urban or Industrial | |
| Narrow <5m | Residential, Park, New Field Open Pasture, Row Crop | |
| | Fenced Pasture Mining or Construction | |
| | | |
| FLOW REGIME (At Time of Evalu | Moist Channel, isolated pools, no flow (Intermittent) | |
| Subsurface flow with isolated pools COMMENTS | s (Interstitial) Dry channel, no water (Ephemeral) | |
| | er 61 m (200 ft) of channel) _[Check ONLY one box); | |
| | , 1.0 🖸 2.0 🛛 3.0 | |
| 0.5 | 1.5 LJ 2.5 LJ >3 | |
| STREAM GRADIENT ESTIMATE | O Moderate (2 10/100 /l) O Moderate to Severe O Severe (10 10/100 /l) | |
| | | |

BS-12

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| ADDITIONAL STREAM INFORMATION (This Information Must Also | |
|--|--|
| QHEI PERFORMED? - DYes 2 No QHEI Score | (If Yes, Attach Completed QHEI Form) |
| | |
| WWH Name: | |
| CWH Name: | |
|] EWH Name: | Distance from Evaluated Stream |
| | TIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| USGS Quadrangle Name: <u>New Harren, WV-0H</u> | NRCS Soil Map Page: NRCS Soil Map Stream Order |
| County: neigh Towns | enip/city: Letant Falls, Ohio area |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of last precipitation: (| (2105 ausness: unknown |
| Photograph Information: <u>QD, QL</u> (inc) | |
| Elevated Turbidity? (Y/N): N Canopy (% open); | |
| Were samples collected for water chemistry? (Y/N): <u>V</u> (Note lab | |
| | |
| | pH (S.U.) Conductivity (µmhos/cm) |
| is the sampling reach representative of the stream (Y/N) \underline{Y} if not, | please explain: |
| | |
| Additional comments/description of pollution impacts: | |
| | |
| BIOTIC EVALUATION | |
| | r collections optional. NOTE: all voucher samples must be labeled with the |
| · · · · · · · · · · · · · · · · · · · | a sheets from the Primary Headwater Habitat Assessment Manual) |
| Fish Observed? (Y/N) Voucher? (Y/N) Salamanders C | Deserved? (Y/N) Voucher? (Y/N) |
| Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aqua | tic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Comments Regarding Biology: | |
| | |
| | |
| DRAWING AND NARRATIVE DESCRIPTION | OF STREAM REACH (This must be completed): |
| | or site evaluation and a narrative description of the stream's location |
| | - - - |
| | |
| 12 | - A h |
| | |
| FLOW - | N n lit |
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| | Frank T |
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| \checkmark | ٣ ٢ |
| | 1 |
| | <u>1</u> |
| PHWH | Form Page - 2 |

HHEI SCORE (sum of metrics 1, 2, 3) : 86

7.5

Class II

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| SITE NAME/LOCATION | | S-B | RIVER BASI | N | DR | AINAGE AREA (mi²) | |
|--|--|-----------------------------|---|---|--|--|--|
| LENGTH OF STREAM RE | CORER JAV | COM | | | | | |
| NOTE: Complete All I STREAM CHANNEL MODIFICATIONS: | | | | | | H Streams" for Instru RECENT OR NO RECO | |
| (Max of 32). Add t TYPE BLDR SLABS BOULDER (>2 BEDROCK () COBBLE (65-2 GRAVEL (2-6-2) SAND (<2 mm | [16 pts] i 256 mm) [16 pts] i 16 pti i 256 mm) [12 pts] i 4 mm) [9 pts] i () [6 pts] i centages of er, Cobble, Bedrock i | SO% | | ax of 8). Final metr SILT (3 pt) LEAF PACK/WOOE FINE DETRITUS (3 CLAY or HARDPAN VIUCK (0 pts) ARTIFICIAL (3 pts) | ic score is sum by DEBRIS [3 pi 3 pts] 4 [0 pt] | 6) (B) (C) (C) (C) (C) (C) (C) (C) (C) (C) (C | HHEI Metric Points Substrate Max = 40 3 3 A+B |
| evaluation, Avoid > 30 centimeters [2 > 22:5 - 30 cm [30 > 10 - 22:5 cm [25 | pts] | ulverts or s | storm water pip | es) (Check ONL > 5 cm - 10 cm [11 < 5 cm [5 pts] NO WATER OR M | Y one box): 5 pts] IOIST CHANNE | L [0 pts] | Pool Depth Max = 30 2 5 |
| 3. BANK FULL WID > 4.0 meters (> 13") > 3.0 m - 4.0 m (> > 1.5 m - 3.0 m (> | TH (Measured as the av | verage of 3 | -4 measureme D D | ents) (Che > 1.0 m - 1.5 m (> ≤ 1.0 m (≤ 3'3")[5 | ck ONLY one t 3' 3" - 4' 8") [15 ; pts] | xox): ts] | Bankfuli Width Max=30 30 |
| <u>RIPARIA</u> L & (Per Ba L U Wide > | 10m te 5-10m <5m | | TY \$NOT LAIN QUALITY (Most Predom Mature Forest | inant per Bank) , Wetland sst, Shrub or Old ark, New Field | | Conservation Tillage Urban or Industrial Open Pasture, Row Crop Mining or Construction | |
| Stream Fid Subsurface COMMEN | flow with isolated pools | (Interstitial) 61 m (200 |) | Moist Cha Dry chann Check ONLY on | el, no water (Ep | ools, no flow (Intermittent) ihemeral) | |
| None None 0.5 STREAM GRADI Flat (0.5 IV100 tt) | ENT ESTIMATE D Flat to Moderate | 1.0 1.5 | rate (2 1/100 N) | 2.0 2.5 | e to Severe | 3.0 >3 | 00 ft) |

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| | | <u> </u> | BS-13 |
|--|---|--|--|
| DDITIONAL STREAM INFORMATION (Th | | | |
| QHEI PERFORMED? - 🖸 Yes | No QHEI Score (| If Yes, Attach Completed QHEI For | n) |
| DOWNSTREAM DESIGNATED U | | | |
| J www.H Name: | | | |
| CWH Name: | | | |
| J EWH Name: | | | |
| MAPPING: ATTACH COPIES OF N | MAPS, INCLUDING THE <u>ENTIRE</u> WA | TERSHED AREA. CLEARLY MARK | THE SITE LOCATION |
| ISGS Quadrangle Name: | NRCS | Soil Map Page: NRCS So | il Map Stream Order |
| county: | Township / Cit | y: | |
| MISCELLANEOUS | | | |
| Base Flow Conditions? (Y/N): Date | e of last precipitation: $11/29/6$ | 25 Quantity: UMh | norm |
| Photograph Information: | | | ······ |
| Elevated Turbidity? (Y/N): <u>N</u> C | | | |
| Vere samples collected for water chemistry | ? (Y/N): (Note lab sample | no, or id, and attach results) Lab Ne | amber: |
| | | H (S.U.) Conductivity (µrr | • |
| | | | |
| s the sampling reach representative of the s | stream (Y/N)_7 If not, please e | explain: | |
| IO number. 1 | Include appropriate field data sheets (/N) Salamanders Observed | ons optional. NOTE: all voucher samp from the Primary Headwaler Habitat A ? (Y/N) Voucher? (Y/N) pinvertebrates Observed? (Y/N) | ssessment Manual) |
| DRAWING AND NARRA | | TREAM REACH (This <u>must</u> reluation and a narrative descriptio | |
| FLOW - 21 | | What we have a series of the s | arbitration 3 million and and and and and and and and and an |
| Defendent 24, 2002 Baulation | PHWH Form P | 2ge - 2 | |

2002 Revis

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| | | HHEI Score (| ation Form (sum of metrics 1, 2, 3) : | 19 |
|---|---|---|--|-------------|
| Stream | LOCATIONSITE NUMBER | S-14 RIVER BASIN | | Mi . |
| LENGTH OF | STREAM REACH (ft) ろつつ ' | LATLONGRIV | ER CODE RIVER MILE | |
| | | m - Refer to "Field Evaluation Manual for | | iction |
| | | TURAL CHANNEL 🗇 RECOVERED 🛛 🗐 REC | | |
| MODIFIC/ | | | | |
| 1. SUE | BSTRATE (Estimate percent of eve | ery type of substrate present. Check ON/LY byo | predominant substrate TYPE boxes | |
| | ix of 32). Add total number of signific | ant substrate types found (Max of 8). Final metric | | HI Me |
| | BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] | | <u> 75</u> | Po |
| | | | (en | Sub: Max |
| ם פ | GRAVEL (2-64 mm) (9 pbs) | | | 2 |
| | SAND (<2 mm) [6 pts] | | | |
| | Total of Percentages of Slabs, Bouider, Cobble, Bedrock <u>(</u> | 6 % 45 | ^(B) 4 | A+ |
| | TWO MOST PREDOMINATE SUBS | | R OF SUBSTRATE TYPES: | |
| eval | luation. Avoid plunge pools from road | aximum pool depth within the 61 meter (200 ft) d culverts or storm water pipes) (Check ONLY of | one box): | Pool Mex |
| >22 | centimeters [20 pts] .5 - 30 cm [30 pts] | □ > 5.cm - 10 cm [16:p □ < 5 cm [5 pts] | | |
| | 22.5 cm [25 pts] | | XST CHANNEL [0 pts] | |
| | MMENTS | | DOL DEPTH (centimeters): | - |
| | NK FULL WIDTH (Measured as the meters (> 13') [30 pts] | O >10m-15m/>3 | k ONLY one box): 3 [*] -4' 8') [15 pts] | Ban Wi |
| >3.0 |)m -4.0m (> 9' 7" - 13') [26 pts] im -3.0m (> 9' 7" - 4'8") [20 pts]. | | | |
| | | | | |
| শ্ব ৯৫ | MMENTS | AVERAGE BA | ANKFULL WIDTH (meters) | Max Q |
| ্ষ ৯৫ | | AVERAGE BA | ANKFULL WIDTH (meters) | ら |
| ষ ৯৫ | | This information <u>must</u> also be complete | ANKFULL WIDTH (meters) | ら |
| ষ ৯৫ | RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH R_ (Per Bank) | This information must also be complete PLAIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L_R_ (Most Predominant per Bank) | ANKFULL WIDTH (meters) | ら |
| میں الع/ coi | RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH R (Per Bank) Wide >10m | This information <u>must</u> also be complete PLAIN QUALITY TONOTE: River Left (L) and <u>FLOODPLAIN QUALITY</u> L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Shrub or Old | ANKFULL WIDTH (meters) | ら |
| ,⊠d ,⇒ius coi | RIPARIAN ZONE AND FLOODP RIPARIAN WIDTH R (Per Bank) Wide >10m Moderate 5-10m | This information <u>must</u> also be complete PLAIN QUALITY ANOTE: River Left (L) and <u>FLOODPLAIN QUALITY</u> L R (Most Predominant per Bank) Mature Forest, Wetland | ANKFULL WIDTH (meters) | ら |
| сон Сон Сон Сон Сон | RIPARIAN ZONE AND FLOODP <u>RIPARIAN WIDTH</u> R (Per Bank) Wide >10m Moderatě 5-10m Narrow <5m None | This information <u>must</u> also be complete PLAIN QUALITY $\Im NOTE:$ River Left (L) and <u>FLOODPLAIN QUALITY</u> L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field | ANKFULL WIDTH (meters) | ら |
| کی cov کی ال ال ال ال ال ال ال ال ال ال ال ال ال | RIPARIAN ZONE AND FLOODP <u>RIPARIAN WIDTH</u> R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS | This information must also be complete PLAIN QUALITY ☆NOTE: River Left (L) and FLOODPLAIN QUALITY L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture | ANKFULL WIDTH (meters) | ら |
| دم دم لا لا لا لا لا لا لا لا لا لا لا لا لا | RIPARIAN ZONE AND FLOODP <u>RIPARIAN WIDTH</u> R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS | This information <u>must</u> also be complete PLAIN QUALITY \bigstar NOTE: River Left (L) and <u>FLOODPLAIN QUALITY</u> L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Moist Channe | ANKFULL WIDTH (meters) | ら |
| | RIPARIAN ZONE AND FLOODP <u>RIPARIAN WIDTH</u> R (Per Bank) Wide >10m Noderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evel Stream Flowing Subsurface flow with isolated poo COMMENTS SINUOSITY (Number of bends p | This information <u>must</u> also be complete PLAIN QUALITY ${\longrightarrow}$ NOTE: River Left (L) and <u>FLOODPLAIN QUALITY</u> L R (Most Predominant per Bank) Mature Forest, Wetland Mature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Huation) (Check ONLY one box): Moist Channel, Dry channel, per 61 m (200 ft) of channel) (Check ONLY one box) | ANKFULL WIDTH (meters) | ら |
| | RIPARIAN ZONE AND FLOODP <u>RIPARIAN WIDTH</u> R (Per Bank) Wide >10m Noderate 5-10m Narrow <5m None COMMENTS FLOW REGIME (At Time of Evel Stream Flowing Subsurface flow with isolated poo COMMENTS | This information <u>must</u> also be complete PLAIN QUALITY \Rightarrow NOTE: River Left (L) and <u>FLOODPLAIN QUALITY</u> L R (Most Predominant per Bank) Mature Forest, Wetland Immature Forest, Shrub or Old Field Residential, Park, New Field Fenced Pasture Huation) (Check ONLY one box): Moist Channel, Dry channel, | ANKFULL WIDTH (meters) | ら |

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| MAPPING: ATTACH COPIES OF MAPS, INCLIDING THE ENTER WATERSHED AREA. CLEARLY MARK THE SITE LOCATION SGS Clustrangle Name: <u>Murch Marren</u> , <u>Murch Marren</u> , <u>Murch Soli Map Page</u> , <u>NRCS Soli Map Sheam Order</u> , <u>Murch Steam Order</u> | ADDITIONAL STREAM INFORMAT | TION (This Information Must Also be Co | mpleted): | BS-14 |
|--|--------------------------------------|--|---------------------------|---------------------------------------|
| DOWNETTEAM DESIGNATED USE(5) DWY Hams: | QHEI PERFORMED? - [| | (If Yes, Attach Comple | ted QHEI Form) |
| DOWN Hame: | | • • | | |
| JEWH Name: | _ | | | |
| MAPPING: ATTACH COPIES OF MAPS, INCLIDING THE ENTER WATERSHED AREA. CLEARLY MARK THE SITE LOCATION SGS Clustrangle Name: <u>Murch Marren</u> , <u>Murch Marren</u> , <u>Murch Soli Map Page</u> , <u>NRCS Soli Map Sheam Order</u> , <u>Murch Steam Order</u> | CWH Name: EWH Name: | | | |
| SGS Quadrangle Name: Number: Number: NRCS Soil Map Page: NRCS Soil Map Stream Order ounly: | MAPPING: ATTACH COP | IES OF MAPS, INCLUDING THE ENTIRE W | ATERSHED AREA. CL | EARLY MARK THE SITE LOCATION |
| ounty: | - | 11 | | |
| NESCELLANEOUS //////////////////////////////////// | | | | |
| hetograph Information: | Ų | 7 | "y. <u> </u> | |
| levated Turbidity? (Y/N): | Base Flow Conditions? (Y/N): | Date of last precipitation: $11 - 29$ | <u>-0う</u> Quan | in interom |
| Here samples collected for water chemisity? (Y/N): | Photograph Information: | | <u></u> | |
| eld Measures: Temp (*C) Dissolved Oxygen (mg/l)PH (\$.U) Conductivity (unitoxian) the sampling reach representative of the stream (Y/N) | Elevated Turbidity? (Y/N): | Canopy (% open): <u>40 [©])0</u> | | |
| the sampling reach representative of the stream (Y/N) // If not, please explain: | Were samples collected for water ch | nemistry? (Y/N): <u>N</u> (Note lab sample | e no. or id. and attach r | esults) Lab Number: |
| the sampling reach representative of the stream (Y/N) // If not, please explain: | Field Measures: Temp (°C) | Dissolved Oxygen (mg/l) p | oH (S.U.) Co | onductivity (µnitios/cm) |
| BIOTIC EVALUATION erformed? (Y/N): | is the sampling reach representative | e of the stream (Y/N) If not, please (| explain: | |
| BIOTIC EVALUATION erformed? (Y/N): | | • | | · · · · · · · · · · · · · · · · · · · |
| erformed? (YM): | Additional comments/description of | poliution impacts: | | • |
| Dinumber. Include appropriate field data sheets from the Primary Headwater Habital Assessment Manual) sch Observed? (Y/N) Voucher? (Y/N) vou | BIOTIC EVALUATION | | | |
| sh Observed? (Y/N) Voucher? (Y/N) Salamenders Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) oucher? (Y/N | | | | |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): Include Important landmarks and other features of interest for site evaluation and a narrative description of the stream's location | Fish Observed? (Y/N) Vou | cher? (Y/N) Salamanders Observed | 1? (Y/N) Vouch | er? (Y/N) |
| Include important landmarks and other features of interest for sile evaluation and a narrative description of the stream's location | Comments Regarding Biology: | ······································ | | |
| Include important landmarks and other features of interest for sile evaluation and a narrative description of the stream's location | | | | |
| Include important landmarks and other features of interest for sile evaluation and a narrative description of the stream's location | | | | |
| Include important landmarks and other features of interest for sile evaluation and a narrative description of the stream's location | DRAWING AND N | ARRATIVE DESCRIPTION OF S | TREAM REACH | This must be completed): |
| Clobe estation of the state of | | • | | |
| Clobe estation of the state of | EFWey! | es in the second | 60 rel | * |
| | FLOW | | e) A | ••• |
| DHWH Earn Dags 2 | 3. S. S. | the steel | 2 5 | |
| ការរាក Frith Fays * 4 | Databer 24, 2002 Revision | PHWH Form Pa | age • 2 | |

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

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Class II

| SITE NAME/LOCATION AMP ON | S-15 RIVER BASIN | |
|--|--|--|
| LENGTH OF STREAM REACH (#) / 60 | | |
| DATE 29 Nos 05 SCORER Kosser/Uns | | |
| NOTE: Complete All Items On This Form | Refer to "Field Evaluation Manual for Oh | io's PHWH Streams" for Instructions |
| | RAL CHANNEL 🗍 RECOVERED 🗍 RECOV | |
| MODIFICATIONS: | | |
| (Max of 32). Add total number of significant TYPE BLDR SLABS [16 pts] PER BOULDER (>256 mm) [16 pts] SEDROCK [16 pt] SEDROCK [16 pt] SEDROCK [16 pt] SEDROCK [16 pt] SAND (<2 mm) [6 pts] SEDROCK SEDROC | type of substrate present. Check ONLY two pretsubstrate types found (Max of 8). Final metric science | Image: bore is sum of boxes A & B. HHEI PERCENT Metric EBRIS [3 pts] Image: boxes A & B. Image: boxes A & B. HHEI Substrate Max = 40 Image: boxes A & B. Image: boxes A & B. <tr< td=""></tr<> |
| SCORE OF TWO MOST PREDOMINATE SUBSTR | ATE TYPES: Management TOTAL NUMBER (| |
| evaluation. Avoid plunge pools from road of > 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts] > 10 - 22.6 cm [25 pts] | imum pool depth within the 61 meter (200 ft) ev ulverts or storm water pipes) (Check ONLY one 5 cm - 10 cm [15 pts] 5 cm [5 pts] NO WATER OR MOIS MAXIMUM POO | e box):] T CHANNEL [0 pts] |
| | rerage of 3-4 measurements) (Check C | |
| > 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' 6") [20 nts] | → 1.0 m - 1.5 m (> 3' 3") ≤ 1.0 m (≤ 3' 3") [5 pts] | |
| > 1.5 m - 3.0 m (> 9'7" - 4' 8") [20 pts] | | |
| COMMENTS | AVERAGE BAN | KFULL WIDTH (meters) |
| RIPARIAN ZONE AND FLOODPL. RIPARIAN WIDTH L R (Per Bank) Wide >10m Moderate 5-10m Narrow <5m None COMMENTS | This information must also be completed AIN QUALITY Image: NOTE: River Left (L) and Right Reserve to the second s | ght (R) as looking downstreams L R Conservation Titlage Urban or Industriat Open Pasture, Row Crop Mining or Construction |
| FLOW REGIME (At Time of Evaluated Stream Flowing Subsurface flow with isolated pools COMMENTS SINUOSITY (Number of bends per None | Moist Channel, | x): |
| | 1.5 🖸 2.5 | |
| STREAM GRADIENT ESTIMATE | D Moderate (2 IV100 It) D Moderate to 5 | Severe 🔲 Severe (10 liv100 li) |
| | | |

| | BS-1 |
|---|---|
| DITIONAL STREAM INFORMATION (This info | ormation Must Also be Completed); |
| | QHEI Score (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| • | INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| SGS Quadrangle Name: New Nave | M, WV-OH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| ounty: Mega | Township/City: Letart Fells Ohio area |
| MISCELLANEOUS | |
| ase Flow Conditions? (Y/N): Date of las | st precipitation: 11/24/05 Quantity: untrum |
| notograph information: <u>56 + 59</u> | 9 Maris contra |
| levated Turbidity? (Y/N): Canopy | 9 Maris contra (% open): 15% |
| fere samples collected for water chemistry? (Y/N) |); (Note lab sample no. or id. and attach results) Lab Number: |
| ield Measures: Temp (°C) Dissolved | I Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) |
| s the sampling reach representative of the stream | n (Y/N) If not, please explain: |
| | • • • • • • • • • • • • • • • • • • • |
| BIOTIC EVALUATION | |
| Performed? (Y/N): (If Yes, Record all o | observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site |
| 10 number, include | e appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) |
| ish Observed? (Y/N) Voucher? (Y/N) | Salamanders Observed? (Y/N) Voucher? (Y/N) |
| | er? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Comments Regarding Biology: | · · · · · · · · · · · · · · · · · · · |
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| | E DESCRIPTION OF STREAM REACH (This must be completed): |
| | eatures of interest for site evaluation and a narrative description of the stream's location |
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| October 24, 2002 Revision | PHWH Form Page - 2 |
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ClassI

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| | НН | El Score (sum of met | rics 1, 2, 3) : | /7 |
|---|--|---|--------------------------------|------------------------|
| SITE NAME/LOCATION AMP-OH | | | | |
| | | ORA | | |
| LENGTH OF STREAM REACH (#) LAT | LONG | RIVER CODE | RIVER MILE | |
| DATE 11/29/05 SCORER MOL | | | | |
| NOTE: Complete All Items On This Form - R | eler to "Field Evaluation | Manual for Ohio's PHWH | l Streams" for instru | uctions |
| | | | RECENT OR NO RECO | VERY |
| MODIFICATIONS: | | | | |
| SUBSTRATE (Estimate percent of every ty (Max of 32). Add total number of significant si | | | | HHEI |
| TYPE PERCI | | 1 | PERCENT 30 | Metric Points |
| BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] | | PACKWOODY DEBRIS [3 pts | | • ••••• |
| DD BEDROCK [16 pt] | | ETRITUS [3 pts] | -20_ | Substrate Max ≠ 40 |
| COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts] | | or HARDPAN [0 pt] | 20 | |
| GRAVEL (2-64 mm) [9 pts] | N STATE | (0 pts) ICIAL (3 pts) | | 14 |
| Total of Percentages of | | | (8) | |
| Bidr Slabs, Boulder, Cobble, Bedrock | - 151 | OTAL NUMBER OF SUBSTR | 4 | A+B |
| 2. Maximum Pool Depth (Measure the maxim | | | ch at the time of | Pool Depth |
| evaluation. Avoid plunge pools from road cult > 30 centimeters [20 pts] | | (Check O/VLY one box): m - 10 cm [15 pts] | | Max = 30 |
| > 22.5 - 30 cm [30 pts] | | m [5 pts] VATER OR MOIST CHANNEL | 10 atral | 15 |
| > 10 - 22.5 cm [25 pts] | | | | |
| 3. BANK FULL WIDTH (Measured as the aver | age of 3-4 measurements) | (Check ONLY one bo | x): | Bankfull |
| | | m - 1,5 m (> 3' 3" - 4' 8") [15 pt m (≤ 3' 3") [5 pts] | 5) | Width <u>Max=30</u> |
| > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | | un (a. e. à la bra) | [] | |
| COMMENTS | | AVERAGE BANKFULL WID | TH (meters) | 22 |
| | This information must als | o be completed | | مانبنالك فسيبيهن وزيرت |
| RIPARIAN ZONE AND FLOODPLAI | N QUALITY SYNOTE: Riv | er Left (L) and Right (R) as loc | king downstreams | |
| RIPARIAN WIDTH E | LOODPLAIN QUALITY B (Most Predominant p | ber Bank) L. R | | |
| Vide >10m | Mature Forest, Wells | and 🗍 🗍 | Conservation Tillage | |
| Moderate 5-10m | Immature Forest, Sh Field | nub or Old | Urban or Industrial | |
| □ □ Narrow <5m | C Residential Park N | ew Field 🛛 🗍 | Open Pasture, Row | |
| COMMENTS WE MAN | Fenced, Pasture | | Crop Mining or Construction | |
| FLOW REGIME (At Time of Evaluation Stream Flowing Subsurface flow with isolated pools (in COMMENTS | <u> </u> | Moist Channel, isolated poo Dry channel, no water (Ept | • • • • | |
| SINUOSITY (Number of bends per 6 | 1 m (200 ft) of channel) - {Ch 1.0 | eck ONLY one box): 2.0 | 3.0 | |
| | .s n | 2.5 | >3 | |
| STREAM GRADIEN FÉSTIMATE | J Moderate (2 ivitod it) | Moderate to Severe | Severe (10 10 10 | X0 (t) |

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| DDITIONAL STREAM INFORMATION (This Information Must / | · · · · · · · · · · · · · · · · · · · |
|--|--|
| CHEI PERFORMED? - C Yos No QHEI Score_ | (If Yes, Altach Completed QHE: Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| | E <u>Entire</u> watershed area. Clearly mark the site location |
| | OH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| ounty: Me' f S Tr | ownship/city: Letart Falls, Ohio area |
| MISCELLANEOUS | |
| tase Flow Conditions? (Y/N): Date of last precipitation: | 11/29/05 quantity unternorm |
| holograph Information: yes #42, 43 | 3 |
| levaled Turbidity? (Y/N): Canopy (% open): | |
| Vere samples collected for water chemistry? (Y/N): $\underline{N}_{}$ (Note | e lab sample no. or id. and attach results) Lab Number: |
| ield Measures: Temp ('C) Dissolved Oxygen (mg/i) | ρΗ (S.U.) Conductivity (μπhos/cm) |
| | not, please explain: |
| s the sampling reach representative of the stream (17N) if | not, please explain: |
| | nucher collections optional. NOTE: all voucher samples must be labeled with the s d data sheets from the Primary Headwater Habitat Assessment Manual) |
| Tish Observed? (Y/N) Voucher? (Y/N) Salamande Trogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) A Comments Regarding Biology: | ers Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · |
| | |
| DRAWING AND NARRATIVE DESCRIPT | ION OF STREAM REACH (This must be completed): |
| Include Important landmarks and other features of intere | est for site evaluation and a narrative description of the stream's location |
| 4. | Kill |
| the stand | |
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| No. | |
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October 24, 2002 Revision

PHWH Form Page - 2

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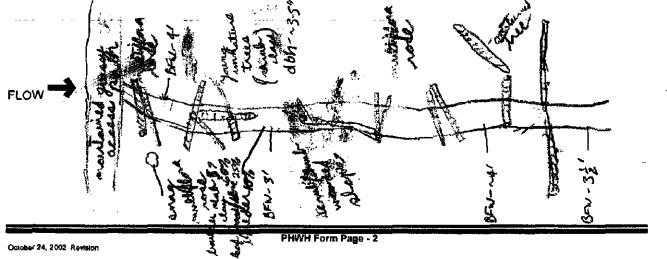
| Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3) : | ∘⊥ 5 |
|---|-----------------------|
| SITE NAME/LOCATION AMP - OH | |
| | |
| LENGTH OF STREAM REACH (11) LAT. LONG. RIVER CODE RIVER MILE DATE 11/30/05 SCORER MBL/JAV COMMENTS | |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for instruct | tions |
| STREAM CHANNEL ON NONE / NATURAL CHANNEL OF RECOVERED RECOVERING RECENT OR NO RECOVER MODIFICATIONS: | ERY |
| 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. | HHEI |
| TYPE PERCENT TYPE PERCENT | Metric Points |
| BOULDER (>256 mm) [16 pts] 5% DIM LEAF PACKWOODY DEBRIS [3 pts] 20% | |
| I LI I BEDRUCK NIS BALL I LI VI FINE DE IRTUS IS DISI - 72. I | Substrate Max = 40 |
| GRAVEL (2-64 mm) [9 pts] 5% 0 0 MUCK [0 pts] 5% | |
| □ □ SAND (<2 mm) [6 pts] 10% □ □ ARTIFICIAL [3 pts] [3/ | [0 |
| Total of Percentages of (B) Bidr Stabs, Bouldar, Cobble, Bedrock 5% (A) SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: | A+8 |
| | ool Depth |
| evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): | <u>Max = 30</u> |
| □ > 22.5 - 30 cm [30 pts] □ < 5 cm [5 pts] | Ø |
| ß | |
| COMMENTSMAXIMUM POOL DEPTH (centimeters): | |
| > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] | Bankfull Width |
| □ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] □ ≤ 1.0 m (≤ 3' 3") [5 pts] □ □ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] □ | Max=30 |
| COMMENTSAVERAGE BANKFULL WIDTH (meters) | (5 |
| This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream ☆ RIPARIAN WIDTH FLOODPLAIN QUALITY | |
| L/R/ (Per Bank) L R (Most Predominant per Bank) L R 2 S Wide >10m D Mature Forest, Wetland D Conservation Tillage | |
| Moderate 5-10m D D Moderate 5-10m D D Moderate 5-10m D D Moderate 5-10m D | |
| D Narrow <5m D Residential Park New Field D Open Pasture, Row | |
| Crop | |
| COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS | |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check O/VLY one box): None 1.0 2.0 3.0 0.5 1.5 2.5 >3 | |
| STREAM GRADIENT ESTIMATE Flat (0.5. R/100 n) Flat to Moderate Moderate (2 fl/100 n) Moderate to Severe Conservere Conservere (10 flat (0.5. R/100 n) | 0 |

PHWH Form Page - 1

| | Score (I Yes, Attach Completed QHEI Form) |
|--|--|
| DOWNSTREAM DESIGNATED USE(S) | |
|] WWH Name: | Distance from Evaluated Stream |
| D CWH Name: | Distance from Evaluated Stream Distance from Evaluated Stream |
| JEWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUD | ING THE <u>ENTIRE</u> WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| JSGS Quadrangle Name: | NRCS Soil Map Page: NRCS Soil Map Stream Order |
| County: | Township / City: |
| MISCELLANEOUS | , |
| Sase Flow Conditions? (Y/N): Date of last precip | sitation: 11 /29/05 Quantity unknown |
| Photograph Information: | |
| Elevated Turbidity? (Y/N): Canopy (% open | 1): ~ 40% wooded slope, leaves have fal |
| | (Note lab sample no. or id. and attach results) Lab Number: |
| ield Measures: Temp (°C) Dissolved Oxygen |) (mg/l) pH (S.U.) Conductivity (µmhos/cm) |
| s 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 observati | ions. Voucher collections optional. NOTE: all voucher samples must be labeled with the site riate field data sheets from the Primary Headwater Habitat Assessment Manual) |
| Fish Observed? (Y/N) N Voucher? (Y/N) Sa | iamanders Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Front of Technoles Observed? (Y/N) \outbor? (Y/N) |) Agustic Macromusclebrates (Disemed 2 (V/M) VAucher 2 (V/M) |

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



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Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 69

| SITE NAME/LOCATION AMPCOH | |
|---|--|
| | |
| DATE 11/30/05 SCORER JAV COMMENTS NVERCODE NVERCODE | |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructi | ons |
| STREAM CHANNEL | Þν |
| MODIFICATIONS: | N 1 |
| | منظور المحمد |
| 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. | HHE |
| TYPE PERCENT TYPE PERCENT M | letric oints |
| 0 0 BOULDER (>256 mm) [16 pts] <u>25%</u> 00 LEAF PACKWOODY DEBRIS [3 pts] <u>14%</u> | |
| | ubstrate lax = 40 |
| Image: Complete (65-256 mm) [12 pts] Image: State | |
| Image: SAND (<2 mm) [6 pts] | 27 |
| Total of Percentages of (A) (A) | A+B |
| Bidr Siabs, Boulder, Cobble, Bedrock <u>~6578</u> (A) SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: | |
| | |
| evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check O/VL Yone box): | of Depth lax = 30 |
| > 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) | \bigcirc |
| COMMENTSMAXIMUM POOL DEPTH (centimeters): | |
| | Bankfull |
| | Width f <u>ax=30</u> |
| > 1.5 m - 3.0 m (> 9'7" - 4'8") [20 pts] | 200 |
| COMMENTS and march and narrow AVERAGE BANKFULL WIDTH (motors) 14 | \mathcal{D} |
| | |
| This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY おNOTE: River Left (L) and Right (R) as looking downstreamな | |
| RIPARIAN WIDTH FLOODPLAIN QUALITY L R (Most Predominant per Bank) L R | į |
| L R (Most Predominant per Bank) L R D Wide >10m D D Mature Forest, Wetland D Conservation Tillage | |
| Moderate 5-10m GO immature Forest, Shrub or Old DO Urban or Industrial Field | |
| Open Pasture, Row | |
| Image: Comparison of the company o | |
| COMMENTS | |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box): | |
| Subsurface flow with isolated pools (interstitial) Ory channel, no water (Ephemeral) | |
| COMMENTS | |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): None II.0 II.0 II.0 II.0 II.0 | |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | |
| | |
| 🗇 Fiat (0.5 sv100 m) 🔲 Fiat to Moderate 💭 Moderate (2 sv100 m) 😡 Moderate to Severe 💭 Severe (10 sv100 m) | |

| | <u>(S+1-2</u> |
|--|--|
| ADDITIONAL STREAM INFORMATION (This Information Must Also be | Completed): |
| QHEI PERFORMED? - TYes TNo QHEI Score | (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| O wwwH Name: | Distance from Evaluated Stream |
| CWH Name: | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIR | E WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |

| C CWH Name: | Distance from Evaluated Stream |
|--|--|
| EWH Name: | |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHE | ED AREA. CLEARLY MARK THE SITE LOCATION |
| USGS Quadrangle Name: New Harron, WV-OH NRCS Soil Map | Page: NRCS Soil Map Stream Order |
| County: Township / City: | etart Falls, Ohio area |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of last precipitation: | Quantity: um hamm |
| Photograph Information: | |
| Photograph Information: | trees have leaves) |
| 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 (umhos/cm) |
| Is the sampling reach representative of the stream (Y/N) If not, please explain: | |
| | |
| Additional comments/description of pollution impacts: | |
| BIOTIC EVALUATION | |
| Performed? (Y/N): (If Yes, Record all observations. Voucher collections option ID number. Include appropriate field data sheets from the I | nat. NOTE: all voucher samples must be labeled with the sile Primary Headwater Habitat Assessment Manual) |
| Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinverteb | Voucher? (Y/N) rates Observed? (Y/N) Voucher? (Y/N) |
| Comments Regarding Biology: | • |
| | |
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| | |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM | |
| Include important landmarks and other features of interest for site evaluation | SUG & HEHRING RESCHARM OF THE STREAM S ROCATION |
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PHWH Form Page - 2

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October 24, 2002 Revision

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| HHEI Sco | ore (sum | of metrics | 1. 2 | 3) | : | |
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| SITE NAME/LOCATION AMP - OH | | DRAINAGE AREA (mi²) | |
|---|--|---|---|
| LENGTH OF STREAM REACH (R)L | AT LONG | RIVER CODE RIVER MILE | |
| DATE 11/30/05 SCORER MOL | | | |
| NOTE: Complete All Items On This Form | | | |
| STREAN CHANNEL ONNE / NATU MODIFICATIONS: | RAL CHANNEL DRECOVERED | | OVERY |
| (Max of 32). Add total number of significant 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] Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock | Al substrate types found (Max of 8). Find the substrate type found (Max of 8). Find the substrate ty | KWOODY DEBRIS [3 pts] IO RITUS [3 pts] IO ARDPAN [0 pt] IO L [3 pts] IO | HHE! Metric Points Substrate Max = 40 QQ |
| SCORE OF TWO MOST PREDOMINATE SUBST | RATE TYPES: | L NUMBER OF SUBSTRATE TYPES: | |
| 2. Maximum Pool Depth (Measure the maximum Pool Depth (Measur | culverts or storm water pipes) (Che | 10 cm [16 pts] pts] ER OR MOIST CHANNEL [0 pts] | Pool Depth Max = 30 |
| 3. BANK FULL WIDTH (Measured as the a → 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 - | (Check ONLY one box): 1.5 m (> 3' 3" - 4' 8") [15 pts] < 3' 3") [5 pts] | Bankfuli Width Max=30 |
| COMMENTS | AVI | ERAGE BANKFULL WIDTH (meters) | |
| RIPARIAN ZONE AND FLOODPL RIPARIAN WIDTH | This information <u>must</u> also be AIN QUALITY ☆NOTE: River Le FLOODPLAIN QUALITY | completed eft (L) and Right (R) as looking downstreams? | |
| | R (Most Predominant per B Mature Forest, Wetland Immature Forest, Shrub Field Residential, Park, New F | or Cld Conservation Tillage | 1 |
| | iation) (Check ONLY one box): | oist Channel, isolated pools, no flow (intermitten ry channel, no water (Ephemeral) | |
| SINUOSITY (Number of bends pe None 0.5 | ar 61 m (200 ft) of channel) (Check (1.0 0 2.0 1.5 0 2.5 | Q 3.0 | |
| STREAM GRADIENT ESTIMATE | | Moderate to Severe 10 to | 100 ft) |

| | <u>CS-2</u> |
|--|---|
| DDITIONAL STREAM INFORMATION (This Information Must Also b | be Completed): |
| | (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
|] WWH Name: | |
|] CWH Name: | Distance from Evaluated Stream |
| | |
| · · · | IRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| USGS Quadrangle Name: New Harron, WV-OH | |
| County: M-Pigs Townsh | 10/City: Retart Falle, Ohioanea |
| MISCELLANEOUS | , , |
| Base Flow Conditions? (Y/N): Date of last precipitation: | aglus annus ha ann |
| | |
| Photograph Information: | |
| Elevated Turbidity? (Y/N): Canopy (% open): | |
| Were samples collected for water chemistry? (Y/N): $\underline{\mathcal{N}}_{}$ (Note lab s | 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, p | |
| ια απηλείται το μαραγικό το μαραγικά το της Σαμαρικής το της βαραγικής το της μαραγικής το της παραγικής της πα Τη ποτέξει | wase explaint |
| | mbered they in charmed |
| Additional manager of the second state of the first second state of the second state o | hubblit litter to C utherer 1 |
| Additional comments/description of pollution impacts: 11900 | |
| Head UK storem int of by BIOTIC EVALUATION | ATV Area , I. |
| Head UK Station BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) |
| HPAD UK Station BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) |
| Head UK Station BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) |
| HPAD UK Station Station <td< td=""><td>collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)</td></td<> | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) |
| HPAD OF Station (with off by BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assassment Manual) iserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): |
| HPAD OF Station (with off by BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assassment Manual) iserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): |
| HPAD OF Station (with off by BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) to Macroinvertebrates Observed? (Y/N) Voucher? (|
| HPAD OF Station (with off by BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) to Macroinvertebrates Observed? (Y/N) Voucher? (|
| HPAD OF Station (with off by BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) to Macroinvertebrates Observed? (Y/N) Voucher? (|
| Head of statem (in the AF by BKOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assassment Manual) iserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) OF STREAM REACH (This must be completed): |
| Head of statem (in the AF by BKOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) served? (Y/N) Voucher? (Y/N) to Macroinvertebrates Observed? (Y/N) Voucher? (|
| Head of statem (int all by BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) iserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Vouch |
| Head of statem (in the AF by BKOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) iserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Vouch |
| Head of statem (int all by BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) iserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Vouch |
| Head of statem (int all by BIOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) iserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Vouch |
| Head of statem (in the of the by BNOTIC EVALUATION Performed? (Y/N): | collections optional. NOTE: all voucher samples must be labeled with the site sheets from the Primary Headwater Habitat Assessment Manual) iserved? (Y/N) Voucher? (Y/N) c Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Vouch |

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Class II

-7 4

| | HHEI Score (s | um of metrics 1, 2, 3) : $4 + 7$ |
|---|---|---|
| SITE NAME/LOCATION AMP-OH | | |
| | 3-1 RIVER BASIN | |
| LENGTH OF STREAM REACH (R) L DATE JAJ NOTE: Complete All Items On This Form | COMMENTS | |
| | / | |
| | RAL CHANNEL DRECOVERED DRECOV | ERING DRECENT OR NO RECOVERY |
| MODIFICATIONS: | | ې غ |
| (Max of 32). Add total number of significan TYPE PEI BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] | | The provided HTML for the second sec |
| evaluation. Avoid plunge pools from road (> 30 centimeters [20 pts] > 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts] | cimum pool depth within the 61 meter (200 ft) e culverts or storm water pipes) (Check ONL Y on 55 cm - 10 cm [15 pts 5 cm [6 pts] NO WATER OR MOIS A flormer for the MAXIMUM POO | e box):] T CHANNEL [0 pts] |
| 3. BANK FULL WIDTH (Measured as the a → 4.0 meters (> 13') [30 pts] → 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] | verage of 3-4 measurements) (Check (> 1.0 m - 1.5 m (> 3' 3" = 1.0 m (≤ 3' 3') [5 pts] | DNL Yone box): Bankfuli - 4' ס") (15 pts] Width |
| | AVERAGE BAN | |
| RIPARIAN ZONE AND FLOODPL <u>RIPARIAN WIDTH</u> | This information <u>must</u> also be completed AIN QUALITY GNOTE: River Left (L) and Ri FLOODPLAIN QUALITY | ght (R) as looking downstreamជា |
| L R (Per Bank) | L R (Most Predominant per Bank) | L R D D Conservation Tillage |
| □ □ Wide >10m | Mature Forest, Wetland | • |
| Moderate 5-10m | Field | Urban or Industrial |
| Narrow <5m None COMMENTS | Residential, Park New Field Fenced Pasture | Open Pasture, Row Crop Mining or Construction |
| FLOW REGIME (At Time of Evalue Stream Flowing Subsurface flow with isolated pools COMMENTS | Moist Channel | isolated pools, no flow (Intermittent) o water (Ephemersi) |
| SINUCSITY (Number of bends pe None D 0.5 D | r 61 m (200 ft) of channel) (Check ONLY one bo 1.0 2.0 1.5 2.5 | x): 3.0 >3 |
| STREAM GRADIENT ESTIMATE | Moderate (2 (1/100 ft) OModerate to | Severe 🔲 Severe (10 stribo nj |

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| | | | CS-3-1 |
|-------------------------------------|---|--|---------------------|
| DDITIONAL STREAM INFORM | NTION (This Information Must Also be Co | ompleted): | |
| QHEI PERFORMED? - | Ves Ø No QHEI Score | _ (If Yes, Attach Completed QHEI Form) | |
| DOWNSTREAM DESIG | | | |
| | | Distance from Evaluated Stre | |
| DEWH Name: | | Distance from Evaluated Stre | |
| | | | - |
| MAPPING: ATTACH CO | PIES OF MAPS, INCLUDING THE <u>ENTIRE</u> V | WATERSHED AREA. CLEARLY MARK THE SI | TE LOCATION |
| ISGS Quadrangle Name: <u>New</u> | -Karen, WU-OH NRC | CS Soil Map Page: NRCS Soil Map \$ | Stream Order |
| county: Margo | Township / (| city: Letart Falls, O | tio area |
| MISCELLANEOUS | | , | |
| | Date of last precipitation: 11/5 | R1/05 Quantity: untron | n |
| Photograph Information: | <u></u> | | |
| Elevated Turbidity? (Y/N): <u> </u> | Canopy (% open): | | |
| Were samples collected for water | chemistry? (Y/N): (Note lab samp | ele no. or id. and attach results) Lab Number: | |
| Field Measures: Temp (*C) | Dissolved Oxygen (mg/l) | _pH (S.U.) Conductivity (umhos/cn | n) |
| is the sampling reach representati | ve of the stream (Y/N) / If not, please | e explain: | |
| Additional comments/description of | of pollution impacts: | | |
| BIOTIC EVALUATION | ····· | | • |
| Performed? (Y/N): <u>N</u> (If | Yes, Record all observations. Voucher collect | ctions optional. NOTE: all voucher samples mu Is from the Primary Headwater Habilat Assessm | |
| Frogs or Tadpoles Observed? (Y/ | | red? (V/N) Voucher? (V/N) croinvertebrates Observed? (V/N) Vouc ad ma (Connect) observed | |
| | | | |
| DRAWING AND | NARRATIVE DESCRIPTION OF | STREAM REACH (This must be co | |
| Include important landma | ks and other features of interest for site | evaluation and a narrative description of th | e stream's location |
| and a | A pic | BEW-N7' | kilow |
| Mar Tan | Se Contraction | | 1 Martine |
| 2012 2 | | Pro Pro Pro | 1 May |
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| FLOW - | A Charles | And the | |
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| | t t z | y.e. | |
| | C Ballant - A | | |
| Ontobar 24 2802 Busirian | PHWH Form | rage - Z | |

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

Class III

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58

| SITE NAME/LOCATION AMP-OH | |
|---|------------------------|
| SITE NUMBER <u>CS - 3-2</u> RIVER BASIN DRAINAGE AREA (mi ²) | |
| LENGTH OF STREAM REACH (II) <u>900</u> LAT. LONG. RIVER CODE RIVER MILE DATE <u>11/30/05</u> SCORER <u>INBL</u> COMMENTS | |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruc | tions |
| | |
| STREAM CHANNEL ONONE / NATURAL CHANNEL RECOVERED RECOVERING RECENT OR NO RECOVER MODIFICATIONS: | ERY |
| | |
| SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. | HHEI |
| TYPE PERCENT TYPE PERCENT | Metric |
| BLDR SLABS [16 pts] 3 SiLT [3 pt] 3 BOULDER (>256 mm) [16 pts] 0 LEAF PACKWOODY DEBRIS [3 pts] 10 | Points |
| | Substrate Max = 40 |
| XII COBBLE (65-256 mm) (12 pts) XII CLAY or HARDPAN [0 pt] II GRAVEL (2-64 mm) [9 pts] II MUCK [0 pts] | ~ |
| Image: Second state | 2 |
| Total of Percentages of (A) | A+B |
| Bidr Slabs, Boulder, Cobble, Bedrock | ~~ |
| | |
| evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box); | 'ool Depth Max = 30 |
| □ > 30 centimeters [20 pts] □ > 22.5 - 30 cm [30 pts] | 5 |
| > 10 - 22.5 cm [26 pts] | |
| COMMENTSMAXIMUM POOL DEPTH (centimeters): | |
| | Bankfuli |
| └ > 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") [6 pts] | Width Max=30 |
| > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | 20 |
| COMMENTSAVERAGE BANKFULL WIDTH (meters) | 20 |
| | |
| This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY がNOTE: River Left (L) and Right (R) as looking downstream☆ | |
| RIPARIAN WIDTH ELOODPLAIN QUALITY LR (Most Predominant per Bank) | |
| R (Per Bank) L R Mode >10m Mature Forest, Wetland D Conservation Tillage | |
| Moderate 5-10m Immature Forest, Shrub or Old D Urban or Industrial Field | |
| D Narrow <5m D D Residential, Park, New Field D Open Pasture, Row | |
| Image: Crop Image: Crop Image: Crop <td></td> | |
| COMMENTS | |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Δ Stream Flowing \Box Moist Channel, isolated pools, no flow (Intermittent) | |
| Subsurface flow with isolated pools (Interstitial) Dry channel, no water (Ephemeral) | |
| | |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check OVLY one box): | |
| | |
| | |
| 🛛 Flat (0.5 w100 n) 🖉 Elat to Moderate 🔲 Moderate (2 fw100 li) 🔲 Moderate to Severe 💭 Severe (10 lw100 n | 4) |

| | LJ-J-d |
|--|--|
| DITIONAL STREAM INFORMATION (This Information Must Also be Com | ipleted): |
| QHEI PERFORMED? - DYes No QHEI Score (II | f Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESKINATED USE(S) | |
| WWH Name: | |
| CWH Name: | |
| EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WA | TERSHED AREA, CLEARLY MARK THE SITE LOCATION |
| GS Quadrangle Name: New Harron, WV-OH NRCS: | Soil Map Page: NRCS Soil Map Stream Order |
| unty: Township / City | , Letant Falls, Ohio area |
| Inty: Township / City | - Actorise Crouse, Course and |
| MISCELLANEOUS | C |
| se Flow Conditions? (Y/N): f Date of last precipitation: $11/39/2$ | D quantity: unkerrown |
| • • | |
| wated Turbidity? (Y/N): Canopy (% open): | |
| re samples collected for water chemistry? (Y/N): 10 (Note lab sample | no. or id. and attach results) Lab Number: |
| | H (S.U.) Conductivity (µmhos/cm) |
| | |
| he sampling reach representative of the stream (Y/N) If not, please e | splain: |
| | |
| ditional comments/description of pollution impacts: | |
| BIOTIC EVALUATION | |
| | ons optional. NOTE: all voucher samples must be labeled with the site |
| | from the Primary Headwater Habitat Assessment Manual) |
| h Observed? (Y/N) Voucher? (Y/N) Salamanders Observed' ogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macro | |
| mments Regarding Biology: | |
| magno rogotorg pology | |
| | A |
| | |
| DRAWING AND NARRATIVE DESCRIPTION OF ST | IREAM REACH (This must be completed): |
| Include important landmarks and other features of interest for site eva | |
| t lan l | A to ATV trail |
| 1 guilty between for st | ichle à |
| gun fan on | K That = |
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er 24, 2002 Revision

Acr 11 beech/oak with strub/1112 havysuite tangles

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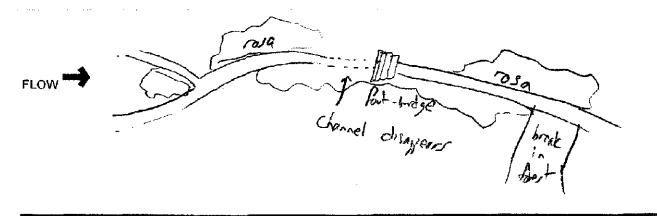
| modified class I |
|---|
| Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3): 34 |
| SITE NAME/LOCATION AMI - OH |
| |
| LENGTH OF STREAM REACH (#) LAT LONG RIVER CODE RIVER MILE |
| |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions |
| |
| STREAM CHANNEL ON 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 Metric I I BLDR SLABS (16 pts) I I I I I I I I I I I I I I I I I I I |
| BLDR SLABS [16 pts] 24. Silt [3 pt] 36. Foints BOULDER (>256 mm) [16 pts] 10 LEAF PACK/WOODY DEBRIS [3 pts] 15 |
| BEDROCK [16 pt] BEDROCK [16 pt] Substrate |
| |
| |
| |
| Total of Percentages of (A) (B) (A A+B Bidr Slabs, Boulder, Cobble, Bedrock |
| SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: |
| 2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth |
| evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max ≠ 30 |
| > 30 centimeters [20 pts] > 5 cm - 10 cm (15 pts) > 22.5 · 30 cm (30 pts) < 5 cm (6 pts) |
| > 22.5 · 30 cm [30 pts] > 10 - 22.5 cm [25 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): Bankfuli 2 4.0 meters (> 13") [30 pts] Width Width |
| > ≥ 3.0 m - 4.0 m (> 9'7' - 13') [25 pts] ≤ 1.0 m (≤ 3' 3') [5 pts] |
| D > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pis] |
| |
| |
| This information <u>must</u> also be completed |
| RIPARIAN ZONE AND FLOODPLAIN QUALITY SHOTE: River Left (L) and Right (R) as looking downstreams? <u>RIPARIAN WIDTH</u> <u>FLOODPLAIN QUALITY</u> |
| R (Per Bank) L R (Most Predominant per Bank) L R |
| Wide >10m |
| Field Urban or industrial |
| Narrow <5m O Residential, Park, New Field O Core Pasture, Row |
| Image: Construction Image: Construction Image: Construction Image: Construction |
| COMMENTS |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box) |
| Stream Flowing Subsurface flow with isolated pools (Interstitial) COMMENTS No another (Interstitial) COMMENTS No another (Subsurface Comments) Subsurface flow with isolated pools (Interstitial) Subsurface flow with isola |
| |
| SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box): |
| |
| |
| Flat (0.5 W100 ft) Fiat to Moderate (2 W100 ft) Orderate (2 W100 ft) Severe (10 W100 ft) |
| |

| QHEI PERFORMED? - 🗆 Yes 🕅 No QHEI Score | (If Yes, Attach Completed QHEI Form) |
|---|---|
| DOWNSTREAM DESIGNATED USE(S) | |
|] www.iname: | Distance from Evaluated Stream |
|] CWH Name: | Distance from Evaluated Stream Distance from Evaluated Stream |
| | |
| | ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| • | NRCS Soil Map Page: NRCS Soil Map Stream Order |
| county: <u>Meigs</u> Tow | inship/city: Letart Falls, Ohio area |
| ے MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of last precipitation: | 1/20/05 unham |
| · • | |
| Photograph Information: | |
| Elevated Turbidity? (Y/N): Canopy (% open): | 2_ |
| | ab sample no. or id. and attach results) Lab Number: |
| | pH (S.U.) Conductivity (µmhos/cm) |
| | |
| is the sampling reach representative of the stream (Y/N) If no | ol, please explain: |
| ····· | <u></u> |
| Additional comments/description of pollution impacts: Wooded | valley between 2 row-crop helds |
| | 1 |
| BIOTIC EVALUATION | |
| | |
| | her collections optional. NOTE: all voucher samples must be labeled with the late sheets from the Primary Headwater Habilat Assessment Manual) |
| | Observed (VBI) Vousborg (VBB |
| Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aqu | Jatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| | |

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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



HHEI Score (sum of metrics 1, 2, 3) : 97

Class III

| SITE NAME LOCATIONAMP - OH | | | | ····· |
|---|--|--|-----------------------|---|
| SITE NUMBER <u>CS</u> | | | | |
| LENGTH OF STREAM REACH (ft) | AT LONG | | RIVER MILE | |
| DATE 11/30/0-5 SCORER JAV | | | | |
| NOTE: Complete All Items On This Form | - Refer to "Field Evaluation Ma | nual for Ohio's PHWH S | Streams" for Instru | ctions |
| | | | ECENT OR NO RECON | VERY |
| MODIFICATIONS: | | | | |
| 1. SUBSTRATE (Estimate percent of every (Max of 32). Add total number of significar | | · _·· | | HHEI Metric |
| BLDR SLABS [16 pts] | | | 5% | Points |
| BOULDER (>256 mm) [16 pts] | | KWOODY DEBRIS [3 pts] | _5%_ | Substrate |
| BEDROCK [16 pt] | | RITUS (3 pts) ARDPAN (0 pt) | | Max = 40 |
| GRAVEL (2-64 mm) [\$ pts] | | • • • | | \sim |
| SAND (<2 mm) [6 pts] | 5% 00 ARTIFICIA | L [3 pts] | | 32 |
| Total of Percentages of | (A07, (A) | | (8) | A+B |
| Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock | <u>a</u> as | | + | <u>, , , , , , , , , , , , , , , , , , , </u> |
| SCORE OF TWO MOST PREDOMINATE SUBST | RATE TYPES: ************************************ | L NUMBER OF SUBSTRAT | E TYPES: | |
| 2. Maximum Poot Depth (Measure the max | | | at the time of | Pool Depth |
| evaluation. Avoid plunge pools from road > 30 centimeters [20 pts] | | eck ONLY one box): 10 cm [15 pts] | Ìr | <u>Max = 30</u> |
| □ / > 22.5 - 30 cm [30 pts] | 🖸 < 5 cm [5 | pts] | | 25 |
| ▶ > 10 - 22.5 cm [25 pts] | | ER OR MOIST CHANNEL [0 | ob.5 | |
| COMMENTS | MA | XIMUM POOL DEPTH (cen | timeters): | |
| 3 BANK FULL WIDTH (Measured as the a | verage of 3-4 measurements) | (Check ONLY one box) | | Bankfull |
| → 4.0 meters (> 13') [30 pts] ↓ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] | □ > 1.0 m · □ ≤ 1.0 m (: | 1.5 m (> 3' 3" - 4' 8") [15 pts] | | Width Max=30 |
| I 5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | | 2 2) [5 bts] | | |
| COMMENTS | | | ~1821 | 20 |
| CONNER (3 | AV | ELARE DAMALLAFE 4410 HU | i (marara) | |
| RIPARIAN ZONE AND FLOODPL <u>RIPARIAN WDTH</u> | This information <u>must</u> also be AIN QUALITY INOTE: River L FLOODPLAIN QUALITY | completed eft (L) and Right (R) as looki | ng downstreamដ | |
| L R (Per Bank) | L R (Most Predominant per B | | | |
| | Mature Forest, Wetland | or Old en en | onservation Tillage | |
| Moderate 5-10m | Field | | rban or industrial | |
| D D Narrow <5m | 🔲 🗹 – Residential, Park, New F | 1860 - 1919 - 1 | pen Pasture, Row | |
| D D None | D D Fenced Pasture | | ining or Construction | |
| COMMENTS | ····· | | . <u></u> | |
| FLOW REGIME (At Time of Evalue Stream Flowing Subsurface flow with isolated pools COMMENTS | Q M | oist Channel, isolated pools, ry channel, no water (Epher | • • | |
| SINUOSITY (Number of bends pe | r 61 m (200 ft) of channel) (Crieck (1.0 - 2.0 1.5 - 2.5 | | 3.0 >3 | |
| STREAM GRADIENT ESTIMATE | | | | |

PHWH Form Page - 1

CS-4-2

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| MISCELLANEOUS lase Flow Conditions? (Y/N): Y Date of last precipitation: $11/29/05$ Quantity: $whmaw$ Photograph Information: YRA Photograph Information: YRA Stevated Turbidity? (Y/N): N Canopy (% open): $\sim 40\%$ Vere samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: | | | is, Attach Completed QHEI Form) | |
|--|---|--|--|------------|
| Diver Name: | | | | |
| Detailed from Evaluated Stream | | | | |
| MAPPING: ATTACH COPES OF MAPS, INCLIDING THE ENTERS WATERSHED AREA. CLEARLY MARK THE STEL LOCATION ISGS Quadrangie Mane. MALT MARCA MICS Self Map Stream Order Soundy: Marga Township / C4y. Township / C4y. Township / C4y. INISCELLANEOUS INISCELLANEOUS Iniscellaneous 11/24/25 Quantity Output INISCELLANEOUS Iniscellaneous 11/24/25 Quantity Initomation: 11/24/25 Issee Flow Conditions? (YRH) Date of last precipitation: 11/24/25 Quantity Initomation: Issee Flow Conditions? (YRH) Date of last precipitation: 11/24/25 Quantity Initomation: Issee Flow Conditions? (YRH) Canopy (% open): 11/24/25 Quantity Initomation: Issee Townee Temps: Canopy (% open): 11/24/25 Quantity Initomation: Issee Samples collocided for water chamility? (YRI): Canopy (% open): 11/24/25 Quantity Initomation: Issee Samples collocided for water chamility? (YRI): Disolved Corgen (% open): PHC2 Conductivity (iminoater) Issee samples collocided for water chamility? <t< td=""><td></td><td></td><td></td><td></td></t<> | | | | |
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| Issee Flow Conditions? (YM): Date of test precipitation: 11/29/05 Ouentity: | county: Meigh | Township / City: | hetart Falls, Ohio are | a |
| holograph kitomation: | MISCELLANEOUS | | | |
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| s the sampling reach representative of the stream (Y/N) If not, please explain: | Vere samples collected for water chem | ilstry? (Y/N): Note lab sample no. | or id. and attach results) Lab Number: | |
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HHEI Score (sum of metrics 1, 2, 3) AMP-OH SITE NAME/LOCATION SITE NUMBER CS - 5 - 2 RIVER BASIN DRAINAGE AREA (mi²) LENGTH OF STREAM REACH (ft) LONG. RIVER CODE RIVER MILE LAT. 130105 SCORER JAV ___COMMENTS DATE 1/ NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions INONE / NATURAL CHANNEL I RECOVERED RECOVERING RECENT OF NO RECOVERY STREAM CHANNEL **MODIFICATIONS:** 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. PERCENT Туре Ф С BLDR SLABS [16 pts] SILT [3 pt] 00 BOULDER (>256 mm) [16 pts] LEAF PACK/WOODY DEBRIS [3 pts] BEDROCK [16 pt] 00 FINE DETRITUS [3 pts] סס COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 00 GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] <u>,</u> 9 00 Ο SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] Total of Percentages of (B) 2 Bidr Slabs, Boulder, Cobble, Bedrock TOTAL NUMBER OF SUBSTRATE TYPES: 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): > 5 cm - 10 cm [15 pts] > 30 centimeters [20 pts] $\mathbf{\Theta}$ > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] 1 > 10 - 22.5 cm [25 pts] NO WATER OR MOIST CHANNEL [0 pts] COMMENTS MAXIMUM POOL DEPTH (centimeters): BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): > 4.0 meters (> 13') [30 pts] Ø > 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 (> 9' 7" - 4' 6") [20 pts] AVERAGE BANKFULL WIDTH (meters) COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY \$PNOTE: River Left (L) and Right (R) as looking downstreams **RIPARIAN WIDTH** FLOODPLAIN QUALITY (Per Bank) (Most Predominant per Bank) L R LR a 00 ПС Wide >10m П Mature Forest, Welland **Conservation Tillage** Immature Forest, Shrub or Old Ø Ø MI 00 Moderale 5-10m Urban or Industrial Field Open Pasture, Row 00 00 Narrow <5m Residential, Park, New Field Cróp 00 00 None 00 Fenced Pasture Mining or Construction COMMENTS

HHEI Metric TYPE Points 00 Substrate 00 Max = 40 00 00 00 4 + R SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 2. Pool Depth Max # 3D Ο Ο Baskfull П Width Ο <u> Max=30</u> п FLOW REGIME (A! Time of Evaluation) (Check ONLY one box): Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing П Ō 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): п 8 None 1.0 2.0 3.0 Ο ٥ 0.5 1.5 2.5 23 STREAM GRADIENT ESTIMATE Moderate (2 IV100 ft) D Moderate to Severe Severe (10 m/100 ft) Flat (0.6 n/ 100 m) Flat to Moderate PHWH Form Page - 1

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| CWH Name: | DDITIONAL STREAM INFORMATION (This Information Must Also be Comple | etedi: |
|--|---|--|
| JWM Name: | QHEI PERFORMED? - 🗍 Yes 🖉 No QHEI Score (If Ye | as, Attach Completed QHEI Form) |
| B VAN Hame: Distance from Evaluated Stream DEVAN Hame: Distance from Evaluated Stream DEVAN Hame: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUOMING THE ENTITIE WATERSHED AREA. CLEARLY MARK THE BITE LOCATION SGS Cluadrangle Neme: NEW MOREAL, U/J-OH NRCS Soil Map Depe: MISCELLANEOUS same: | DOWNSTREAM DESIGNATED USE(S) | |
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| s the sampling reach representative of the stream (Y/N) ⊥ if not, please explain: <u>a angrufu cant pertion</u> <u>bf the arm each has</u> <u>been inpacted by fulling</u> <u>different contents/description of pollution impacts:</u> <u>BOTIC EVALUATION</u> reformed? (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) ish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Comments Regarding Biology: <u>Comments Regarding Biology</u> DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location <u>Contents</u> Regarding Biology: <u>Contents</u> Regarding Biology: <u>Contents</u> <u>Contents</u> <u>and</u> <u>Contents</u> <u>Conte</u> | Nere samples collected for water chemistry? (Y/N): (Note lab sample no. | or id. and attach results) Lab Number: |
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| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location woodsd bfw-site woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description of the stream's location woodsd bfw-site evaluation and a marrative description and a marrative descr | | , |
| Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location accuse-abuse wooded BEW-S' We been BEW-S' BE | Comments Regarding Biology | |
| Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location accuse-abuse wooded BEW-S' We been BEW-S' BE | | |
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| Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location accuse-abuse wooded BEW-S' We been BEW-S' BE | | |
| LOW - 22' scrub shub brw-s' wooded brw-s' wooded brw-s' wooded brw-s' wooded brw-s' wooded brw-s' wooded brw-s' | DRAWING AND NARRATIVE DESCRIPTION OF STR | EAM REACH (This <u>must</u> be completed): |
| LOW - 22 wooded BEW-5 wooded BEW-5 wooded BEW-5 | • | |
| LOW - County and the second of | | wooded cut 5' |
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Class I

Primary Headwater Habitat Evaluation Form

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

| SITE NAME/LOCATION | | | |
|---|---|---|--|
| | NUMBER CS-6 RIVER BASIN | | |
| | LAT. LONG. | | |
| · · | <u>JAV</u> COMMENTS n This Form - Refer to "Field Evaluat | | |
| • | | | |
| STREAM CHANNEL | | Vered D Recovering D | RECENT OR NO RECOVERY |
| (Max of 32). Add total num | ercent of every type of substrate present. Der of significant substrate types found (Max | | boxes A & B. HH |
| TYPE D BLDR SLABS [16 pts] | <u>Percent</u> <u>type</u> vil | T (3 pt) | PERCENT Met 45% Poir |
| BOULDER (>256 mm) | · · · · <u>· · · · · · · · · · · · · · · </u> | AF PACK/WOODY DEBRIS [3 pts IE DETRITUS [3 pts] |] <u>25%</u> 10% Subst |
| COBBLE (65-256 mm) | [12 pts] | AY or HARDPAN [0 pt] | 1070 Max= |
| GRAVEL (2-64 mm) [9 | | CK (0 pts) TIFICIAL (3 pts) | —— IIII |
| Total of Percentages | | HEIGIAL IS HIS! | |
| Bidr Slabs, Boulder, Cobbie SCORE OF TWO MOST PREDOMI | e, Bedrock <u>07</u> 0 6 | TOTAL NUMBER OF SUBSTR | |
| 2. Maximum Pool Depth (Me | esure the maximum pool depth within th | e 61 meter (200 ft) evaluation rea | ch at the time of Pool D |
| | oois from road culverts or storm water pipes | | Max = |
| 22.5 - 30 cm [30 pts] | Ø < | 5 cm [6 pts] | 5 |
| | | O WATER OR MOIST CHANNEL | ~1.0/ |
| COMMENTS | | MAXIMUM POOL DEPTH (cr | entimeters): ••••••••• |
| 3. BANK FULL WIOTH (Mea | sured as the average of 3-4 measurement $\Box \sim >$ | | |
| > 3.0 m - 4.0 m (> 9' 7" - 13' > 1.5 m - 3.0 m (> 9' 7" - 4' 8 | | 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pt 1.0 m (≤ 3' 3") [5 pts] | Max= |
| | | | 1-2115 |
| COMMENTS | | AVERAGE BANKFULL WID | (moters) |
| | This information must | | •••••••••••••••••••••••••••••••••••••• |
| RIPARIAN WIDTI | | River Left (L) and Right (R) as loc | King downsiream Fr |
| L R (Per Bank) □ □ ∕ Wide >10m | L R (Most Predomina | | Conservation Tillage |
| Moderate 5-10m | Immature Forest | | Urban or Industrial |
| DD Narrow <5m | Residential, Parl | New Field | Open Pasture, Row |
| O O None | G G Fenced Pasture | | Crop Mining or Construction |
| COMMENTS | | | ····· |
| Stream Flowing | t <i>Time of Evaluation)</i> (Check OIVLY one bo { n isolated pools (Interstitiat) | x): Moist Channel, isolated poo Dry channel, no water (Eph | • |
| SINUOSITY (Numt None 0.5 | ber of bends per 61 m (200 ft) of channel) 1.0 1.5 C | Check ONLY one box): 2.0 2.5 | 3.0 >3 |
| <u>.</u> | | | |
| STREAM GRADIENT EST | IMATE Moderate (2 n/ 100 ii) | Moderate to Severe | Severe (10 #100 #) |

| | <u> </u> |
|--|---|
| DDITIONAL STREAM INFORMATION (This information Must Also be C | completed): |
| | |
| | |
| DOWNSTREAM DESIGNATED USE(S) | Distance from Evaluated Stream |
| | |
| EWH Name: | |
| | |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE I | |
| JSGS Quadrangle Name: New Haven, WV-OH NRC | CS Soil Map Page: NRCS Soil Map Stream Order |
| County: Meigh Township / | civ Letart Falls Ohioarea |
| (Unitable) | ······································ |
| MISCELLANEOUS | , |
| Base Flow Conditions? (Y/N): Y Date of last precipitation: $11/2$ | 9/05 Quantity: untracem |
| , | / |
| Photograph Information: | |
| Elevated Turbidity? (Y/N): <u>Y</u> Canopy (% open): <u>707</u> | |
| Were samples collected for water chemistry? (Y/N): (Note tab samp | ple no. or id. and attach results) Lab Number: |
| | · · · · · · · · · · · · · · · · · · · |
| Field Measures: Temp (*C) Dissolved Oxygen (mg/l) | |
| Is the sampling reach representative of the stream (Y/N) If not, pleas | æ explain: |
| | |
| BIOTIC EVALUATION | |
| Performed? (Y/N): (If Yes, Record all observations. Voucher colle | ections optional. NOTE: all voucher samples must be labeled with the sit |
| | ets from the Primary Headwater Habitat Assessment Manual) |
| Fish Observed? (Y/N) N Voucher? (Y/N) Salamanders Observ | /ed? (Y/N) Voucher? (Y/N) |
| Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Ma | |
| Comments Regarding Biology: | |
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| ······································ | |
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| DRAWING AND NARRATIVE DESCRIPTION OF | STREAM REACH (This <u>must</u> be completed): |
| Include important landmarks and other features of interest for site | evaluation and a narrative description of the stream's location |
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| | barton the stand |
| mint series - shub area | rune) of the part of the |
| (muttillar rose, deer | |
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| FLOW | |
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| | 14 (marthard) |
| T DEN-1 | J-1 (c.g. marger) Them |
| appar - z" his | U-1 (c.g. multiplet) (u. z" conternation of a sycamore |
| meltille | |
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October 24, 2002 Revision

| VILLAL | | GUOI | | | | |
|--------|-------|--------|----------|------|------|----|
| HHE | Score | (sum o | f metric | s 1, | 2, 3 |): |

modified Class II

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| TE NAME/LOCATION AMP - OH | | | | |
|---|--|---|---|----------------------|
| SITE NUMBER D | | | | |
| ENGTH OF STREAM REACH (ft) | LAT. LONG. | | | |
| | | | | |
| NOTE: Complete All Items On This Form | | | | • • • |
| TREAM CHANNEL | URAL CHANNEL DRECOVE | | DRECENT OR NO RECOVE | RY |
| MODIFICATIONS: | | - stream i | a currently recove | mg f |
| | | | | |
| . SUBSTRATE (Estimate percent of ever (Max of 32). Add total number of significa | | | of boxes A & B. | HHEI |
| | ERCENT TYPE | A | | letric oints |
| BLDR \$LAB\$ [16 pts] BOULDER (>256 mm) [16 pts] | | 3 py PACK/WOODY DEBRIS [3 | | 01110 |
| | | DETRITUS [3 pts] | \$ | ubstrate lax = 40 |
| COBBLE (65-256 mm) [12 pts] GRAVEL (2-64 mm) [9 pts] | | or HARDPAN [0 pt] | 40% | <u></u> |
| GRAVEL (2-64 mm) [9 pts] SAND (<2 mm) [6 pts] | | ([0 pts] FICIAL [3 pts] | 2520 | 0 |
| | | | | |
| Bidr Slabs, Boulder, Cobble, Bedrock | 3 | | 7 | A + B |
| | IRATE TYPES: | OTAL NUMBER OF SUBSI | RATE TYPES: | <u> </u> |
| Maximum Pool Depth (Measure the mi | | | | of Depth |
| evaluation. Avoid plunge pools from road > 30 centimeters [20 pts] | | (Check O/VL) one box): m - 10 cm [15 pts] | | lax = 30 |
| > 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts] | | m [6 pts] WATER OR MOIST CHANN | | 5 |
| | · | | 1/1/1 | |
| | | MAXIMUM POOL DEPTH | (centimeters): | ومرافقها الأحفظي |
| BANK FULL WIDTH (Measured as the | | • | | Bankfull Width |
| ↓ > 4.0 meters (> 13') [30 pts] ↓ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] | | im - 1.5 m (> 3' 3" - 4' 8") [15)m (≤ 3' 3") [5 pts] | | Aax#30 |
| Som (> 9' 7" - 4' 8") [20 pts] | | | | |
| COMMENTS | | _AVERAGE BANKFULL W | 1DTH (meters) | |
| | | | | |
| RIPARIAN ZONE AND FLOODF | This Information <u>must</u> als PLAIN QUALITY ট NOTE: Ri | ver Left (L) and Right (R) as | looking downstreams | |
| RIPARIAN WIDTH | FLOODPLAIN QUALITY L R (Most Predominant | per Bank) L R | | |
| Wide >10m | DD / Mature Forest, Wet | and OO | Conservation Tillage | |
| Moderate 5-10m | Field | hrub of Old | Urban or Industrial | |
| D Narrow <5m | DD Residential, Park, N | iew Field | Open Pasture, Row | |
| O O None | G G Fenced Pasture | 00 | Crop Mining or Construction | |
| COMMENTS | | | | |
| FLOW REGIME (At Time of Eva | luation) (Check ONLY one box) | | | |
| Stream Flowing Subsurface flow with isolated poo | ols (Interstitial) | Moist Channel, isolated p Dry channel, no water (B | oools, no flow (Intermittent) Ephemeral) | |
| CONTRACTO | | | | ÷ |
| | er 61 m (200 ft) of channel) (Ct | eck ONLY one box) | _ | - |
| SINUOSITY (Number of bends p | Ter in (coo in or channel) Ter | | 1 | |
| 🖸 None 🗍 🗍 | 1.0 | 2.0 | 3 .0 | |
| | | 2.0 2.5 | 1 >3 | |

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The second second

| DOWNSTREAM DESIGNATED USE(S) | |
|--|---|
| | Distance from Evaluated Stream |
| CWH Name: | |
| _) EWH Name: | Distance from Evaluated Stream |
| | E ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| JSGS Quadrangie Name: <u>New Haven, W-O</u> | NRCS Soil Map Page: NRCS Soil Map Stream Order |
| County: <u>Meigs</u> To | ownship/city: Letart Falls, Ohio area |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of last precipitation: | 11/29/05 Quantity: unknown |
| Photograph Information: | |
| Elevated Turbidity? (Y/N): Canopy (% open): | 40% |
| Nere samples collected for water chemistry? (Y/N): (Note | e 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: |
| | |
| | |
| BIDTIC EVALUATION Performed? (Y/N): N (If Yes, Record at observations, Vo | ucher collections optional. NOTE: all voucher samples must be labeled with the site |
| Performed? (Y/N): (If Yes, Record all observations. Vo 10 number, Include appropriate liek | ucher collections optional. NOTE: all voucher samples must be labeled with the site I data sheets from the Primary Headwater Habitat Assessment Manual) |
| Performed? (Y/N): (If Yes, Record all observations, Vo 10 number, Include appropriate liek Fish Observed? (Y/N) Voucher? (Y/N) Salamande | I data sheets from the Primary Headwater Habilat Assessment Manual) ers Observed? (Y/N) |
| Penformed? (Y/N): (If Yes, Record all observations. Vo 10 number. Include appropriate field Fish Observed? (Y/N) Voucher? (Y/N) Salamanda Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) A | I data sheets from the Primary Headwater Habilat Assessment Manual) |
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| Performed? (Y/N): (If Yes, Record all observations. Vo 10 number. Include appropriate field Fish Observed? (Y/N) Voucher? (Y/N) Satamande Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) A Comments Regarding Biology: DRAWING AND NARRATIVE DESCRIPT | I data sheets from the Primary Headwaler Habitat Assessment Manual) ers Observed? (Y/N) vqualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) ION OF STREAM REACH (This must be completed): |
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| Performed? (Y/N): (If Yes, Record all observations. Vo 10 number. Include appropriate field Fish Observed? (Y/N) Voucher? (Y/N) Salamanda Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) A Comments Regarding Biology: DRAWING AND NARRATIVE DESCRIPT Include important landmarks and other features of intere | I data sheets from the Primary Headwaler Habitat Assessment Manual) ers Observed? (Y/N) voucher? (Y/N) voucher? (Y/N) voucher? (Y/N) Voucher? (Y/N) ION OF STREAM REACH (This must be completed): est for site evaluation and a narrative description of the stream's location |
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| Performed? (Y/N): | I data sheets from the Primary Headwaler Habilat Assessment Manual) ers Observed? (Y/N) Voucher? (Y/N) voualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) ION OF STREAM REACH (This <u>must</u> be completed): ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description and a narrative description and a narrative |
| Performed? (Y/N): | I data sheets from the Primary Headwaler Habilat Assessment Manual) ers Observed? (Y/N) Voucher? (Y/N) voualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) ION OF STREAM REACH (This <u>must</u> be completed): ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description and a narrative description and a narrative |
| Performed? (Y/N): | I data sheets from the Primary Headwaler Habilat Assessment Manual) ers Observed? (Y/N) Voucher? (Y/N) voualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) ION OF STREAM REACH (This <u>must</u> be completed): ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description of the stream's location ist for site evaluation and a narrative description and a narrative description and a narrative |

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

CLOSSIT

| SITE NAME/LOCATIONAMP -OH SITE NUMBER DS - [- [] RIVER BASIN DRAINAGE AREA (mi²) | |
|---|-----------------------------|
| LENGTH OF STREAM REACH (#) LAT LONG RIVER CODE RIVER MILE | |
| DATE 12/1/05 SCORER JAV COMMENTS stream has recovered since and | |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instruction | |
| | ov |
| STREAM CHANNEL DINONE / NATURAL CHANNEL DIRECOVERED DIRECOVERING DIRECENT OR NO RECOVER | RY |
| MOST IONICIUS. | |
| 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes | |
| | HHEI Netric |
| Image: Single state | oints |
| BOULDER (>256 mm) [16 pts] Image: Constraint of the second s | ubstrate |
| Image: Description of the product of the pr | ax = 40 |
| G GRAVEL (2-64 mm) [9 pts] | 7 |
| SAND (<2 mm) [6 pts] | |
| Total of Percentages of (A) Bidr Slabs, Boulder, Cobble, Bedrock (B) (B) | A + B |
| SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: | |
| 2. Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool | ol Depth |
| evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): | lax = 30 |
| > 30 centimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] □ / < 5 cm [6 pts] | |
| 0 > 10 - 22.5 cm [25 pts] Ø NO WATER OR MOIST CHANNEL [0 pts] | \mathcal{O} |
| COMMENTSMAXINUM POOL DEPTH (centimeters): | |
| □ > 4.0 meters (> 13') [30 pts] □ 1.0 m - 1.5 m (> 3' 3" - 4' 6") [15 pts] | lankfull Width Nax=30 |
| | 5 |
| COMMENTS AVERAGE BANKFULL WIDTH (meters) | |
| This information must also be completed | |
| RIPARIAN ZONE AND FLOODPLAIN QUALITY | |
| L R (Per Bank) L R (Most Predominant per Bank) L R | |
| Image Image Image Image | |
| Field Woderate 5-10m W W Field | |
| Image: Second state of the se | |
| Image: None Image: Descent Pasture Image: Descent Pasture COMMENTS Image: Descent Pasture Image: Descent Pasture | |
| FLOW REGIME (At Time of Evaluation) (Check ONLY one box) Stream Flowing Image: Subsurface flow with isolated pools (Interstitial) Subsurface flow with isolated pools (Interstitial) Image: Subsurface flow with isolated pools (Interstitial) 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 | |

| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA CLEARLY MARK THE SITE LOCATION SGS Quadrangia Name: Aur Havren July UP OH NRCS Soit Map Page: NRCS Soit Map Stream Order munity: Marga County Township / City. Faturt Falls, Ohio and annot the stream of the stream order township / City. Faturt Falls, Ohio and a stream order munity: Marga County Township / City. Faturt Falls, Ohio and a stream order township / City. Faturt Falls, Ohio and a stream order or other township / City. Faturt Falls, Ohio and a stream order or other township / City. Internet of the stream order or other township / City. Internet of the stream order or other township / City. Internet of the stream or other township / City. Internet of the stream or other township / City. Internet of the stream order of the stream order of the stream (VIN). If not, please explain: BIOTIC EVALUATION Stream of the stream (VIN) Y If not, please explain: Stream of the stream (VIN) Y If not, please explain: Stream of the stream (VIN) Y If not, please explain: Stream of the stream (VIN) Y If not, please explain: Stream of the stream (VIN) Y If not, please explain: Stream of the stream (VIN) Y If not, please explain: Stream of the stream (VIN) Y If not, please explain: Stream order of pollution impacts: Onder order of pollution impacts: Onder order order order order order order order order order (VIN) Oper colspan ord | | ds-1-11 |
|---|---|---|
| DOWNESTREAM DESIGNATED USE(S) With Name: | DDITIONAL STREAM INFORMATION (This informatio | on Must Also be Completed): |
| WWW Name: Distance from Evaluated Stream ICWH Name: Distance from Evaluated Stream Distance from Evaluated Stream Distance from Evaluated Stream BAPPING: ATTACH COPES OF MAPS, INCLIDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION SGS Guadrangie Name: NECS Soil Map Page: MEDIA Concol IV Township / City: MEDIA MESSELLANEOUS Township / City: See Flow Conditions? (YRN): Date of last precipitation: JI/21/AS Quantity: MESSELLANEOUS See Flow Conditions? (YRN): See Flow Conditions? (YRN): Date of last precipitation: JI/21/AS Quantity: Wated Turbidity? (YNN): Canopy (% open): Canopy (% open): 20.72 ere samples collected for water chamistry? (YNI): Metot precipitation: Jid Measures: Temp? (C) Desclored Oxygen (mp?) Jid Measures: Temp? (YNI): Metot precipitation: Jid Measures: Temp? (YNI): Metot precipitation: Jid Measures: Temp? (YNI): Metot precipitation: Jid Measures: Temp? (YNI): Metot precipitatit accentration and attreact precipitatit we | | Score (If Yes, Attach Completed QHE) Form) |
| CVM-Name: Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream BAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION BGS Cluadengie Name: Muxr: Mapping: Microstand Stream Microstander Muxr: Microstander Microstander Microstander Microstander Missoellaneous Missoellaneous Missoellaneous | DOWNSTREAM DESIGNATED USE(S) | |
| EWH Name: | | |
| IMAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTIRE</u> WATERSHED AREA. CLEARLY MARK THE SITE LOCATION SGS Quadrangle Name <u>Auro Haveton</u> , <u>UV-OH</u> NECS Sod Map Page NRCS Sod Map Steam Order UNICS <u>Provention</u> <u>NRCS Sod Map Steam Order</u> Township / Cay. <u>Astant Falls</u> , <u>Ohio area</u> <u>INISCELLANEOUS</u> see Flow Conditions? (VM): <u>Date of last precipitation</u> | | |
| SGS Quadrangie Name ?Luc Havren, UV- OH NRCS Sod Map Page:NRCS Sod Map Stream Order unity:MargaContract yTownship / City:RatartFalls, Ohio area MISCELLAMEOUS see Flow Condition? (V/N): Date of last precipitation:/??/_AS Quantity: _unit intermet unity:MCA | EWH Name: | Distance from Evaluated Stream |
| unity: | | |
| NISCELLANEOUS see Flow Conditions? (YM): | SGS Quadrangie Name: 1000 14aveng W | <u>IV-OH</u> NRCS Soil Map Page: NRCS Soil Map Stream Order |
| see Flow Conditions? (Y/N): Date of last precipitation: 11/21/25 Cuantity: Latranian uptograph information: | • V | Township / City: Latant Falls, Ohio area |
| polograph Information: | | |
| evaled Turbidity? (YN): N Canopy (% open): ~30.72 are samples collected for water chemistry? (YN): N (Note lab sample no. or id. and attach results) Lab Number. and Measures: Temp (*C) Discolved Oxygen (mg/l) pH (S.U.) Conductivity (umbos/cm) the sampling reach representative of the stream (Y/N) Y If not, please explain: stillional comments/description of pollution impacts. BIOTIC EVALUATION aformed? (YN): A (If Yes, Record all observations. Youcher collections optional NOTE: all voucher samples must be labeled with the IO number. Include appropriate field data steets from the Primary Headwater Habital Assessment Manual) sh Observed? (YN): A voucher? (YN) A coller? (YN) A coller observed? (YN) voucher? (YN) ogs of Tacholos Observed? (YN) Voucher? (YN) A coller? (YN) | | ipitation: 11/29/25 Quantity: Unternaver |
| are samples collected for water chemistry? (YA): N (Note lab sample no. or id. and attach results) Lab Number: ald Measures: Temp (*C) Discolved Oxygen (mgr) pH (S.U) Conductivity (unhos/cm) the sampling reach representative of the stream (Y/N) If not, please explain: ditional comments/description of pollution impacts: BIOTIC EVALUATION arformed? (YA): H (If Yes. Record all observations. Youcher collections optional. NOTE: all voucher samples must be labeled with the Discolved? (YAN): W (If Yes. Record all observations. Youcher collections optional. NOTE: all voucher samples must be labeled with the Discolved? (YAN): W (If Yes. Record all observations. Youcher collections optional. NOTE: all voucher samples must be labeled with the Discolved? (YAN): Woucher? (YAN] Salamanders Observed? (YAN] Voucher? (YAN] ogs or Tacpoles Observed? (YAN] Voucher? (YAN] Aquatic Macroinvertebrates Observed? (YAN] voucher? (YAN] opments 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 (Norther of the stream's location | | |
| aid Measures: Temp (*C) | Elevated Turbidity? (Y/N): Y Canopy (% ope | en): <u>~ 30<i>%</i></u> |
| the sampling reach representative of the stream (Y/N) If not, please explain: | Nere samples collected for water chemistry? (Y/N): <u>N</u> | (Note lab sample no. or id. and attach results) Lab Number: |
| the sampling reach representative of the stream (Y/N) If not, please explain: | ield Measures: Temp (°C) Dissolved Oxyge | n (mo/l) aH (SU) Conductivity (umbos/cm) |
| Additional comments/description of pollution impacts: BIOTIC EVALUATION seformed? (Y/N): | | |
| BIOTIC EVALUATION seformed? (Y/N): | ; the sampling reach representative of the stream (Y/N)_ | |
| aformed? (Y/N): | Additional comments/description of pollution impacts: | |
| ID number. Include appropriate field data sheets from the Primary Headwater Habital Assessment Manual) sh Observed? (Y/N) | BIOTIC EVALUATION | |
| ID number. Include appropriate field data sheets from the Primary Headwater Habital Assessment Manual) sh Observed? (Y/N) | Performent? (V/N) k (If Yes, Record all observat | tions. Voucher collections optional NOTE: all yourber samples must be jabeled with the u |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location which where all of the stream's location of the stream's location (Ammel general restation as (Ammel | ID number. Include approp | priate field data sheets from the Primary Headwater Habitat Assessment Manual) |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location which where all of the stream's location of the stream's location (Ammel general restation as (Ammel | State Observand (MAL) N Vounter 2 (MAL) St | alemandare Observed (1/1/h) //supher? (//b) |
| DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This <u>must</u> be completed): Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location which where all of the stream's location of the stream's location (Ammel general restation as (Ammel | rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Sa | N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location which we alled 's scrub shrub/ oddfield sycamores which are (scrub shrub / odd field sycamores which are then and a marrative description of the stream's location (scrub shrub / odd field are conditioned, mbus, sp.) | Comments Regarding Biology: | - |
| Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location which we alled 's scrub shrub/ oddfield sycamores which are (scrub shrub / odd field sycamores which are then and a marrative description of the stream's location (scrub shrub / odd field are conditioned, mbus, sp.) | <u>.</u> | · · · · · · · · · · · · · · · · · · · |
| Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location which we alled 's scrub shrub/ oddfield sycamores which are (scrub shrub / odd field sycamores which are then and a marrative description of the stream's location (scrub shrub / odd field are conditioned, mbus, sp.) | | |
| Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location which we alled 's scrub shrub/ oddfield sycamores which are (scrub shrub / odd field sycamores which are then and a marrative description of the stream's location (scrub shrub / odd field are conditioned, mbus, sp.) | | |
| Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location which we alled 's scrub shrub/ oddfield sycamores which are (scrub shrub / odd field sycamores which are then and a marrative description of the stream's location (scrub shrub / odd field are conditioned, mbus, sp.) | DRAWING AND NARRATIVE DES | CRIPTION OF STREAM REACH (This must be completed): |
| widther a nove of the second second a | | |
| LOW - Camel of by anou by and active of the second of the | the second | |
| LOW - Camel of by anou by and active of the second of the | Hole alle se | nul shrul / deffield sycamore utopie |
| LOW - Camel of byenou by accurated goldenrod, and accurate of byenou by accurate goldenrod, and accurate of the second of the se | mind we low | me general vegetation as |
| LOW - Company acrub shut /old field road in the former internet goldenrod, and internet with a second of the secon | | |
| crande of by anou sourced, mbus, sp.) spearnee | | Darlere) Darlere |
| crande of by anou sourced, mbus, sp.) spearnee | FLOW 7 | The stand is a sould be sould |
| channel of bycanol sycon | - Parte | |
| channel of bycanol sycon | NZ a | scrub shrub /old lild |
| channel of bycanol sycon | | here were in more more that |
| channel of bycanol sycon | | Jorg mile, goldenrod, (when / |
| channel of bycanol sycon | | monweed, more, sp. |
| if patter pears new health | crannel of bycamol | Ageor. |
| | if patter Bearca | news field |

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October 24, 2002 Revision

HHEI Score (sum of metrics 1, 2, 3): 40

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class II

| SITE NAME/LOCATION <u>AMP-OH</u> | -2-2 RIVER BASIN | |
|--|---|---|
| LENGTH OF STREAM REACH (ft) L | | |
| DATE 12/1/25 SCOPED TAV | COMMENTS TE AND Champing | ROUGE Touch and a de acoler |
| DATE 12/1/05 SCORER TAV | Potor to HE laid England Country of | Lind of stream reach |
| NOTE: Complete All items On This Form | - Refer to "Field Evaluation Manual for C | JNIO'5 PHWH SUBAINS" IOF INSTRUCTIONS |
| STREAM CHANNEL INONE / NATU MODIFICATIONS: | IRAL CHANNEL ØRECOVERED ØRECO | |
| | v type of substrate present. Check ONLY two p | |
| | is substrate types found (Max of B). Final metric s | score is sum of boxes A & B. HHE |
| | <u>RCENT</u> TYPE → SILT (3 of) | PERCENT Metric 2023 Points |
| BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] | □□ SILT [3 pt] □□ LEAF PACKWOODY (| <u> </u> |
| BEDROCK [18 pt] | | |
| | | 0 pt] |
| GRAVEL (2-64 mm) [9 pts] | <u>57</u> □ □ MUCK [0 pts] <u>-07</u> □ □ ARTIFICIAL [3 pts] | |
| | | |
| Total of Percantages of Bidr Slabs, Boulder, Cobbie, Bedrock | 2% "15 | ^(B) 5 A+B |
| SCORE OF TWO MOST PREDOMINATE SUBST | TOTAL NUMBER | OF SUBSTRATE TYPES: |
| | ximum pool depth within the 61 meter (200 ft) | |
| evaluation. Avoid plunge pools from road (> 30 centimeters [20 pts] | culverts or storm water pipes) (Check ONLY o | |
| 22.5 - 30 cm [30 pts] | 5 cm (5 pts) | |
| ☐ > 10 - 22.5 cm [25 pts] | | ST CHANNEL [0 pts] |
| COMMENTS motel chan | nel, no plave or pool MAXIMUM PO | OL DEPTH (centimeters): |
| 3. BANK FULL WIDTH (Measured as the a | verage of 3-4 measurements) (Check | ONLY one box): Bankfull |
| > 4.0 meters (> 13') [30 pts] | | 3" - 4' 8") [16 pts] Width |
| > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | C 21.0 m (2 3 3) 19 p r | (s) |
| COMMENTS bank) . I was | th overages average BA | NKELILI MADTH (materix) |
| appinimatel | | |
| <i>0</i> | This information must also be completed | i |
| RIPARIAN ZONE AND FLOODPL | | Right (R) as looking downstreamଘ |
| RIPARIAN WIDTH L /R / (Per Bank) | FLOODPLAIN QUALITY L R (Most Predominant per Bank) | LR |
| Ø Ø vide > 10m | DD / Mature Forest, Wetland | Conservation Tillage |
| Moderate 5-10m | Field | Urban or Industrial |
| DD Narrow <5m | Residential, Park, New Field | Open Pasture, Row |
| None None | 🗇 💭 Fenced Pasture | Crop Grop Mining or Construction |
| COMMENTS | | |
| FLOW REGIME (At Time of Evalu | | ` |
| Stream Flowing Subsurface flow with isolated pools | A L - | e) isolated pools, no flow (Intermittent) no water (Ephemeral) |
| COMMENTS | | |
| SINUOSITY (Number of bends pe | r 61 m (200 ft) of channel) (Check ONLY one b | txoc |
| | 1.0 2.0 | 3.0 |
| L) 0.5 | 1.5 🗍 2.5 | U >3 |
| | | |
| ☐ Flat (0.5 m 100 m) | D Moderate (2 1/100 /l) D Moderate to | |

| ADDITIONAL STREAM INFORMATION IT is information Must Also be Completed:: CHES PERFORMED? Yes We ONE Score (If Yes, Alson't Completed QHEI Form) DOWNSTREAM DESIGNATED USE(S) Distance from Evaluated Stream |
|--|
| DOWNSTREAM DESIGNATED USE(S) Distance from Evaluated Stream DWWH Name: Distance from Evaluated Stream DWWH Name: Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream BYMH Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE STE LOCATION USOS Quadrangle Name: MARK THE STE LOCATION Base Flow Conditions? (YAN): Date of last precipitation: II/Q4/D5 Quantity: MARK Photograph Information: |
| □ WWH Name: □ Distance from Evaluated Stream □ CWH Name: □ Distance from Evaluated Stream □ EWH Name: □ Distance from Evaluated Stream □ Base Flow Conditions? (YAN): W/OH □ Caunty: |
| OWH Name: Distance from Evaluated Stream DEVM Name: Distance from Evaluated Stream DEVM Name: Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION UGGS Quadrangle Name: Marx Marxin, WV-OH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| Distance from Evaluated Stream MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE STE LOCATION USGS Quadrangle Name: <u>Mut Harven</u> , <u>WV-OH</u> NRCS Soil Map Page:NRCS Soil Map Stream Order County: <u>MUGA County</u> Township / City. <u>Attant Falls</u> , <u>Oflice and A</u> NISCELLANEOUS Base Flow Conditions? (YM): <u>V</u> Date of last precipitation: <u>II/Q4/D5</u> Quantity: <u>MMX.count</u> Photograph Infomation: |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION USGS Quadrangle Name: Must Planen, www-old NRCS Soil Map Page: |
| USGS Quadrangle Name: <u>Mut Harven</u> , <u>WV-OH</u> NRCS Soil Map Page:NRCS Soil Map Stream Order County: <u>Merga</u> |
| County: |
| MISCELLANEOUS Base Flow Conditions? (Y/N): Y Date of last precipitation: |
| MISCELLANEOUS Base Flow Conditions? (Y/N): Y Date of last precipitation: |
| Photograph Information: |
| Were samples collected for water chemistry? (Y/N): |
| Were samples collected for water chemistry? (Y/N): |
| Field Measures: Temp (*C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) ts the sampling reach representative of the stream (Y/N) If not, please explain: |
| ts the sampling reach representative of the stream (Y/N) |
| ts the sampling reach representative of the stream (Y/N) |
| Additional comments/description of pollution impacts: BIOTIC EVALUATION Performed? (Y/N): |
| BIOTIC EVALUATION Performed? (Y/N): |
| Performed? (Y/N): |
| ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Fish Observed? (Y/N) Voucher? (Y/N) Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) |
| Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates 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 |
| mag -0 nose |
| scrub shrub area with few trees with generated |
| FLOW |
| send-strutterer WWW Way |
| send stopsdaren AVA HA merhanging mutitiers aver metitiens |

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October 24, 2002 Revision

Class II

59

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Primary Headwater Habitat Evaluation Form

| | HHEI Score (sum | of metrics 1, 2, 3) : 59 |
|--|--|---|
| SITE NAME/LOCATIONATN) -0 | | |
| SITE NUMBER | S-2-5 RIVER BASIN | DRAINAGE AREA (ml²) |
| | LAT. LONG. RIVER CO | DE RIVER MILE |
| DATE 121115 SCORER 18 | COMMENTS | |
| NOTE: Complete All Items On This Form | - Refer to "Field Evaluation Manual for Ohio's | PHWH Streams" for Instructions |
| STREAM CHANNEL | | |
| MODIFICATIONS: | ~ | |
| (Max of 32). Add total number of significa TYPE BLDR SLABS [16 pts] BOULDER (>256 mm) [16 pts] | y type of substrate present. Check ONLY two predom Int substrate types found (Max of 8). Final metric score is INCENT TYPE INCENT TYPE INCENT IS IS INCENTION IS INCENTION IN INCENTION IN INCENTION IS INCENTION IS IN INCENTION IS INTENTIAL INCENTION IS INTENTIAL INCENTION IS INTENTIALIZABLE IN INCENTIALIZABLE IN INCENTIALIZABLE INTENTIALIZABLE INTENTIALIZABLE INTENTIALIZABLE INTENTIALIZZABLE INTENTI | s sum of boxes A & B. <u>PERCENT</u> <u>HHE</u> Metric Points |
| DU BEDROCK [16 pt] ZO COBBLE (65-256 mm) [12 pts] 2 | C CLAY or HARDPAN 10 pt | Max = 40 |
| GRAVEL (2-64 mm) [9 pts] | 5 00 MUCK [0 pts] | IO |
| SAND (<2 mm) [6 pts] | 5 00 ARTIFICIAL (3 pts) | |
| Total of Percentages of | | (B) A+B |
| Bidr Slabs, Boulder, Cobble, Bedrock | TATE TYPES: TOTAL NUMBER OF S | UBSTRATE TYPES: |
| 2. Maximum Pool Depth (Measure the m | iximum pool depth within the 51 meter (200 ft) evalua | tion reach at the time of Pool Depth |
| evaluation. Avoid plunge pools from road | culverts or storm water pipes) (Check ONLY one boy | |
| ↓ > 30 centimeters [20 pts] ↓ > 22.5 - 30 cm [30 pts] | > 5 cm - 10 cm (15 pts) < 5 cm (5 pts) | 15 |
| > 10 - 22.5 cm [25 pts] | NO WATER OR MOIST CH | IANNEL [0 pts] |
| COMMENTS 1 Solated DEC | MAXIMUM POOL DE | EPTH (centimeters): |
| 3. BANK FULL WIDTH (Measured as the > 4.0 meters (> 13') [30 pts] > 3.0 m - 4.0 m (> 5' 7" - 13') [25 pts] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | average of 3-4 measurements) (Check OAL) > 1.0 m - 1.5 m (> 3' 3' - 4' B < 1.0 m (\$ 3' 3'') (5 pts) | |
| COMMENTS | AVERAGE BANKFU | LL WIDTH (meters) |
| | This information must also be completed | |
| RIPARIAN ZONE AND FLOOD | LAIN QUALITY TYNOTE: River Left (L) and Right (| R) as looking downstream☆ |
| <u>RIPARIAN WIDTH</u> L L R (Per Bank) | ELOODPLAIN QUALITY L R (Most Predominant per Bank) L | R |
| Wide >10m | Mature Forest, Wetland | Conservation Tillage |
| Moderate 5-10m | Field | Urban or Industrial |
| Narrow <5m | 🗋 🗍 🛛 Residential, Park, New Field 🗌 | Open Pasture, Row Crop |
| COMMENTS Regrammy | Sylamon Michary Dity | Mining or Construction |
| FLOW REGIME (At Time of Eva Stream Flowing Subsurface flow with isolated por COMMENTS | | ated pools, no flow (Intermittent) Ner (Ephemøral) |
| SINUOSITY (Number of bends r None | er 61 m (200 fl) of channel) (Check OWLY one box) 1.0 2.0 1.5 2.5 | □ 3.0 □ ->3 |
| STREAM GRADIENT ESTIMATE | Moderate (2 M100 II) O Moderate to Seve | re 🗍 Severe (10/0/100 k) |

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| ADDITIONAL STREAM INFORMATION (This Information Must Also be Complete | d): |
|---|---|
| QHEI PERFORMED? - DYes No QHEI Score (If Yes. | Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| | |
| CWH Name: | |
| EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTIRE</u> WATERS | |
| USGS Quadrangle Name: <u>New Harren, WV-OH</u> NRCS Soil N | |
| County: Township / City: | Letart Falls, Ohio area |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of last precipitation: | 5 Quantity: unknown |
| Photograph Information: | |
| Elevaled Turbidity? (Y/N); Canopy (% open): | |
| Were samples collected for water chemistry? (Y/N): (Note tab sample no. o | rid, and attach results) Lab Number: |
| Field Measures: Temp (*C) Dissolved Oxygen (mg/l) pH (S.I | |
| Is the sampling reach representative of the stream (Y/N) If not, please explain | n: |
| Farind Reld approximately 40m from | but side s |
| Additional comments/description of pollution impacts: | |
| BIOTIC EVALUATION Performed? (Y/N): | he Primary Headwater Habitat Assessment Manual) N) Voucher? (Y/N) tebrates Observed? (Y/N) Voucher? (Y/N) |
| | |
| DRAWING AND NARRATIVE DESCRIPTION OF STRE | AM REACH (This must be completed): |
| Include important landmarks and other features of interest for site evaluat | |
| a) type tages | Jours + |
| du ryperts manager and | |
| FLOW + Wujdreel + Kingus | nopence variation and |
| 150/p/ Que Co | |
| dural press | Land Silver |
| The project open s | - June june |
| John John K V M | Friskey Lugny today Way (K |
| PHWH Form Page - | 2 2 |

October 24, 2002 Revision

Class TT

HHEI Score (sum of metrics 1, 2, 3) : Do SITE NAME LOCATION AMP-01 SITE NUMBER $D \le -2 - 10$ RIVER BASIN DRAINAGE AREA (mi²) LENGTH OF STREAM REACH (fl) LONG. _____ RIVER CODE RIVER MILE DATE 12/1/05 SCORER COMMENTS NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions STREAM CHANNEL MONE / NATURAL CHANNEL COVERED RECOVERING RECENT OF NO RECOVERY **MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric TYPE PERCENT PERCENT Points 00 BLDR SLABS [16 pts] SILT [3 pt] 00 00 5% LEAF PACK/WOODY DEBRIS [3 pts] BOULDER (>256 mm) [16 pts] Substrate 00 00 FINE DETRITUS [3 pts] BEDROCK [16 pt] Max = 4000 30 COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] വഖ 00 GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] 00 00 SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] Total of Percentages of (8) (A) A+B Bldr Slabs, Boulder, Cobble, Bedrock ~40% ь TOTAL NUMBER OF SUBSTRATE TYPES: SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: Pool Depth Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of 2 evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30 Q п. > 5 cm - 10 cm [15 pts] > 30 centimeters [20 pts] М σ > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] Ň NO WATER OR MOIST CHANNEL [0 pts] Ο > 10 - 22.5 cm [25 pts] 匕 MAXIMUM POOL DEPTH (centimeters): COMMENTS BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): Bankfull > 4.0 meters (> 13') [30 pts] > 1.0 m - 1.5 m (> 3' 3" - 4" 8") [15 pts] Width П > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] Max=30 নি > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] 5.6 AVERAGE BANKFULL WIDTH (meters) COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY なNOTE: River Left (L) and Right (R) as looking downstreamな FLOODPLAIN QUALITY **RIPARIAN WIDTH** (Per Bank) LR (Most Predominant per Bank) I R 00 ៙៙ Wide >10m 00 Mature Forest, Welland **Conservation Tillage** Immature Forest, Shrub or Old ฬิ 00 00 Moderale 5-10m Urban or Industrial Field Open Pasture, Row 00 00 00 Residential, Park, New Fleid Narrow <5m Croo пп. 00 Fenced Pasture Mining or Construction None COMMENTS FLOW REGIME (At Time of Evaluation) (Check ONLY one box); ð Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing ň 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): 1.0 None 2.0 3.0 n 2.5 0.5 15 >3 STREAM GRADIENT ESTIMATE Moderate (2 (v100 ft) Fial (0.6 to 100 th) Fiat to Moderate D Moderate to Severe

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| QHEIPERFORMED? - TYES WNO QHE | Score (If Yes, Attach Completed QHEI Form) |
|--|--|
| DOWNSTREAM DESIGNATED USE(S) | |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
|] EWH Name: | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLU | IDING THE <u>ENTIRE</u> WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| USGS Quadrangle Name: Mur Haven, h | ノンーのH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| county: Merge County | Township/City: Letart Falls, Ohio area |
| MISCELLANEOUS | |
| | ipitation: 11/29/05 Quantity: untrum |
| Photograph Information: | |
| | on): ~ 50% (considers Trees and overhanging ninee) |
| Alere samples collected for water chemistry? (Y/N): <u>1</u> | (Note lab sample no. or id. and attach results) Lab Number: |
| Field Measures: Temp (*C) Dissolved Oxyge | en (mg/l) pH (S.U.) Conductivity (µmhos/cm) |
| s the sampling reach representative of the stream (Y/N) | Y If not, please explain: |
| | |
| Additional comments/description of pollution impacks: | |
| BIOTIC EVALUATION Performed? (Y/N): | ations. Voucher collections optional. NOTE: all voucher samples must be labeled with the s ipriate field data sheats from the Primary Headwater Habitat Assessment Manual) ialamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION Performed? (Y/N): | alions. Voucher collections optional. NOTE: all voucher samples must be isbeled with the supriate field data sheats from the Primary Headwater Habitat Assessment Manual) |
| BIOTIC EVALUATION Performed? (Y/N): | ations. Voucher collections optional. NOTE: all voucher samples must be labeled with the s ipriate field data sheats from the Primary Headwater Habitat Assessment Manual) ialamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION Performed? (Y/N): | ations. Voucher collections optional. NOTE: all voucher samples must be labeled with the s ipriate field data sheats from the Primary Headwater Habitat Assessment Manual) ialamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION Performed? (Y/N): | alions. Voucher collections optional. NOTE: all voucher samples must be isbeled with the s priate field data sheets from the Primary Headwater Habitat Assessment Manual) islamanders Observed? (Y/N) Voucher? (Y/N) N} Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUATION Performed? (Y/N): | alions. Voucher collections optional. NOTE: all voucher samples must be isbeled with the s priate field data sheets from the Primary Headwater Habitat Assessment Manual) ialamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) SCRIPTION OF STREAM REACH (This must be completed): |
| BIOTIC EVALUATION Performed? (Y/N): | alions. Voucher collections optional. NOTE: all voucher samples must be isbeled with the s priate field data sheets from the Primary Headwater Habitat Assessment Manual) islamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) SCRIPTION OF STREAM REACH (This must be completed): is of interest for site evaluation and a narrative description of the stream's location |
| BIOTIC EVALUATION Performed? (Y/N): | alions. Voucher collections optional. NOTE: all voucher samples must be isbeled with the supriate field data sheets from the Primary Headwater Habitat Assessment Manual) islamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) SCRIPTION OF STREAM REACH (This must be completed): a of interest for site evaluation and a narrative description of the stream's location with function Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Macroinvertebrates of a |
| BIOTIC EVALUATION Performed? (Y/N): | alions. Voucher collections optional. NOTE: all voucher samples must be isbeled with the supriate field data sheets from the Primary Headwater Habitat Assessment Manual) islamanders Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) SCRIPTION OF STREAM REACH (This must be completed): a of interest for site evaluation and a narrative description of the stream's location with function Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Magnetic Macroinvertebrates of a narrative description of the stream's location Macroinvertebrates of a |

Octoper 24, 2002 Revision

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modified close I

HHEI Score (sum of metrics 1, 2, 3) : AMP-OH SITE NAME/LOCATION SITE NUMBER DS-30, b, c RIVER BASIN DRAINAGE AREA (mi²) LENGTH OF STREAM REACH (R) _____ LAT. _____ LONG. RIVER CODE RIVER MILE SCORER MID DATE 121105 COMMENTS Q JUNN Эb" neens only NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for instructions ONONE / NATURAL CHANNEL OR RECOVERED OR RECOVERING DECENT OR NO RECOVERY STREAM CHANNEL MODIFICATIONS: SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes 1. HHEI (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric PERCENT NPE AD PERCENT Points 88 BLDR SLABS [16 pts] SILT [3 pt] 0X BOULDER (>256 mm) [16 pts] LEAF PACKWOODY DEBRIS [3 pts] Substrate пп ΠП BEDROCK [16 pt] FINE DETRITUS [3 pts] filax = 40 00 00 COBBLE (65-256 mm) [12 pts] CLAY or HARDPAN [0 pt] 00 00 GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] d ന 00 ARTIFICIAL [3 pts] SAND (<2 mm) [6 pts] Total of Percentages of (8) A+B Bldr Slabs, Boulder, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth 2. evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30 > 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] JP COMMENTS MAXIMUM POOL DEPTH (centimeters): BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): Bankfull 3 > 4.0 meters (> 13") [30 pts]) > 1.0 m - 1.5 m (> 3' 3" + 4' 8") [15 pts] Width ð > 3.0 m - 4.0 m (> 9' 7" - 13') [26 pts] X ≤ 1.0 m (≤ 3*3*) [5 pts] Max=30 > 1.5 m ~ 3.0 m (> 9' 7" - 4' 8") [20 pts] AVERAGE BANKFULL WIDTH (meters) COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY TONOTE: River Left (L) and Right (R) as looking downstreams **RIPARIAN WIDTH** FLOODPLAIN QUALITY (Per Bank) (Most Predominant per Bank) R пп TAL. Wide >10m Mature Forest, Wetland **Conservation Tillage** Immature Forest, Shrub or Old 00 пп Moderate 5-10m Urban or Industrial Field Open Pasture, Row 00 00 00 Narrow <5m Residential, Park, New Field Crop 00 00 00 Mining or Construction None Fenced Pasture 1 man <u>nead</u> COMMENTS Na. FLOW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing Moist Channel, isolated pools, no flow (Intermittent) ñ X 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): 8 B P None 1.0 2.0 3.0 0.5 25 1.5 >3 STREAM GRADIENT ESTIMATE Moderate (2 #100 II) Flat (0.5 m 100 m) Flat to Moderate D Moderate to Severe Severe (10 10100 ft)

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| | (If Yes, Attach Completed QHEt Form) |
|---|--|
| DOWNSTREAM DESIGNATED USE(S) | |
|) WWH Name: | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| | ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| SGS Quadrangle Name: <u>/ LEWF Navren, WV-C</u> | 2 Hircs Soil Map Page: NRCS Soil Map Stream Order |
| ounty: <u>Meins</u> Ton | mship/city: hetart Falls, Ohio area |
| MISCELLANEOUS | 11/29/05 quantity: unknown |
| notograph Information: | |
| evated Turbidity? (Y/N): N Canopy (% open): | |
| lere samples collected for water chemistry? (Y/N): (Note | lab sample no. or id. and attach results) Lab Number: |
| | pH (S.U.) Conductivity (µmhos/cm) |
| λ. | |
| the sampling reach representative of the stream (Y/N) | ot, please explain: |
| | |
| dditional comments/description of pollution impacts: Very 3 | top silllary channel draining from |
| | cher collections optional. NOTE: all voucher samples must be labeled with the sit |
| sh Observed? (Y/N) Voucher? (Y/N) Salamander | data sheets from the Primary Headwater Habitat Assessment Manual) s Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) tualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| ish Observed? (Y/N) Voucher? (Y/N) Salamander rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aq | s Observed? (Y/N) Voucher? (Y/N) |
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| ish Observed? (Y/N) Voucher? (Y/N) Salamander rogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aq omments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION | s Observed? (Y/N) Voucher? (Y/N) gualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) ON OF STREAM REACH (This must be completed): |
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| sh Observed? (Y/N) Voucher? (Y/N) Salamander rogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aq omments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION Include Important landmarks and other features of interest B | s Observed? (Y/N) Voucher? (Y/N) pualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) ON OF STREAM REACH (This must be completed): t for site evaluation and a narrative description of the stream's location |
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| sh Observed? (Y/N) Voucher? (Y/N) Salamander rogs of Tadpoles Observed? (Y/N) Voucher? (Y/N) Aq omments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION Include Important landmarks and other features of interest B | s Observed? (Y/N) Voucher? (Y/N) pualic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) ON OF STREAM REACH (This must be completed): t for site evaluation and a narrative description of the stream's location |
| sh Observed? (Y/N) Voucher? (Y/N) Salamander ogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aq omments Regarding Biology: DRAWING AND NARRATIVE DESCRIPTION Include Important (andmarks and other features of interest B | s Observed? (Y/N) Voucher? (Y/N) Vou |

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modified class II

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| SITE NAME/LOCATION AMP - O H | | e (sum of metrics | |
|---|--|--|-------------------------------------|
| site NUMBER_DS-4 | RIVER BASIN | DRAINAG | E AREA (mi²) |
| LENGTH OF STREAM REACH (ft) LAT DATE 191105 SCORER _MOLCO | LONG (| RIVER CODE | |
| NOTE: Complete All Items On This Form - Refer 1 | to "Field Evaluation Manual 1 | or Ohio's PHWH Stre | ams" for instructions |
| STREAM CHANNEL | | Écovering Drece | INT OR NO RECOVERY |
| 1. SUBSTRATE (Estimate percent of every type of t | • | | 1 |
| (Max of 32). Add total number of significant substrat <u>TYPE</u> <u>PERCENT</u> | le types found (Max of 8). Final me <u>TYPE</u> | | PERCENT Metr |
| BLDR SLABS [16 pts] | | DDY DEBRIS [3 pts] | Poin |
| | G G FINE DETRITUS | | Substr |
| COBBLE (65-256 mm) [12 pts] <u>15</u> (C) GRAVEL (2-64 mm) [9 pts] <u>30</u> | CLAY or HARDP/ | N [9 p1] | |
| Image: Service (2-of min) (s pts) Image: Service (2-of min) (s pts) Image: Service (2-of min) (s pts) | ARTIFICIAL (3 pt | ہ [e | = 11/6 |
| Total of Percentages of Bidr Slabs, Boulder, Cobble, Bedrock | A 12 | | (B) A+B |
| SCORE OF TWO MOST PREDOMINATE SUBSTRATE TY | PES: TOTAL NUM | BER OF SUBSTRATE T | YPES: |
| 2. Maximum Pool Depth (Measure the maximum po | | | the time of Pool De |
| evaluation. Avoid plunge pools from road culverts of > 30 centimeters [20 pts] | r storm water pipes) (Check ON | • | Max = |
| > 22.5 - 30 cm [30 pts] > 10 - 22.5 cm [25 pts] | | MOIST CHANNEL 10 pt | |
| COMMENTS | | | |
| 3. BANK FULL WIDTH (Measured as the average of > 4.0 meters (> 13') [30 pts] | f 3-4 measurements) (Ci | neck ONLY one box): | Bankf Widti |
| > 3.0 m - 4.0 m (> 9' 7" - 13") [25 pts] | G ≤ 1,0 m (≤ 3'3") | [5 pts] | Max |
| [] > 1.5 m - 3.0 m (> 9' 7" - 4' 6") [20 pts] | | | 115 |
| COMMENTS | AVERAGI | E BANKFULL WIDTH (m | eters) Insural Insural |
| RIPARIAN ZONE AND FLOODPLAIN QUA | Information <u>must</u> also be comp LUTY \$NOTE: River Left (L) (PLAIN QUALITY | leted and Right (R) as looking o | lownstream ය |
| L R (Per Bank) L R | (Most Predominant per Bank) Mature Forest, Wetland | ~ ~ ~ | an otion Tillago |
| Moderate 5-10m | Immature Forest, Shrub or Old | | ervation Tillage n or Industrial |
| O Narrow <5m O O | Field Residential, Park, New Field | | Pasture, Row |
| O None COMMENTSShrub And Kat | Fenced Pasture | Crop | g or Construction |
| FLOW REGIME (At Time of Evaluation) (C Stream Flowing Subsurface flow with isolated pools (Interstiti COMMENTS | Moist Ch | annel, isolated pools, no nel, no water (Ephemera | |
| SiNUOSITY (Number of bends per 61 m (20 None 0 1.0 0.5 0 1.5 | 00 ft) of channel) (Check OALY o 2.0 2.5 | one box): 3.0 2 >3 | |
| | - | | . |
| 🗍 Fial (0.5 #100 H) 🛛 Fial to Moderate 🗍 Mod | derate (2 m/100 m) OModera | ate to Severe | O Severe (10 // 100 //) |

| DCITIONAL STREAM INFORMATION (This information Must Also be Comple | ated): |
|---|---|
| | |
| DOWNSTREAM DESIGNATED USE(S) | |
| WWH Name: | |
| CWH Name: | |
| | Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATE | |
| OS Quadrangle Name: New Harren, WV-OH NRCS So | Map Page: NRCS Soil Map Stream Order |
| unity: Meiz Township / City: | relate Julie, Onio anta |
| MISCELLANEOUS | |
| ase Flow Conditions? (Y/N): Date of last precipitation: | Quantity: Untrown |
| holograph Information:CL | |
| evated Turbidity? (Y/N): Canopy (% open): | |
| ere samples collected for water chemistry? (Y/N): <u>N</u> (Note lab sample no | o or id. and attach results) Lab Number: |
| eld Measures: Temp (*C) Dissolved Oxygen (mg/l) pH (| (S.U.) Conductivity (umhos/cm) |
| the sampling reach representative of the stream (Y/N) Y If not, please expl | |
| | lan: |
| | |
| ditional comments/description of pollution impacts: 449.1 at new | -crip Molt |
| | |
| BIOTIC EVALUATION | |
| | |
| | s optional NOTE: all voucher samples must be labeled with the site |
| erformed? (Y/N): (If Yes, Record all observations. Voucher collections | s optional. NOTE: all voucher samples must be labeled with the site m the Primary Headwaler Habitat Assessment Manual) |
| enformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) |
| arformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) |
| enformed? (Y/N): (If Yes, Record all observations. Voucher collections ID number, Include appropriate field data sheets from sh Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (ogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroiny | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) |
| erformed? (Y/N): (If Yes, Record all observations. Voucher collections ID number, Include appropriate field data sheets from sh Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (ogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroiny | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) |
| enformed? (Y/N): (If Yes, Record all observations. Voucher collections ID number, Include appropriate field data sheets from the Observed? (Y/N) Voucher? (Y/N) Satamanders Observed? (rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroiny | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) |
| erformed? (Y/N): (If Yes, Record all observations. Voucher collections ID number, Include appropriate field data sheets from ish Observed? (Y/N) Voucher? (Y/N) Satamanders Observed? (rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroins ontiments Regarding Biology: | m the Primary Headwaler Habitat Assessment Manual) Y/N) Voucher? (Y/N) vertebrales Observed? (Y/N) |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y/N} Voucher? (Y/N) vertebrales Observed? (Y/N) Voucher? (Y/N) REAM REACH {This must be completed}: |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y/N} Voucher? (Y/N) vertebrales Observed? (Y/N) Voucher? (Y/N) REAM REACH {This must be completed}: |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y/N} Voucher? (Y/N) vertebrales Observed? (Y/N) Voucher? (Y/N) REAM REACH {This must be completed}: |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y/N} Voucher? (Y/N) vertebrales Observed? (Y/N) Voucher? (Y/N) REAM REACH {This must be completed}: |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) Voucher? (Y/N) REAM REACH (This must be completed): uation and a narrative description of the stream's location |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) Voucher? (Y/N) vertebrates Observed? (Y/N) Voucher? (Y/N) REAM REACH {This must be completed}: uation and a narrative description of the stream's location |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) Voucher? (Y/N) vertebrates Observed? (Y/N) Voucher? (Y/N) REAM REACH {This must be completed}: uation and a narrative description of the stream's location |
| erformed? (Y/N): | m the Primary Headwaler Habitat Assessment Manual) Y(N) Voucher? (Y/N) Voucher? (Y/N) Vertebrales Observed? (Y/N) Voucher? (Y/N) REAM REACH (This must be completed): uation and a narrative description of the stream's location XK / XK / XK / XK / |

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Octoper 24, 2002 Revision

PHWH Form Page - 2

Class I

27

Primary Headwater Habitat Evaluation Form

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

| SITE NAME/LOCATION AMP-OH | 7.1 | | |
|---|---|---|-------------------------------------|
| SITE NUMBER | | | |
| LENGTH OF STREAM REACH (ft) $\sim 200^{1}$ L | | | |
| DATE 11/29/05 SCORER JAV | | | |
| NOTE: Complete All Items On This Form | / | | |
| STREAM CHANNEL | IRAL CHANNEL RECOVER | | RECENT OR NO RECOVERY |
| 1. SUBSTRATE (Estimate percent of every | r type of substrate present. Ch | eck ONLY two predominant su | ostrate TYPE boxes i |
| (Max of 32). Add total number of significant | it substrate types found (Max of | | boxes A & B. HHEI |
| BLDR SLABS [16 pts] | <u>RCENT</u> <u>TYPE</u> | 3 pt] | PERCENT Metric 10% Points |
| BOULDER (>256 mm) [16 pts] | | PACK/WOODY DEBRIS [3 pts | 1 <u>30%</u> 10% Substrate |
| BEDROCK [16 pt] BEDROCK [16 pt] COBBLE (65-256 mm) (12 pts) | | DETRITUS [3 pts] or HARDPAN [0 pt] | 50% Max = 40 |
| GRAVEL (2-64 mm) [9 pts] | | [0 pts] | 1 |
| SAND (<2 mm) [6 pts] | 🗖 🗖 ARTIF | ICIAL [3 pts] | 7 |
| Total of Percentages of | 3% A 3 | | (B) A + B |
| Bidr Slabs, Bouider, Cobbie, Bedrock SGDRE OF TWO MOST PREDOMINATE SUBST | | OTAL NUMBER OF SUBSTRA | ATE TYPES: |
| 2. Maximum Pool Depth (Measure the ma | | | ch at the time of Pool Depth |
| evaluation. Avoid plunge pools from road > 30 centimeters [20 pts] | culverts or storm water pipes) □ < > 5 o | (Check ONLY one box): m - 10 cm [15 pts] | Max = 30 |
| > 22.5 - 30 cm [30 pts] | 🗹 < 5 c | m (5 pts) | |
| [] > 10 - 22.5 cm [25 pts] | | VATER OR MOIST CHANNEL | 0 pts /2 / |
| | | MAXIMUM POOL DEPTH (ce | entimeters): |
| 3. BANK FULL WIDTH (Measured as the a | | - | · 1 |
| > 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] | | m - 1.5 m (> 3' 3" - 4' 8") [15 pts ≀m (≤ 3' 3") [5 pts] | i) Width |
| [] > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts] | | | 35115 |
| COMMENTS | | AVERAGE BANKFULL WIDT | TH (meters) |
| | | | |
| RIPARIAN ZONE AND FLOODPL | This information <u>must</u> als | o be completed /er Left (L) and Right (R) as loo | king downstream 🕏 |
| <u>RIPARIAN WIDTH</u> | FLOODPLAIN QUALITY | er den fer eine right (inf do ieb | and connercentar |
| L/R (Per Bank) D U Wide >10m | Most Predominant | | Conservation Tillage |
| Moderate 5-10m | Immature Forest, SI | nauh er Old 🛛 🗂 🗖 | Urban or Industrial |
| | Field | | Open Pasture, Row |
| | Residential, Park, N Fenced Pasture | | Crop |
| COMMENTS forest align | undication of | being mature on | Mining or Construction |
| -trike are rively | le and metare 18 | trets are as wel | 4) |
| 🛄 Stream Flowing | M | Moist Channel, Isolated pool | • |
| U Subsurface flow with isolated pools COMMENTS | (Interslitial) | Dry channel, no water (Eph | emeral) |
| SINUOSITY (Number of bends pe | r 61 m (200 ft) of channel) <u>(C</u> h | eck ONLY one box): | |
| None None O 0.5 | 1.0 I 1.5 I | 2.0 U 2.5 U | 3.D >3 |
| STREAM GRADIENT ESTIMATE | | | - |
| Fial (0.5 N/100 n) Fiat to Moderate | Moderate (2 tr/100 tip | Moderate to Severe | Severe (10 /// 100 ft) |
| | | ······································ | |

| | 0F1 |
|---|---|
| DDITIONAL STREAM INFO | RMATION (This information Must Also be Completed): |
| QHEI PERFORME | 07 - 🗍 Yes 🖉 No GHEI Score (If Yes, Atlach Completed GHEI Form) |
| DOWNSTREAM D | ESIGNATED USE(S) |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| EWH Name: | Distance from Evaluated Stream |
| | COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| SGS Quadrangle Name: | Lew Marren, WV-OH_ NRCS Soil Map Page: NRCS Soil Map Stream Order |
| ounty: <u>Morgo</u> , | County Township/City: Letart Salls, Ohio area |
| ase Flow Conditions? (Y/N) | N Date of last precipitation: 11/29/05 Quantity: unknown |
| hotograph Information: | yes |
| | Canopy (% open): <u>~ 30%</u> |
| Vere samples collected for w | ater chemistry? (Y/N); N (Note lab sample no. or id. and attach results) Lab Number; |
| ield Measures: Temp (°C | Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) |
| | ntative of the stream (Y/N) / If not, please explain: |
| s are sampang reach represe | madive of the stream (r/N) if not, please explain |
| | ion of pollution impacts: |
| BIOTIC EVALUAT Performed? (Y/N): <u>N</u> Fish Observed? (Y/N) <u>N</u> Frogs or Tadpoles Observed | ION (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 Habilat Assessment Manual) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Y(V) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| <u>BIOTIC EVALUAT</u> Performed? (Y/N): <u>N</u> Fish Observed? (Y/N) <u>N</u> Frogs or Tadpoles Observed Comments Regarding Biolog | ION (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 Habilat Assessment Manual) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N) Y(V) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUAT Performed? (Y/N):N Fish Observed? (Y/N) Frogs or Tadpoles Observed Comments Regarding Biolog | ION (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 Habilat Assessment Manual) Voucher? (YN) |
| BIOTIC EVALUAT Performed? (Y/N): Frogs or Tadpoles Observed Comments Regarding Biolog // DRAWING A Include important lan | ION (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 Habilat Assessment Manual) Voucher? (YN) Salamanders Observed? (Y/N) Voucher? (Y/N) Voucher? (YN) Salamanders Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) r |
| BIOTIC EVALUAT Performed? (Y/N):N Fish Observed? (Y/N) Frogs or Tadpoles Observed Comments Regarding Biolog | ION (If Yes. Récord 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 Habilat Assessment Manual) Voucher? (Y/N)Salamanders Observed? (Y/N)Voucher? (Y/N)Voucher? (Y/N)Voucher? (Y/N)Voucher? (Y/N)Voucher? (Y/N) ?(Y/N)Voucher? (Y/N)Aquatic Macroinvertebrates Observed? (Y/N)Voucher? (Y/N) ?(Y/N)Voucher? (Y/N)Aquatic Macroinvertebrates Observed? (Y/N)Voucher? (Y/N) ?(Y)Voucher? (Y/N)Aquatic Macroinvertebrates Observed? (Y/N)Voucher? (Y/N) ?(Y)Voucher? (Y/N)Aquatic Macroinvertebrates Observed? (Y/N)Voucher? (Y/N) MD NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed): dmarks and other features of interest for site evaluation and a narrative description of the stream's location |
| BIOTIC EVALUAT Performed? (Y/N): Frogs or Tadpoles Observed Comments Regarding Biolog // DRAWING A Include important lan | ION (If Yes. Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the sile ID number. Include appropriate field data sheets from the Primary Headwater Habilat Assessment Manual) Voucher? (Y/N) |

| SITE NAME (| CATION AMP-0 | 19 | | | <u> </u> | |
|---|--|--|---|--|--|--------------------------------------|
| Stream | SITE NUMBE | ER <u>S-2</u> | RIVER BASIN | | DRAINAGE AREA (mi²) | Imi . |
| LENGTH OF ST | TREAM REACH (ft) 200 |)LAT | LONG | | RIVER MILE | |
| | -05 SCORER BA | | | | | |
| | Nonel | | | | | |
| STREAM CH | 。 | ANATURAL CHAN | | N, EUR⊒Ge)y=RNC | EIREENTICIANORES A REENTICIANO RES | OVERY |
| | | | | | | |
| | TRATE (Estimate percent of 32). Add total number of s | | • | | | HH |
| | DR SLABS [16 pts] | ST 5 | | | PERCENT | Me Poi |
| ВО | DULDER (>256 mm) [16 pts DROCK [16 pt] | | | KAWOODY DEBRIS 13 | | Subs |
| | BBLE (65-256 mm) [12 pts | <u>Z30</u> | | RITUS [3 pis] (ARDPAN 10 pi] | Z40 | Max |
| <u></u> | (AVEL (2-64 mm) [9 pts] ND (<2 mm) [6 pts] | § 7 70 | | pts] \L [3 pts] | | /{ |
| | N CARACINE NEW YORK CHARACTER | 3~0 | (A) | | (B) [77] | |
| Bidr Si | Total of Percentages of abs, Boulder, Cobble, Bedro /O MOST PREDOMINATE \$ | ock <u>05 7</u> 0 | R | L NUMBER OF SUBS | φ | . ^* |
| | | | | | | Pool I |
| | um Pool Daoth (Mesture) | | | SCOLEN TRANSMICS DAGINGTINI | | |
| | tion. Avoid plunge pools from | | torm water pipes) (Ch | eck ONLY one box): | | |
| ☑ > 30 ce □ > 22.5 | tion. Avoid plunge pools fror ntimeters [20 pts] - 30 cm [30 pts] | m road culverts or si | torm water pipes) (Ch | eck ONLY one box): 10 cm [15 pts] i pts] | | |
| ✓ > 30 ce □ > 22.5 □ > 10 - 2 | tion. Avoid plunge pools from ntimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] | m road culverts or si | torm water pipes) (Ch 5 cm 5 cm 5 cm 1 < 5 cm 1 NO WAT | eck ONLY one box); 10 cm [15 pts] 1 pts] ER OR MOIST CHANN | VEL [0 pts] | |
| ✓ > 30 cer □ > 22.5 □ > 10 ÷ COMM | tion. Avoid plunge pools from ntimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] IENTS | m road culverts or si | torm water pipes) (Ch 5 cm 5 cm 5 cm 8 cm 8 cm 8 cm 8 cm 8 cm 8 cm 8 cm 8 | eck ONLY one box); 10 cm [15 pts] ER OR MOIST CHANN XMUM POOL DEPTH | NEL 10 pts) | 70 |
| 3. BANK 2015 2255 2255 2105 2005 2 | tion. Avoid plunge pools from nimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] IENTS FULL WIDTH (Measured a elers (> 13) [30 pts] | m road culverts or si | torm water pipes) (Ch 5 cm 5 cm 5 cm 5 cm 1 5 cm 1 NO WAT M/ 4 measurements) 2 1.0 m | eck ONLY one box); 10 cm [15 pts] ER OR MOIST CHANN XIMUM POOL DEPTH (Check ONLY one 1.5 m (> 3' 3' -4' 8') [14 | NEL 10 pts] | Pc Banl Wid |
| ✓ > 30 cer ✓ > 22:5 ✓ > 10 COMM 3. BANK ✓ > 4.0 me ✓ > 3.0 m | tion. Avoid plunge pools from nimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] IENTS | m road culverts or si | torm water pipes) (Ch 5 cm 5 cm 5 cm 5 cm 1 5 cm 1 NO WAT M/ 4 measurements) 2 1.0 m | eck ONLY one box); 10 cm [15 pts] ER OR MOIST CHANN XIMUM POOL DEPTH (Check ONLY one | NEL 10 pts] | Pc Banl Wid |
| ✓ > 30 cer ✓ > 22:5 ✓ > 10 COMM 3. BANK ✓ > 4.0 me ✓ > 3.0 m | tion. Avoid plunge pools from nimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] ENTS FULL WIDTH (Measured a elers (> 13) [30 pts] - 4.0 m (> 9' 7" - 13') [25 pts - 3.0 m (> 9' 7" - 4' 6") [20 pt | m road culverts or si | torm water pipes) (Ch 5 cm 5 cm NO WAT NO WAT M/ 4 measurements) 2 1.0 m | eck ONLY one box); 10 cm [15 pts] ER OR MOIST CHANN XIMUM POOL DEPTH (Check ONLY one 1.5 m (> 3' 3' -4' 8') [14 | VEL 10 pts) | Max PC Banl Wid Max S |
| ✓ > 30 cm ✓ > 22:5 ✓ > 10 : COMM 3. BANK ✓ > 4.0 mm ✓ > 3.0 mm ✓ > 3.0 mm ✓ > 15 mm | tion. Avoid plunge pools from nimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] ENTS FULL WIDTH (Measured a elers (> 13) [30 pts] - 4.0 m (> 9' 7" - 13') [25 pts - 3.0 m (> 9' 7" - 4' 6") [20 pt | m road culverts or si s the average of 3- i] ts] | torm water pipes) (Ch 5 cm - 5 cm - 5 cm - 5 cm - 1 NO WAT M/ 4 measurements) 2 1.0 m (2 5.10 m (2 4 measurements) 2 5.0 m (4 measurements) 2 5.0 m (5 m (5 m (6 m (7 | eck ONLY one box): 10 cm [15 pts] ER OR MOIST CHANN XIMUM POOL DEPTH (Check ONLY one 1.5 m (> 3' 3" -4' 8") [1/ ≤ 3' 3") [5 pts] ERAGE BANKFULL V | VEL 10 pts) | Pc Banl Wid |
| 30 cell 22:5 >10 22:5 >10 COMM 3. BANK 2.0 me 3.0 m > 3.0 m > 1.5 m COMM | tion. Avoid plunge pools from nimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] ENTS FULL WIDTH (Measured a sters (> 13') [30 pts] - 4.0 m (> 9' 77 - 13') [25 pts - 3.0 m (> 9' 77 - 4' 8') [20 pt IENTS IENTS RIPARIAN ZONE AND FLO | m road culverts or si s the average of 3- il ts] This inf CODPLAIN QUALIT | torm water pipes) (Ch | eck ONLY one box): 10 cm [15 pts] ER OR MOIST CHANN XIMUM POOL DEPTH (Check ONLY one 1.5 m (> 3' 3' -4' 8'') [14 ≤ 3' 3'') [5 pts] ERAGE BANKFULL V e completed | VEL 10 pts) | Pc Banl Wid |
| 30 cell 22:5 >10 22:5 >10 22:5 >10 22:5 >10 22:5 >10 22:5 >10 22:5 23:5 24:5 2 | tion. Avoid plunge pools from ntimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] ENTS | m road culverts or si is the average of 3- i] ts] This ini CODPLAIN QUALIT FLOODPL L R | torm water pipes) (Ch | eck ONLY one box): 10 cm [15 pts] ER OR MOIST CHANN XIMUM POOL DEPTH (Check ONLY one 1.5 m (> 3' 3'' -4' 8'') [14 ≤ 3' 3'') [5 pts] ERAGE BANKFULL V e completed eft (L) and Right (R) as Sank) L R | VEL 10 pts) | Pc Banl Wid |
| 30 cell 22:5 >10 22:5 >10 COMM 3. BANK 2.0 me 3.0 m > 3.0 m > 1.5 m COMM | tion. Avoid plunge pools from nimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] ENTS FULL WIDTH (Measured a elefs (> 13) [30 pts] - 4.0 m (> 9 77 - 13) [25 pts - 3.0 m (> 9 77 - 4 ° 67 [20 pt ENTS RIPARIAN ZONE AND FLO RIPARIAN WIDTH (Per Bank) Wide > 10m | m road culverts or si s the average of 3 is taj taj COOPLAIN QUALIT FLOODPL L R (D) | torm water pipes) (Ch 5 cm 5 cm NO WAT NO WAT M/ 4 measurements) 2 1.0 m 2 1.0 m AV formation <u>must</u> also be ry \$rNOTE: River L AIN QUALITY | eck <i>ONLY</i> one box): 10 cm [15 pts] ER OR MOIST CHANN (Check <i>ONLY</i> one 1.5 m (> 3' 3' -4' 8') [14 ≤ 3' 3'] [5 pts] ERAGE BANKFULL W e completed eft (L) and Right (R) as 3ank) L R □ □ | VEL:10 pts] | Pc Banl Wid |
| ✓ > 30 cm ✓ > 22:5 ✓ > 10 · 2 ✓ > 10 · 2 ✓ > 10 · 2 ✓ > 4.0 mm ✓ > 3.0 m ✓ > 3.0 m ✓ > 3.0 m ✓ > 15 m ✓ ✓ | tion. Avoid plunge pools from ntimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] ENTS FULL WIDTH (Measured a elefs (> 13) [30 pts] - 4.0 m (> 9 77 - 13) [25 pts - 3.0 m (> 9 77 - 4 67) [20 pt ENTS RIPARIAN ZONE AND FLO RIPARIAN ZONE AND FLO RIPARIAN WIDTH (Per Bank) Wide > 10m Moderate 5-10m | m road culverts or si s the average of 3 is the average of 3 is codpl.ain QUALIT FLOODPL L R D I I | torm water pipes) (Ch | eck <i>ONLY</i> one box): 10 cm [15 pts] ER OR MOIST CHANN (Check ONLY one 1.5 m (> 3' 3' -4' 8') [14 ≤ 3' 3') [5 pts] ERAGE BANKFULL V e completed eft (L) and Right (R) as Bank) L R or Old □ □ | VEL 10 pts) | Pc Banl Wid |
| 30 cel 22:5 >10 22:5 >10 22:5 >10 22:5 >10 22:5 >10 22:5 >10 22:5 23:5 24:5 24 | tion. Avoid plunge pools from nimeters [20 pts] - 30 cm [30 pts] 22.5 cm [25 pts] ENTS FULL WIDTH (Measured a elefs (> 13) [30 pts] - 4.0 m (> 9 77 - 13) [25 pts - 3.0 m (> 9 77 - 4 ° 67 [20 pt ENTS RIPARIAN ZONE AND FLO RIPARIAN WIDTH (Per Bank) Wide > 10m | This int COOPPLAIN QUALIT FLOODPL L R COOPPLAIN QUALIT FLOODPL I R I R I R I R I R I R I R I R | Image: Source water pipes) (Ch Image: Source water source water pipes) Source water source so | eck <i>ONLY</i> one box): 10 cm [15 pts] ER OR MOIST CHANN (Check ONLY one 1.5 m (> 3' 3' -4' 8') [14 ≤ 3' 3') [5 pts] ERAGE BANKFULL V e completed eft (L) and Right (R) as Bank) L R or Old □ □ | VIDTH (meters) | Pc Banl Wid |
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| DDITIONAL STREAM INFORMATION (This Information Must A | Also be Completed): |
| QHEI PERFORMED? - DYes X No QHEI Score | (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| WWH Name: | |
| | Distance from Evaluated Stream Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE | ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| SGS Quadrangle Name: / Lew Movies 0 0 H | NRCS Soil Map Page: NRCS Soil Map Stream Order |
| ounty: <u>Mugi OSVA</u> To | wiship/ City: Letart Fallo, Ohio area |
| | · · · · · · · · · · · · · · · · · · · |
| ase Flow Conditions? (Y/N): | 11-29-05 Quantity: Bonhnorm |
| otograph information: | |
| evated Turbidity? (Y/N): Canopy (% open): | 0 % |
| ere samples collected for water chemistry? (Y/N): <u>//</u> (Note | lab sample no. or id. and attach results) Lab Number |
| eld Measures: Temp (°C) Dissolved Oxygen (mg/l) | pH (S.U.) Conductivity (µmhos/cm) |
| | not, please explain: |
| ditional comments/description of pollution impacts: | |
| | cher collections optional. NOTE: all voucher samples must be labeled with the site data sheets from the Primary Headwater Habitat Assessment Manual) |
| rogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aq | s Observed? (Y/N) Voucher? (Y/N) uatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
| comments Regarding Biology: | |
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| DRAWING AND NARRATIVE DESCRIPTION | ON OF STREAM REACH (This <u>must</u> be completed): |
| | t for site evaluation and a narrative description of the stream's location |
| Structure of the state of the s | COLOR CALL CALL |
| | Handhand Care a loo a |
| BL S. S. Share | ETAL |
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| Strem | ATION <u>AMP-01</u> SITE NUMBER | <u> 5-3</u> | | | RAINAGE AREA (mi²) | |
|------------|---|-----------------------------|---|--|---------------------------------------|---------------|
| | | | | RIVER CODE _ | RIVER MILE | |
| | 05SCORER <u>736</u> lete All Items On This | · _/ ··· | OMMENTS | terusi fra Obiela Dil | | |
| | | | | | | 乙酸白酸乙酸酯 |
| TREAM CHAI | | NATURAL CH | ANNEL LJ RECOVERE | D. EIRECOVERING | DRECENT OR NO REC | OVERY |
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| | ATE (Estimate percent of 32). Add total number of sig | | | | | нн |
| TYPE | | PERCENT | TYPE | | PERCENT | Me Poi |
| DD BOU | ? SLABS [16 pts] LDER (>256 mm) [16 pts] | | | 79 CKWOODY DEBRIS (3 | ptsj 210 | |
| | ROCK [16 pt] BLE (65-256 mm) [12 pte] | Vind | | TRITUS [3 pts] HARDPAN [0 pt] | | Subs Max |
| | VEL (2-64 mm) (9 pts) | 100 | | The second s | | |
| | D (<2 mm) [6 pts] | | | IAL [3 pts] | | |
| | ial of Percentages of s, Boulder, Cobble, Bedroc | * 25 | (A) 2/ | | ^(B) | A+ |
| | MOST PREDOMINATE S | | PES: 47 TOT | AL NUMBER OF SUBS | | |
| | n Pool Depth (Measure th | | | | reach at the time of | Pool |
| | n. Avoid plunge pools from meters [20 pts] | road cuiverts o | | heck ONLY one box): • 10 cm [15 pts] | | Max |
| □>22.5 -3 | 0 cm [30 pts] 5 cm [25 pts] | | 🔄 🔲 🖂 5 cm | | | φ_{e} |
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| COMME | | | ····· | IAXIMUM POOL DEPTH | · · · · · · · · · · · · · · · · · · · | [|
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| | 4.0 m (> 9' 7" - 13') [25 pts] 3.0 m (> 9' 7" - 4' 8") [20 pts | | D ≤ t0 m | (≤ 3' 3") [5 pts] | | Max |
| COMME | | ™ to governikengerkengerken | (* 200) A | VERAGE BANKFULL W | (DTH (maters) | 1 2 |
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| | IPARIAN ZONE AND FLO | | information <u>must</u> also I | e completed Left (L) and Right (R) as | Insking downstreem\$ | |
| | <u>RIPARIAN WIDTH</u> | | PLAIN QUALITY | | looking downeries in a | |
| | (Per Bank) Wide >10m | L R DD | (Most Predominant per Mature Forest, Wetland | | Conservation Tillage | |
| | -Moderate 5-10m | | Immature Forest, Shru | | | |
| 00 | Narrow <5m | | Field Residential, Park, New | Field · 🗍 🗍 | Open Pasture, Row | C). |
| 00 | None | | Fenced Pasture | | Crop Mining or Construction | ·c\ |
| C | OMMENTS | | | ······ | | |
| | LOW REGIME (At Time of ream Flowing | Evaluation) (C | | Moiet Channel isolated r | ools, no flow (Intermittent | |
| _ | bsurface flow with isolated | pools (Interstiti | | Dry channel, no water (E | | , |
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| QHEI PERFORMED? - 🗍 Yes 🕅 | No QHEI Score (If Yes, Attach Completed QHEI Form) |
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| DOWNSTREAM DESIGNATED USE | |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| DEWH Name: | Distance from Evaluated Stream |
| | PS, INCLUDING THE <u>ENTIRE</u> WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| | MRCS Soil Map Page: NRCS Soil Map Stream Order |
| Sounty: Merca County | Township / City: Letart falls, Ohio are |
| MISCELLANEOUS | <i>v</i> |
| | flast precipitation: 11-29-05 Quantity: Unhmorm |
| | The approximation |
| Photograph Information: | 200) |
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| Vere samples collected for water chemistry? (Y | r/N): _// (Note lab sample no. or id. and attach results) Lab Number: |
| | ved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm) |
| the sampling reach representative of the stream | am (Y/N) If not, please explain: |
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| Commonal commems/description of pollution imp | pacts: |
| BIOTIC EVALUATION | |
| Performed? (Y/N): (If Yes, Record a ID number. Inclu ish Observed? (Y/N) Voucher? (Y/N) rogs or Tadpoles Observed? (Y/N) Vouc | all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the appropriate field data sheets from the Primary Headwater Habitat Assessment Manual) Salamanders Observed? (Y/N) Voucher? (Y/N) cher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
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Class II

HHEI Score (sum of metrics 1, 2, 3) AMP-OH SITE NAME/LOCATION SITE NUMBER 5-4 RIVER BASIN DRAINAGE AREA (mi²)_ LENGTH OF STREAM REACH (R) ~ 200' LAT. LONG. RIVER CODE RIVER MILE DATE 11/29/05 SCORER JAV COMMENTS NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions O NONE / NATURAL CHANNEL O RECOVERED RECOVERING RECENT OR NO RECOVERY **STREAM CHANNEL MODIFICATIONS:** SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes HHE (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B. Metric PERCENT PERCENT <u> TYPE</u> Points BLDR SLABS [16 pts] 00 SILT [3 pt] 00 00 LEAF PACK/WOODY DEBRIS [3 pts] 80ULDER (>256 mm) [16 pts] Substrate 00 00 BEDROCK (16 pt) FINE DETRITUS [3 pts] Max = 40 00 00 CLAY or HARDPAN [0 pt] COBBLE (65-256 mm) [12 pts] 00 00 GRAVEL (2-64 mm) [9 pts] MUCK [0 pts] Ó 00 SAND (<2 mm) [6 pts] ARTIFICIAL [3 pts] Total of Percentages of (B) A+B 6 Bidr Slabs, Bouider, Cobble, Bedrock SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: TOTAL NUMBER OF SUBSTRATE TYPES: Maximum Pool Depth (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of Pool Depth 2 evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box): Max = 30 D Г > 5 cm - 10 cm [15 pts] > 30 centimeters [20 pts] Г > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] NO WATER OR MOIST CHANNEL [0 pts] > 10 - 22.5 cm [25 pts] 1/5" MAXIMUM POOL DEPTH (centimeters): COMMENTS BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box): Bankfull > 4.0 meters (> 13') [30 pts] Π > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts] Width П > 3.0 m - 4.0 m (> 9' 7" - 13") [25 pts] ≤ 1.0 m (≤ 3' 3") [5 pts] Max#30 > 1.5 m - 3.0 m (> 9'7" - 4' 8") [20 pts] AVERAGE BANKFULL WIDTH (meters) COMMENTS This information must also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream과 **RIPARIAN WIDTH** FLOODPLAIN QUALITY (Most Predominant per Bank) (Per Bank) L⁄R 00 Wide >10m Mature Forest, Welland Conservation Tillage Immature Forest, Shrub or Old 00 00 Urban or Industrial Moderate 5-10m Field **Open Pasture**, Row 00 00 00 Narrow <5m Residential, Park, New Field Crop 00 00 пп Fenced Pasture None Mining or Construction COMMENTS 10000 consists of a myred and immatule matting FLOW REGIME (At Time of Evaluation) (Check ONLY one box)/ Moist Channel, isolated pools, no flow (Intermittent) Stream Flowing Subsurface flow with isolated pools (Interstitial) Ο Dry channel, no water (Ephemeral) COMMENTS_ (Check ONLY one box): SINUOSITY (Number of bends per 61 m (200 ft) of channel) None 1.0 3.0 Ē ā 0.5 1.5 2.5 STREAM GRADIENT ESTIMATE Flat (0.5 m/100 m) Severe (10 #/100 #) Flat to Moderate Moderate (2 fiving in) Moderate to Severe PHWH Form Page - 1 October 24, 2002 Revision

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| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| | Distance from Evaluated Stream |
| · · · · · · · · · · · · · · · · · · · | E ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| | OH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| | |
| County: //ugsT | ownship/city: Letant Falls, Ohio area |
| MISCELLANEOUS | |
| MISCELLANEOUS Base Flow Conditions? (Y/N): Date of last precipitation: Photograph information: | 11/29/05 Quantity: unknown |
| Photograph Information: | |
| Elevated Turbidity? (Y/N): Canopy (% open): | <u>+0%</u> |
| Were samples collected for water chemistry? (Y/N): (Not | e lab sample no. or id. and attach results} Lab Number: |
| Field Measures: Temp (°C) Dissolved Oxygen (mg/l) | pH (S.U.) Conductivity (µmhas/cm) |
| is the sampling reach representative of the stream (Y/N) V if | not, please explain: |
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| | ucher collections optional. NOTE: all voucher samples must be labeled with the s |
| Performed? (Y/N): (If Yes, Record all observations. Vo ID number. Include appropriate field *. Fish Observed? (Y/N) Voucher? (Y/N) Salamande | Aucher collections optional. NOTE: all voucher samples must be labeled with the s d data sheets from the Primary Headwater Habitat Assessment Manual) ers Observed? (Y/N) Voucher? (Y/N) Auguatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N) |
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| | | | Primary I | leadwa | | at Evalua IEl Score (s | | | a II 54 |
|---|---------------------|---|--|---|--|--|-------------------------------------|---|--------------------------|
| | Stream | ~ | AMP-OH | <u> </u> | RIVER BASIN | | DRA | NAGE AREA (mi²) 🚄 | Im;2 |
| | LENGTH OF | STREAM REA 29-05 SC | CH (ft) <u>400 /</u> ORER <u>861/</u> | LAT | LONG MENTS 5478a | RIVE | R CODE | RIVER MILE | |
| | | omplete All It HANNEL | ems On This Form | n - Refer to " | Field Evaluation | m Manual for C | hio's PHWH | Streams" for Instr RECENTIOR NO REC | |
| ſ | (Ma) <u>TYPE</u> | | | | pes found (Max o | | core is sum of | | HHEI Metric Points |
| | | BEDROCK [16 | | | | PACKWOODY L DETRITUS [3 pt | aj | | Substrate Max = 40 |
| | oø/ | Cobble (65-25 Gravel (2-64 Sand (<2 mm) | A 1997 A 1998 A 1997 A 19 | 100% 20% | | f or HARDPAN (f K [0 pts] FICIAL [3 pts] | i pti 🦾 🔭 🥍 Sanana ang s | ≥ <u>√15%</u> | 19 |
| | | | entages of Cobble, Bedrock EDOMINATE SUBS | | 15 | TOTAL NUMBER | OF SUBSTRA | | A+B |
| | eval | | | | m water pipes) | | ne box): s] | | Pool Depth Max = 30 |
| | | | | | | MAXIMUM POC | | | Baokfuli |
| | | meters (> 13') [3 m - 4.0 m (> 9' | H (Measured as the 10 pts] 7" - 13") [26 pts] 7" - 4"8") [20 pts] | | | (Cnack 9 m ⊱1,5 m (>3:3 0 m (≤ 3*3*) (5 ph | ONLY one bo: -4/6") [15.pts 1 | | Width Max=30 |
| | con | AMENTS | | | | _ AVERAGE BA | NKFULL WIDT | H (meters) | 6 |
| | L M 01 | RIPARIAN R (Per Bani | k))m | LAIN QUALIT FLOODPLA L/R (N L/R (N L/R (N L/R (N) L/R (N) L | Y STNOTE: R IN QUALITY Aost Predominant ature Forest, Wal mature Forest, S | per Bank) Jand | ight (R) as lool | ting downstreams Conservation Tillage Joban or Industrial | . |
| | | | | | ield esidential, Park, I enced Pasture | lew Field | | Open Pasture, Row Crop Aining or Construction | · |
| | | FLOW REG Stream Flowi | IME (At Time of Eval Ing iow with isolated pool | | k ONLY one box) | | | a, no flow (intermittent) meral) | |
| | 8 | SINUOSITY None 0.5 | (Number of bends pr | ≨r 61 m (200 ft) 1.0 1.5 | of channel) (Cl | neck ONLY one bo 2.0 2.5 | ×): | 3.0 >3 | |
| | STR Flat (0.5 ft | EAM GRADIEN | Flat to Moderate | | e (2 1/100 ft) | Moderate to | Severe | Savere (10 10/10 | 0 ft) |

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| ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed): |
|--|
| QHEI PERFORMED? - 🗍 Yes 🕅 No QHEI Score (If Yes, Attach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) WWH Name: Distance from Evaluated Stream CWH Name: Distance from Evaluated Stream EWH Name: Distance from Evaluated Stream |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION |
| USGS Quadrangle Name: New Haven, WV-OH NRCS Soil Map Page: NRCS Soil Map Stream Order |
| county: MCKS Corry Township/City: Letart Salle, Ohio area |
| MISCELLANEOUS |
| Base Flow Conditions? (Y/N): N Date of last precipitation: 11-29-05 Quantity: UNKnown |
| Photograph Information: |
| Elevated Turbidity? (YIN): Canopy (% open):75 % |
| Were samples collected for water chemistry? (Y/N): <u>V</u> (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): |
| Fish Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Voucher? (Y/N) Comments Regarding Biology: Voucher? (Y/N) Voucher? (Y/N) |
| |
| |
| 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 |

5-5

| | | - | ter Habitat Eva HHEI Sco | aluation For ore (sum of metric | | - I 7 |
|---|---|--|---|--|--|--|
| Strea LENGTH OF S DATE <u>11-2</u> | STREAM REACH (ft) <u>QC</u> <u>89-05</u> SCORER <u>I</u> mplete All Items On T TANNEL QT NC | MBER <u>5-6</u> <u>0</u> LAT. <u>B</u> <u>C</u> M COMM This Form - Refer to " | RIVER BASIN LONG IENTS <u>5 frea.m 5 flow</u> Field Evaluation Manual EL TREGOVERED T | RIVER CODE <u>JS</u> Th <u>rough</u> We I for Ohio's PHWH \$ | RIVER MILE CEL + 1970 Str Streams" for Instr | em 4 uctions |
| (Max TYPE B C C C C C C C C C C C C C C C C C C | | of significant substrate type PERCENT pts] pts] downward by the substrate type pts] downward by the substrate type downward b | CLAY OF HARDF | PODY DEBRIS [3 pts] 3 [3 pts] 24N 1 0 pt | $\begin{array}{c} \text{cxes A \& B.} \\ \hline PERCENT \\ \hline \hline 15 \% \\ \hline \hline 35 \% \\ \hline \hline \hline \end{array}$ | HHEI Metrie Points Substrat Max = 44 2 A + B |
| evalu 30.0 22.5 0 > 10 - COM | | from road culverts or stor | measurements) (C | NLY one box): [15 pts] R MOIST CHANNEL [0 IM POOL DEPTH (cent Check ONLY one box): | pts] | Pool Dep Max = 34 |
| □ > 3.0 m □ > 1.5 m | neters (> 13') [30 pts] 0 - 4.0 m (> 9' 7" - 13') [25 1 - 3.0 m (> 9' 7" - 4' 6") [2 MENTS | pts] 9 pts] | A 510m(\$33 | (* 3' 3' - 4'8') [15 pte]) [8 pte] 3E BANKFULL WIDTH | 42 27 | Width Max=30 |
| | RIPARIAN WIDTH (Per Bank) Wide >10m Moderate 5-10m Narrow <5m | | | LR Ca Ca Ca Ca Ca Ca Ca Ca Ca Ca | nservation Tillage ban or Industrial | |
| Ø | | ne of Evaluation) (Check lated pools (Interstitial) | 🛄 🛛 Moist Cl | hannel, isolated pools, i nnel, no water (Ephem | | |
| | SINUOSITY (Number of None 0.5 | f bends per 61 m (200 ft) | of channel) (Check ONLY J. 2.0 2.5 | · · · · · · · · · · · · · · · · · · · | 3.0 >3 | |
| | | | | | | |

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| ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed) | - |
|--|--|
| | ttach Completed QHEI Form) |
| DOWNSTREAM DESIGNATED USE(S) | |
| | |
| 3 CWH Name: | |
| · · | |
| MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE <u>ENTIRE</u> WATERSHE | |
| JSGS Quadrangle Name: New Klanen, WV-04 NRCS Soil Mar | |
| county: <u>Meigl County</u> Township/City: Ke | tart Iallo, Ohio area |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): N Date of last precipitation: 11-27-05 | Quantity: unknown |
| Photograph Information: | |
| Elevated Turbidity? (Y/N): N Canopy (% open): 50 % | |
| 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) |
| s the sampling reach representative of the stream (Y/N) If not, please explain: | |
| | |
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| | |
| BIOTIC EVALUATION Performed? (Y/N): (If Yes, Record all observations. Voucher collections option ID number. Include appropriate field data sheets from the I | |
| Performed? (Y/N): | Primary Headwater Habitat Assessment Manual) |
| Performed? (Y/N): | Primary Headwater Habitat Assessment Manual) |
| Performed? (Y/N): | Primary Headwater Habitat Assessment Manual) |
| Performed? (Y/N): | Primary Headwater Habitat Assessment Manual) |
| Performed? (Y/N): | Primary Headwater Habitat Assessment Manual) Voucher? (Y/N) rates Observed? (Y/N) Voucher? (Y/N) |
| Performed? (Y/N): | Primary Headwater Habitat Assessment Manual) Voucher? (Y/N) rates Observed? (Y/N) Voucher? (Y/N) REACH (This must be completed): |

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| SITE NA | | AMP-OH | <u>.</u> | | · · - · · · · · · · · · · · · · · · · · | | | |
|---|--|---|---|---|--|--|--|-------------------------------------|
| <u> </u> | ram | _SITE NUMBER | 5-7 | RIVER BASIN | | DR | AINAGE AREA (mi²) | lmi |
| | H OF STREAM READ | | _LAT | LONG. | RIVER | | RIVER MILE Into Stream 5 | |
| | | | | | | | /H Streams" for Instr | |
| | | A | | | | | RECENTIORING RECO | |
| ter anna an a | AM CHANNEL FICATIONS | | | | | | | |
| | | | | | | | | |
| 1. | | al number of signific | ant substrat | e types found (Max of | | | | HH Me1 |
| | BLDR SLABS [| | ERCENT | | 3 pt) | | PERCENT | Poi |
| | a balan sector a sector and the sect | | | | PACKWOODY DE DETRITUS: [3 pts] | | a) <u> </u> | Subs |
| 00 | a set of second seco | CREATING SALANYA SALANYA DA L | | 201 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 122 - 12 | or HARDPAN | | | Max |
| | | Carl and a second s | | | [0 pts] | \mathcal{L}_{ij} , | | 17 |
| 00 | | <u></u> | • • • | | ICIAL [3 pts] | | | |
| | Total of Perce Bidr Slabs, Boulder, | Cobble, Bedrock | $()^{0}/_{0}$ | ^(A) 3 | | | (18) | A+ |
| SCORE | OF TWO MOST PR | EDOMINATE SUBS | TRATE TYP | ES: Innend Ti | OTAL NUMBER O | FSUBST | | |
| | | ومفسيقية الأستاب عنكت بفنصنعت | | | | | | |
| 2 | | | | of depth within the 6 storm water pipes) | | | ach at the time of | |
| | evaluation. Avoid pli > 30 centimeters [20 | unge pools from road pts] | | storm water pipes) | (Check ONLY one m = 10 cm [15 pts] | box): | ach at the time of | |
| | evaluation. Avoid pl | unge pools from road pts] its] | | storm water pipes) | (Check ONLY one | box): | | |
| | evaluation. Avoid pli > 30 centimeters [20 > 22.5 - 30 cm [30 p | unge pools from road pts] its] | | storm water pipes) | (Check ONLY one m - 10 cm [15 pts] m [5 pts] | box): CHANNE | L-10 pts) | |
| 3 | evaluation. Avoid pl > 30 centimeters [20 > 22.5 - 30 cm [30 p > 10 - 22.5 cm [25 p COMMENTS BANK FULL WADTH | unge pools from road pts] ts] ts] ts] ts] | d culvents or | storm water pipes) | (Check ONLY one m = 10 cm [15 pts] m [5 pts] VATER OR MOIST MAXIMUM POOL (Check O | box): CHANNE . DEPTH (NLY one t | centimeters): | Pool [Max |
| | evaluation. Avoid pl > 30 centimeters [20 > 22.5 - 30 cm [30 p > 10 - 22.5 cm [25 p COMMENTS BANK FULL WIDTH > 4.0 meters (> 13') [3 | unge pools from road pts] ts] ts] ts] ts] ts] ts] ts] ts] ts] | d culvents or | storm water pipes) Storm | (Check ONLY one m = 10 cm [15 pts] m [5 pts] VATER OR MOIST MAXIMUM POOL (Check O/ m = 115 m (> 3' 3' | box): CHANNE . DEPTH (NLY one 1 4'8") (15 ; | LTO posi centimeters): | Max D Bani Wid |
| | evaluation. Avoid pl > 30 centimeters [20 > 22.5 - 30 cm [30 p > 10 - 22.5 cm [25 p COMMENTS BANK FULL WADTH | unge pools from road pts] ts] ts] ts] ts] ts] ts] ts] ts] ts] | d culvents or | storm water pipes) □ > 5 c □ < 5 c NO V 3-4 measurements) □ > 1.0 < 1.0 | (Check ONLY one m = 10 cm [15 pts] m [5 pts] VATER OR MOIST MAXIMUM POOL (Check O | box): CHANNE . DEPTH (NLY one 1 4'8") (15 ; | LTO posi centimeters): | Max D Bani Wid |
| | evaluation. Avoid pl > 30 centimeters [20 > 22.5 - 30 cm [30 p > 10 - 22.5 cm [25 p COMMENTS BANK FULL WIDTH > 4.0 meters (> 13') [3 > 3.0 m - 4.0 m (> 9' | unge pools from road pts] ts] ts] ts] ts] ts] ts] ts] ts] ts] | d culverts or | storm water pipes) □ > 5 c □ < 5 c NO V 3-4 measurements) □ > 1.0 < 1.0 | (Check ONLY one m = 10 cm [15 pts] m [5 pts] VATER OR MOIST MAXIMUM POOL (Check O/ m = 115 m (> 3' 3' | box): CHANNE . DEPTH (NL Y one 1 4'8') [15 ; | tree post | Max D Bani Wid |
| | evaluation. Avoid pl > 30 centimeters [20 > 22.5 - 30 cm [30 p > 10 - 22.5 cm [25 p COMMENTS BANK FULL WIDTH > 4.0 meters (> 13) [3 > 3.0 m - 4.0 m (> 9 > 1.5 m - 3.0 m (> 9 | unge pools from road pts] ts] ts] ts] ts] ts] ts] ts] ts] ts] | d culverts or average of | storm water pipes) Storm | (Check ONLY one m = 10 cm [15 pts] m [5 pts] VATER OR MOIST MAXIMUM POOL (Check O m - 1.5 m (> 3 3 m (≤ 3'3") [5 pts] AVERAGE BANK | box): CHANNE . DEPTH (NL Y one 1 4'8') [15 ; | tree post | Max D Bani Wid |
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| | evaluation. Avoid pl > 30 centimeters [20 > 22.5 - 30 cm [30 p > 10 - 22.5 cm [25 p COMMENTS BANK FULL WEDTH > 4.0 meters (> 13) [3 > 3.0 m - 4.0 m (> 9 > 1.5 m - 3.0 m (> 9 COMMENTS COMMENTS RIPARIAN Z <u>RIPARIAN Z</u> L R (Per Bank | unge pools from road pts] ts] ts] ts] T (Measured as the 0 pts] 7* 13') [25 pts] 7* -4'.8") [20 pts] 7* -4'.8") [20 pts] CONE AND FLOODF WIDTH () | average of This PLAIN QUAN FLOOD L/R/ | storm water pipes) Storm water pipes) Storm water pipes) Storm Stor | (Check ON/LY one m 10 cm [15 pts] WATER OR MOIST MAXIMUM POOL (Check O/ m 15 m (> 3'3' m (< 3'3') [\$ pts] AVERAGE BANK o be completed ver Left (L) and Rigi per Bank) | box): CHANNE DEPTH (NLY one L 4'8') (15 ; FULL Will ht (R) as ic L R | L TO pts) centimeters): hox): Hall DTH (meters) boking downstream A | Max D Bani Wid |
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| | evaluation. Avoid pl > 30 centimeters [20 > 22.5 - 30 cm [30 p > 10 - 22.5 cm [25 p COMMENTS | unge pools from road pts] ts] ts] ts] ts] ts] ts] ts] | average of This PLAIN QUAN FLOOD L/R [] [] [] | storm water pipes) Storm | (Check ONLY one m 10 cm [15 pts] WATER OR MOIST MAXIMUM POOL (Check O) m - 1.5 m (> 3' 3' - m (< 3' 3') [5 pts] AVERAGE BANK o be completed rer Left (L) and Rigi per Bank) and rub or Old | box): CHANNE . DEPTH (. MLY one it 4'8') (15 ; (FULL Will ht (R) as ic L R L R | L R0 pts) centimeters): hox): Hox: | Max D Bani Wid |
| | evaluation. Avoid pli > 30 centimeters [20 > 22,5 - 30 cm [30 p > 10 - 22.5 cm [25 p COMMENTS BANK FULL WIDTF > 4.0 meters (> 13) [3 > 3.0 m - 4.0 m (> 9 > 4.5 m - 3.0 m (> 9 > 4.5 m - 3.0 m (> 9 COMMENTS | unge pools from road pts] ts] ts] ts] (Measured as the 0 pts] 7" 13") [24 pts] 7" -4" 8" [20 pts] CONE AND FLOODF WIDTH 4) im 5-10m 5m | average of This PLAIN QUAI FLOODI L/R I/I/I/I/I/I/I/I/I/I/I/I/I/I/I/I/I/I/I | storm water pipes) Storm | (Check ONLY one m 10 cm [15 pts] WATER OR MOIST MAXIMUM POOL (Check O) m - 1.5 m (> 3' 3' - m (< 3' 3') [5 pts] AVERAGE BANK o be completed rer Left (L) and Rigi per Bank) and rub or Old | CHAINNE . DEPTH (I NLY one it 4*8*) [15 ; GFULL Will ht (R) as it D T | L_N0 pts) centimeters): hox) | |
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| | evaluation. Avoid plications. Avoid plications. > 30 centimeters. [20] > 22.5 30 cm [30 plications] > 10 22.5 cm [25 plications] COMMENTS | unge pools from road pts] ts] ts] ts] (Measured as the 0 pts] 7" 13") [25 pts] 7" 24"8" [20 pts] 5" CONE AND FLOODF WIDTH 4) im 5-10m 5 IME (At Time of Evaluation source of Evaluation S | average of average of LAIN QUAL FLOOD L/R () () () () () () () () () () () () () | storm water pipes) | (Check ONL Y one m 10 cm [15 pts] WATER OR MOIST MAXIMUM POOL (Check O) m - 1.5 m (> 3'3'- m (< 3'3') [5 pts] AVERAGE BANK o be completed rer Left (L) and Rigi ber Bank) and rub or Old ew Field Moist Channel, in | box): CHAINNE DEPTH (NLY one t 4'8') [15 g GFULL Will ht (R) as it L R D D D D D D D D Solated po water (Ep | L-N0 pts) centimeters): hox): tel cox) | Max D Bani Wid Max 5 |

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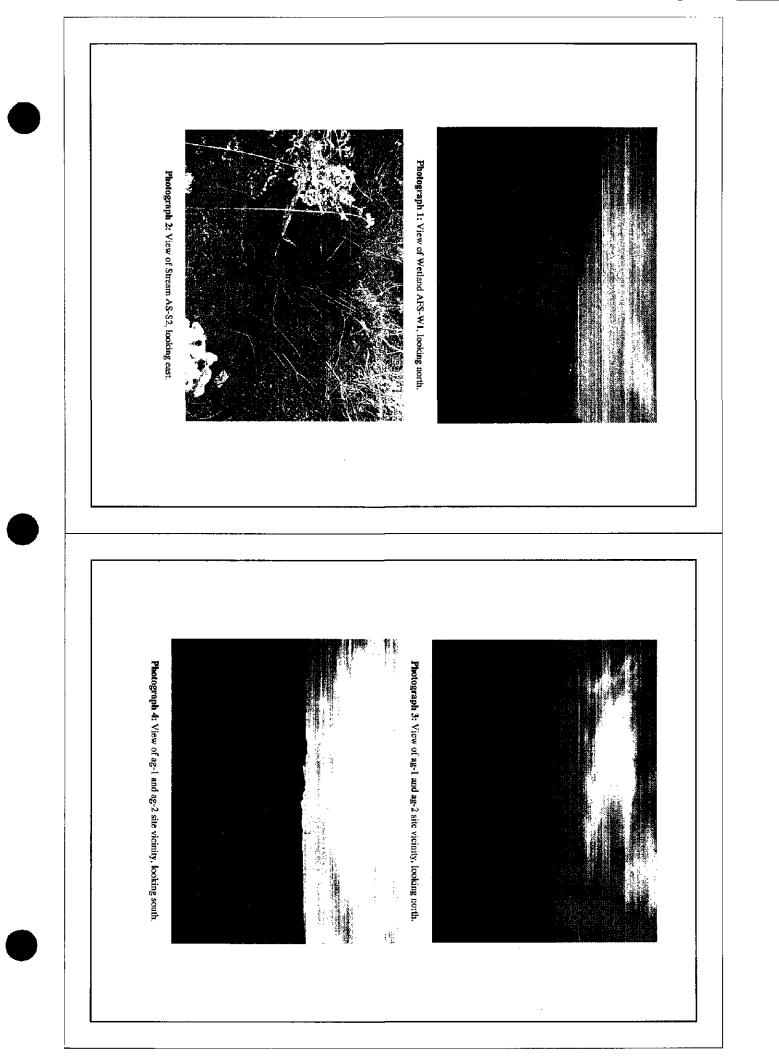
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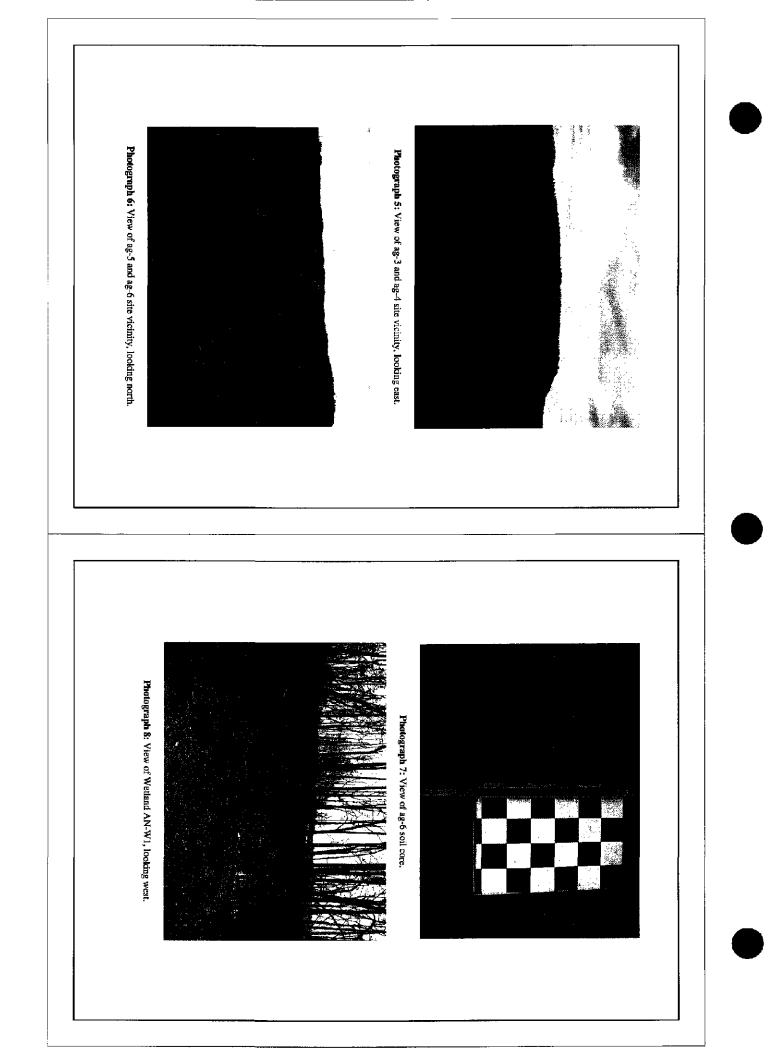
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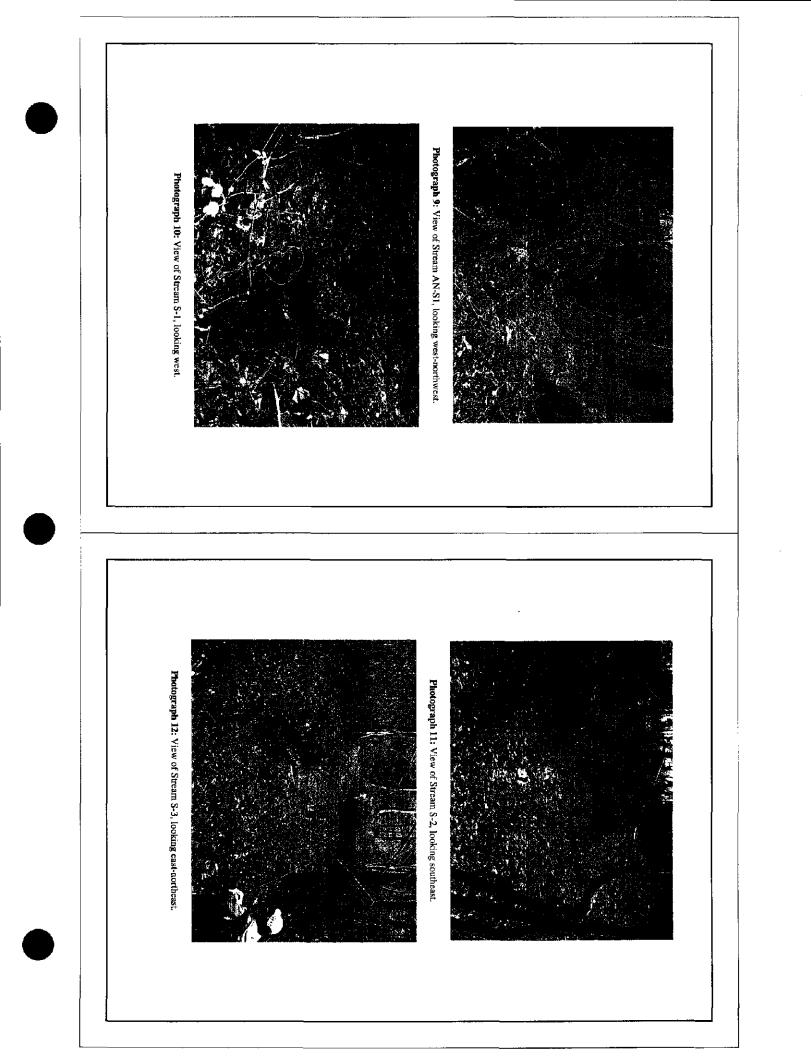
| • | DRMATION (This information Must Also be Completed): | |
|--|---|--|
| QHEI PERFORME | ED? - 🗍 Yes 🕅 No QHEI Score (If Yes, Attach Co | mpleted QHEI Form) |
| | ESIGNATED USE(S) | |
| | Di | stance from Evaluated Stream |
| D EWH Name: | | tance from Evaluated Stream |
| | H COPIES OF MAPS, INCLUDING THE <u>Entire</u> watershed are. | CLEARLY MARK THE SITE LOCATION |
| USGS Quadrancia Name: 7 | New Horren, WV-OH NRCS Soil Map Page: | NRCS Soil Man Stream Order |
| | SUNTY Township/City: Letar | |
| | | |
| | . N Date of last precipitation: 11-29-05 | Dupping LAM MADON |
| Photograph Information: | | 200 kily. <u>00100000</u> |
| . / | Canopy (% open): 50 % | |
| | . [| |
| | vater chemistry? (Y/N): <u>N</u> (Note lab sample no, or id. and at | |
| Field Measures: Temp (*(| C)Dissolved Oxygen (mg/l)pH (S.U.) | Conductivity (µmhos/cm) |
| Is the sampling reach represe | entative of the stream (Y/N) If not, please explain: | |
| Additional comments/descrip | tion of pollution impacts: | |
| BIOTIC EVALUAT | [ION (If Yes, Record all observations. Voucher collections optional. NO | |
| BIOTIC EVALUAT Performed? (Y/N): Fish Observed? (Y/N) Frogs or Tadpoles Observed' | [ION] (If Yes, Record all observations, Voucher collections optional, NO ID number, Include appropriate field data sheets from the Primary Voucher? (Y/N) Salamanders Observed? (Y/N) Y(Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Ot | Headwater Habitat Assessment Manual) |
| BIOTIC EVALUAT Performed? (Y/N): Fish Observed? (Y/N) Frogs or Tadpoles Observed' Comments Regarding Biolog | [ION] (If Yes, Record all observations, Voucher collections optional, NO ID number, Include appropriate field data sheets from the Primary Voucher? (Y/N) Salamanders Observed? (Y/N) Y(Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Ot | -leadwater Habitat Assessment Manual) oucher? (Y/N) served? (Y/N) Voucher? (Y/N) |
| BIOTIC EVALUAT Performed? (Y/N): Fish Observed? (Y/N) Frogs or Tadpoles Observed? Comments Regarding Biolog DRAWING A | [ION (If Yes, Record all observations, Voucher collections optional, NO ID number, Include appropriate field data sheets from the Primary Voucher? (Y/N) Salamanders Observed? (Y/N) V ? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Ot y: | Headwater Habitat Assessment Manual) oucher? (Y/N) served? (Y/N) Voucher? (Y/N) CH (This <u>must</u> be completed): |
| BIOTIC EVALUAT Performed? (Y/N): Fish Observed? (Y/N) Frogs or Tadpoles Observed' Comments Regarding Biolog | [ION] (If Yes, Record all observations. Voucher collections optional. NO' ID number. Include appropriate field data sheets from the Primary Voucher? (Y/N) Salamanders Observed? (Y/N) V ? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Ot y: ND NARRATIVE DESCRIPTION OF STREAM REA | Headwater Habitat Assessment Manual) oucher? (Y/N) werved? (Y/N) Voucher? (Y/N) CH (This <u>must</u> be completed): |
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| BIOTIC EVALUAT Performed? (Y/N): Fish Observed? (Y/N) Frogs or Tadpoles Observed' Comments Regarding Biolog | [ION] (If Yes, Record all observations. Voucher collections optional. NO' ID number. Include appropriate field data sheets from the Primary Voucher? (Y/N) Salamanders Observed? (Y/N) V ? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Ot y: ND NARRATIVE DESCRIPTION OF STREAM REA | Headwater Habitat Assessment Manual) oucher? (Y/N) served? (Y/N) Voucher? (Y/N) CH (This <u>must</u> be completed): |
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| BIOTIC EVALUAT Performed? (Y/N): Fish Observed? (Y/N) Frogs or Tadpoles Observed' Comments Regarding Biology DRAWING A Include important lan | FION (If Yes, Record all observations. Voucher collections optional. NO ID number. Include appropriate field data sheets from the Primary in Voucher? (Y/N) | Headwater Habitat Assessment Manual) oucher? (Y/N) served? (Y/N) Voucher? (Y/N) CH (This <u>must</u> be completed): |

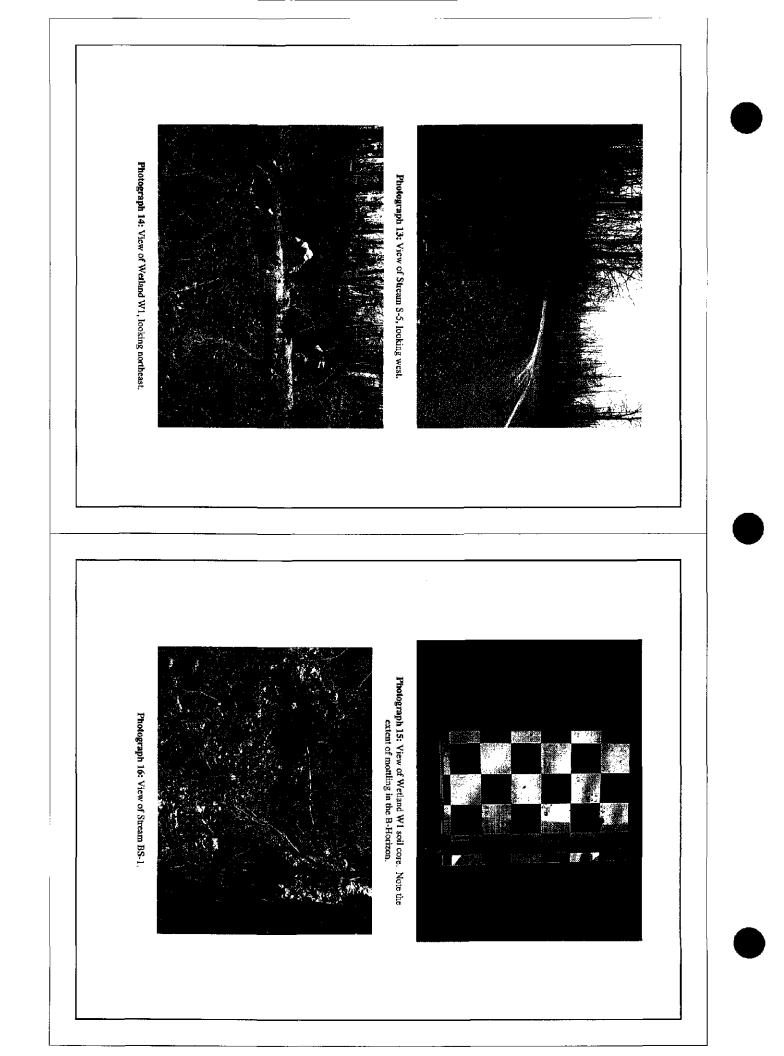
APPENDIX D

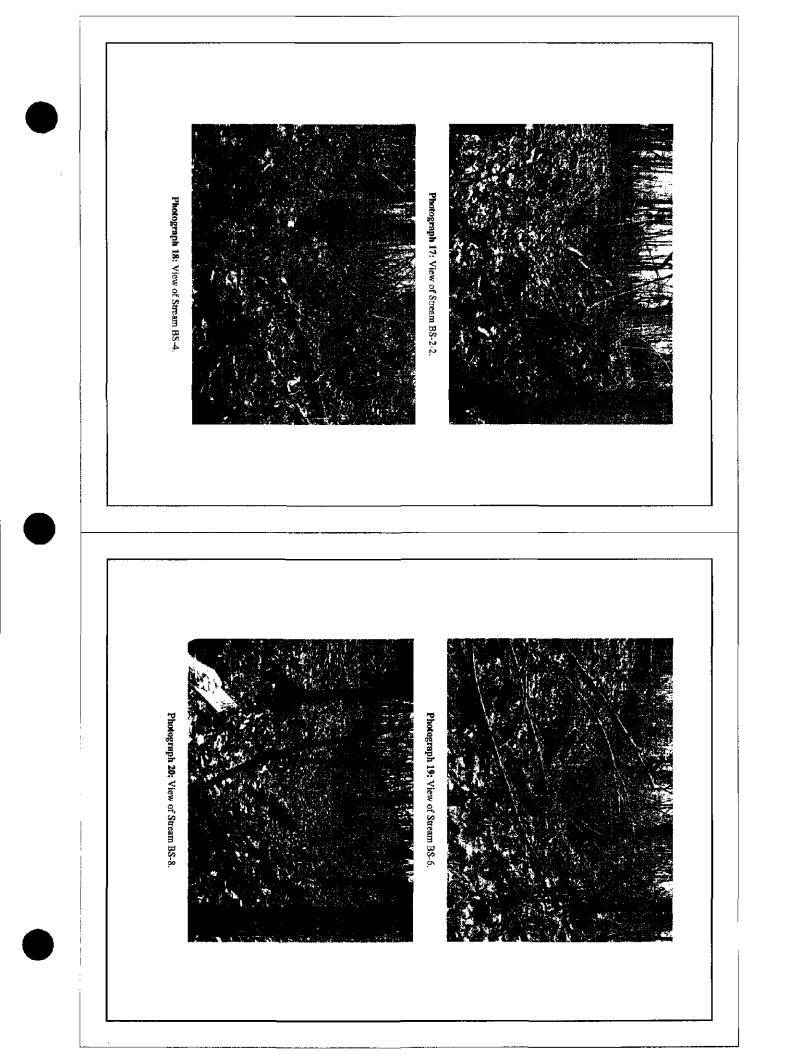
SELECTED PHOTOGRAPHS

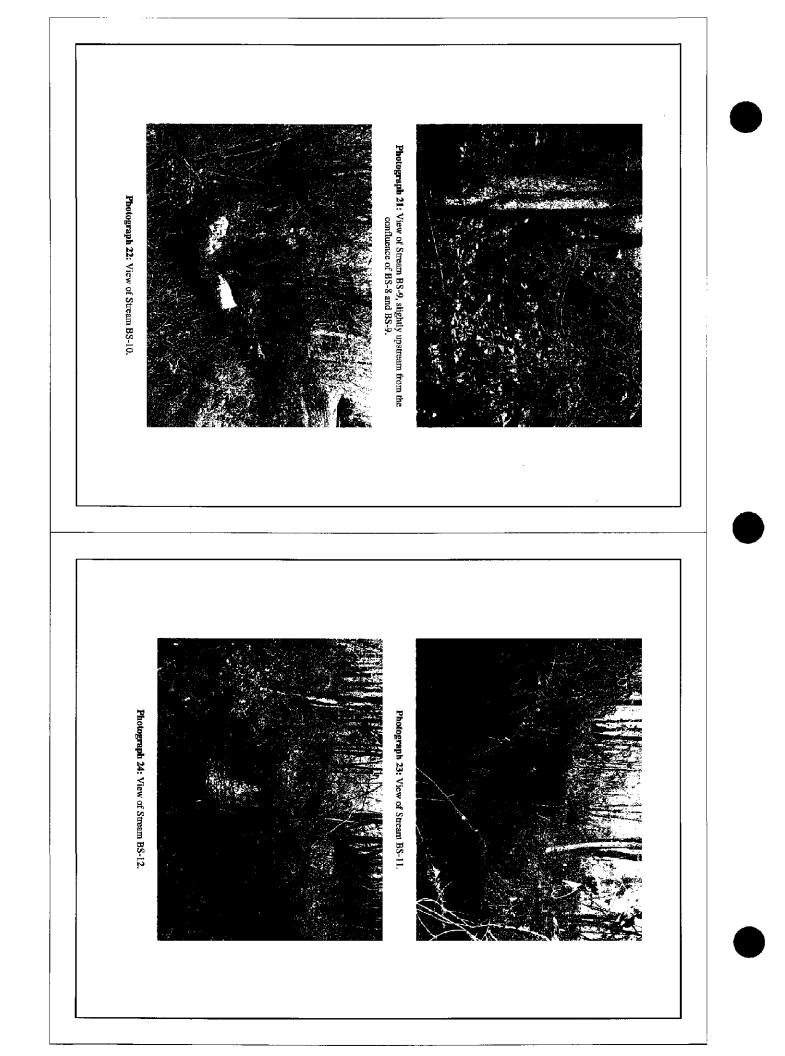


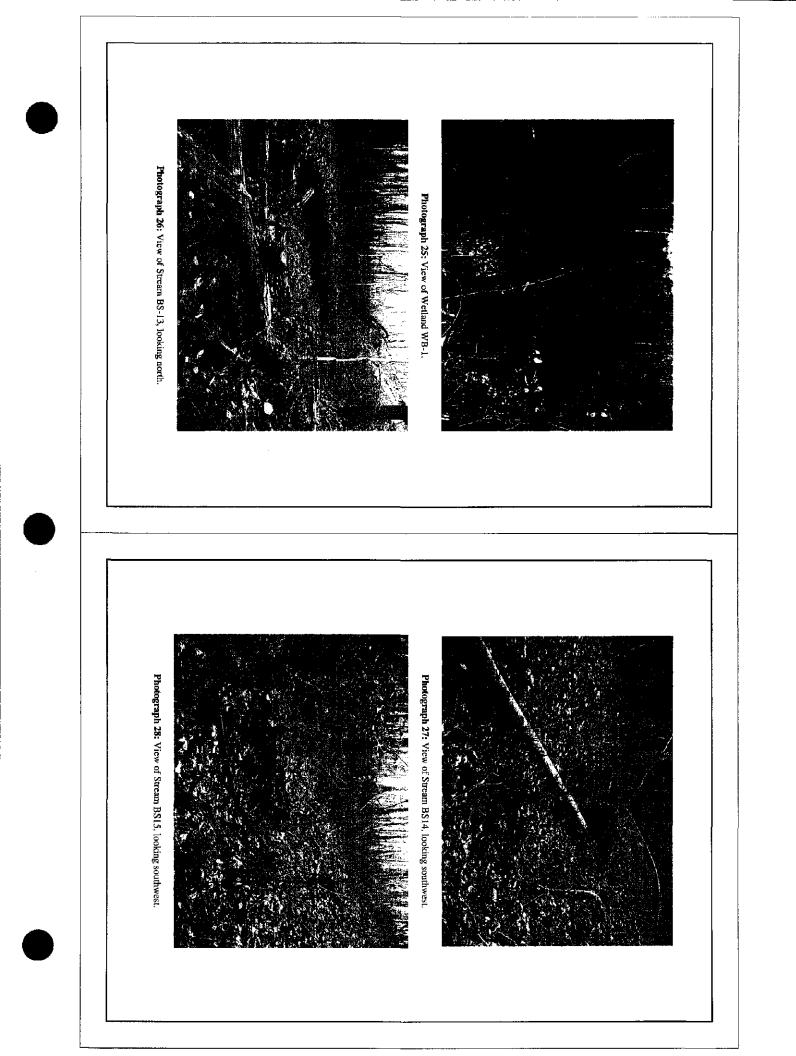


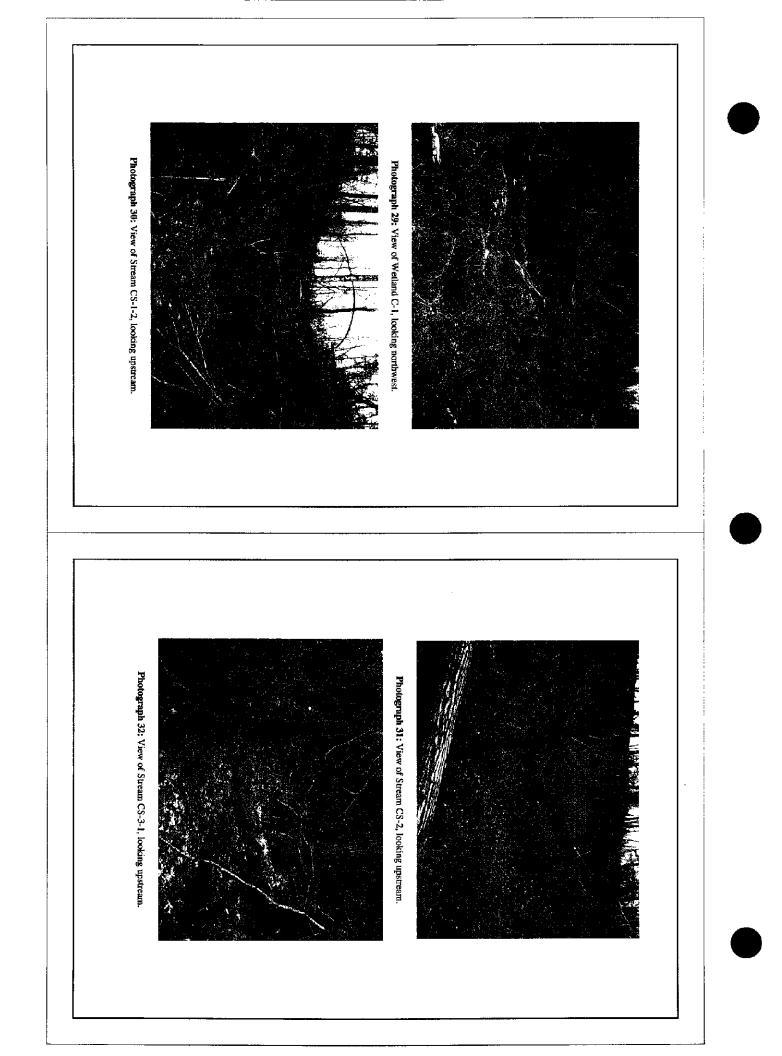


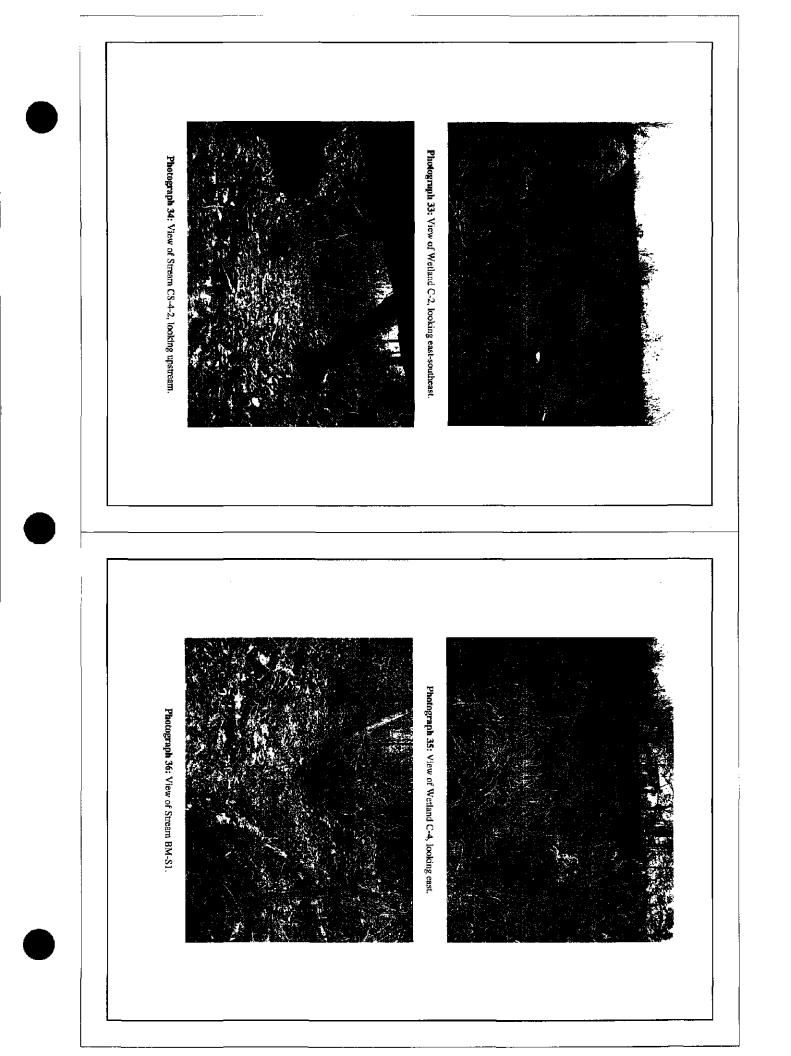


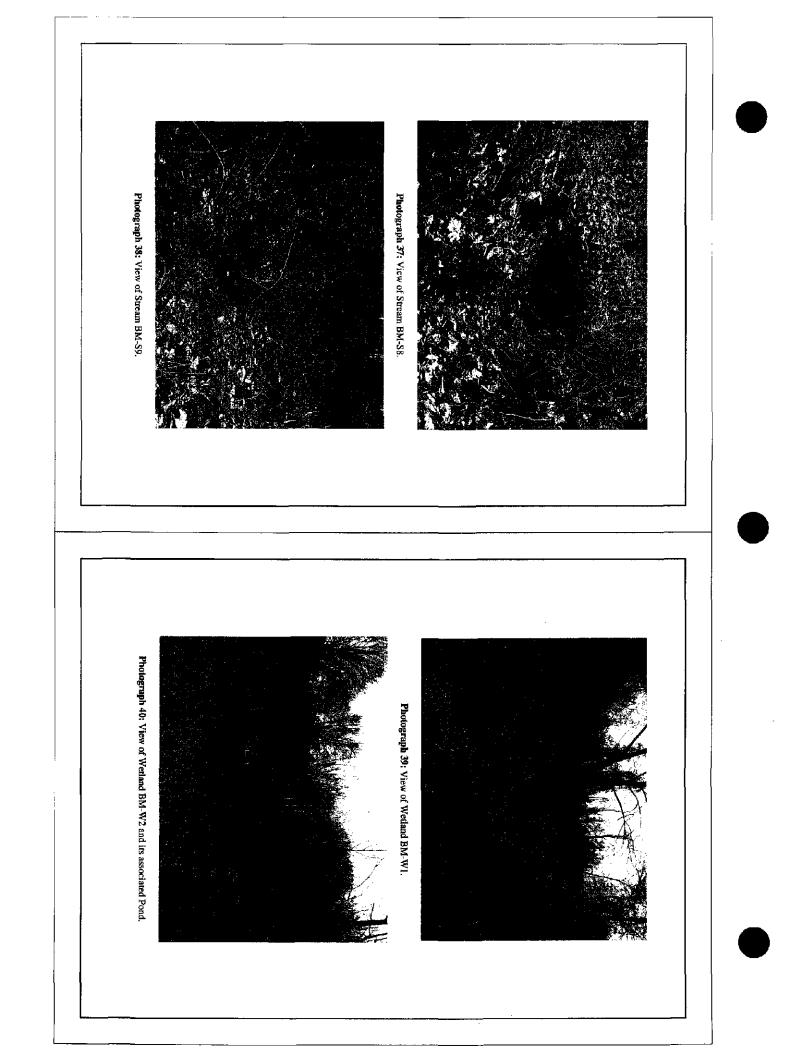


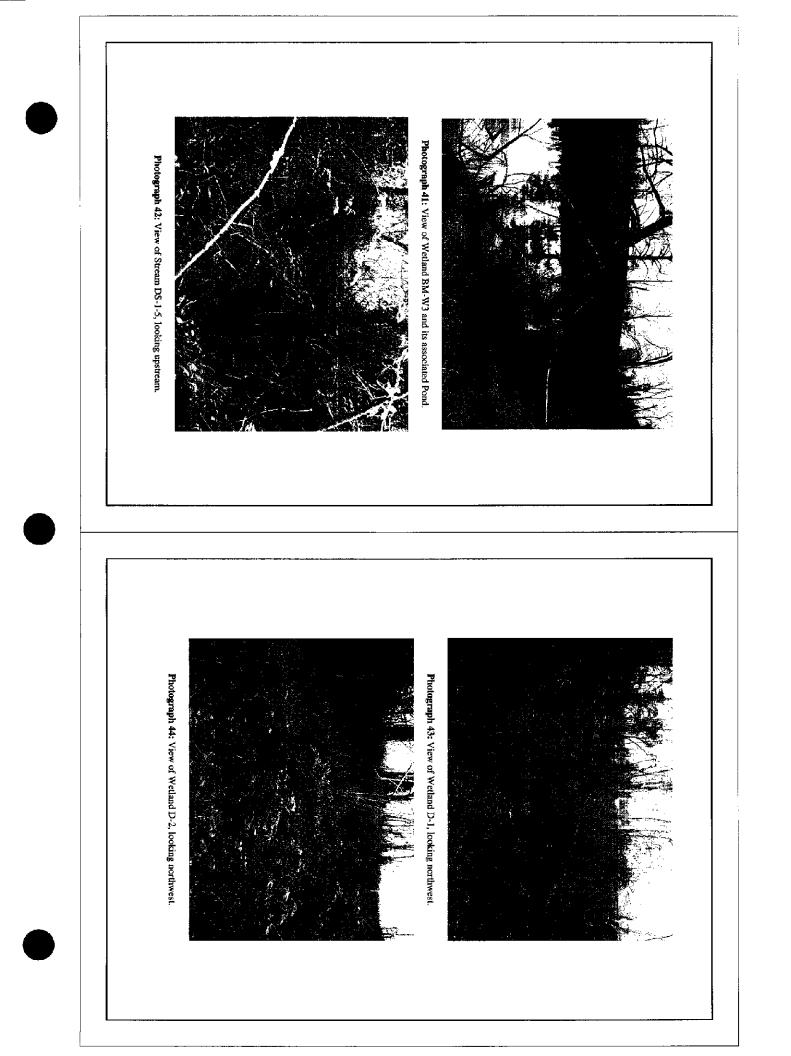


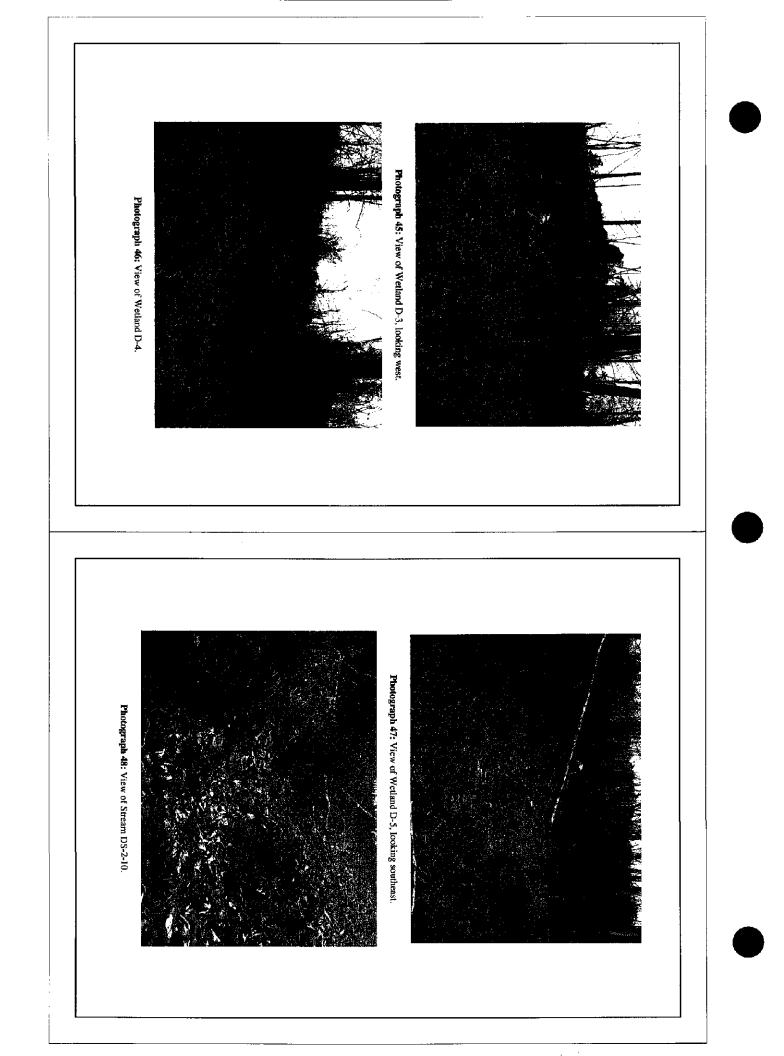


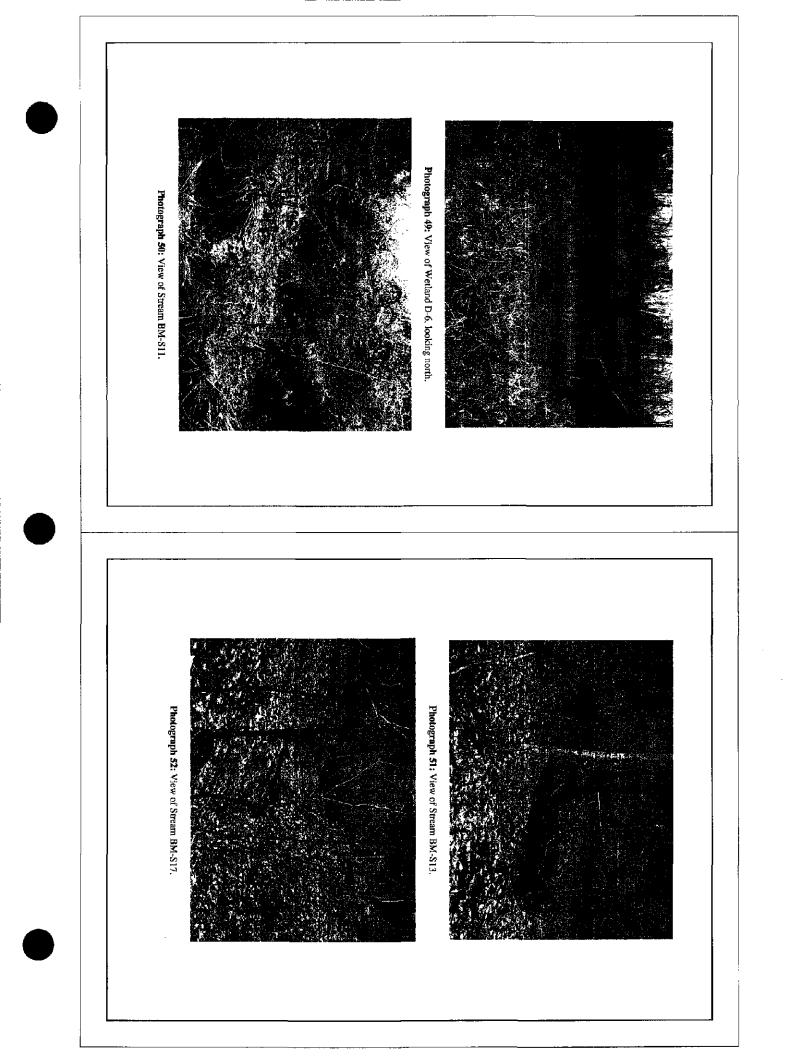


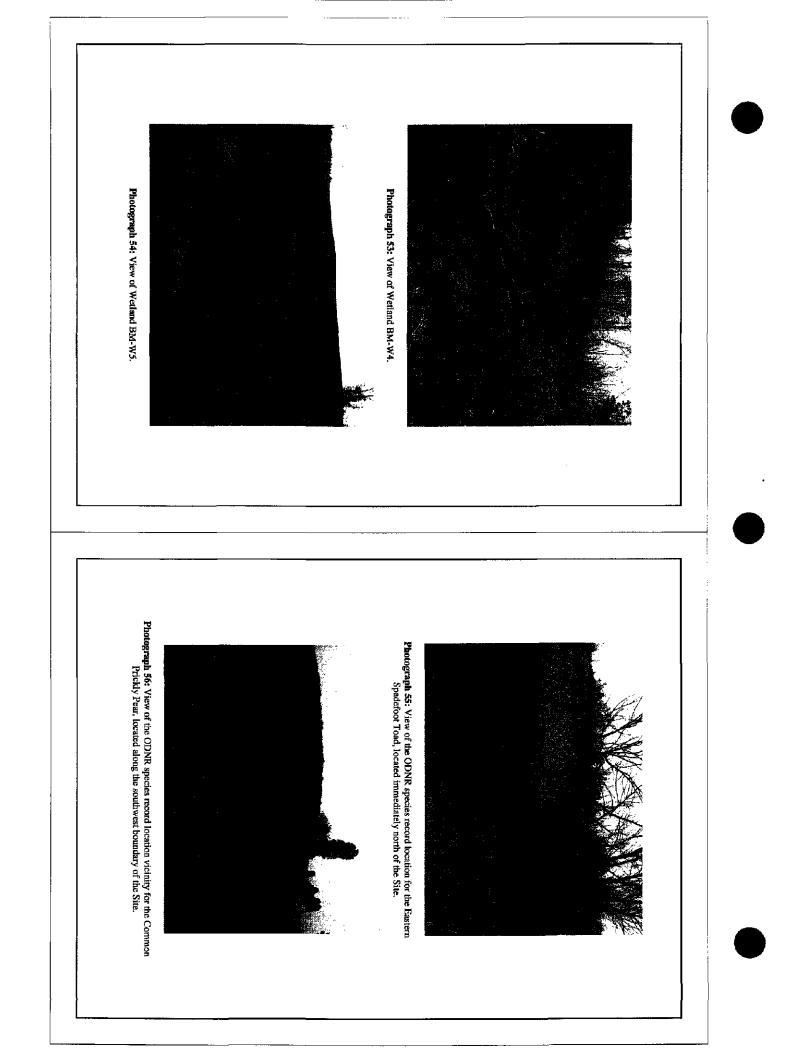












APPENDIX E

AGENCY CORRESPONDENCE



Ohio Department of Natural Resources

BOR TAFT, GOVERNOR

SAMUEL W. SPECK, DIRECTOR Division of Natural Areas & Preserves Nancy Strayer, Acting Chief 1889 Fountain Square, Bldg. F-1 Columbus, OH 43224-1388 Phone: (614) 265-6453 Fax: (614) 267-3096

May 10, 2004

Rebecca Wilson GT Environmental, Inc. 635 Park Meadow Rd., Suite 112 Westerville, OH 43081

Dear Ms. Wilson:

After reviewing our Natural Heritage maps and files, I find the Division of Natural Areas and Preserves has records of rare or endangered species within 5 miles of the GT Environmental, Inc. Ohio 2 project. The site is in Sutton, Lebanon, and Letart Twps., Meigs Co., New Haven and Ravenswood Quadrangles. The maps I have included with this letter display the locations of these records and correspond with the attached list.

There are no existing or proposed state nature preserves at the project site. We are also unaware of any unique ecological sites, geologic features, breeding or non-breeding animal concentrations, champion trees, state parks, state forests, or scenic rivers within the project area. However the search includes the Racine, Old Town Creek, and Lock and Dam 23 Wildlife Areas. Jim Marshall of the Division of Wildlife should be consulted regarding possible impacts to these areas. He can be reached at (614) 594-2211.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although we inventory all types of plant communities, we only maintain records on the highest quality areas. Also we do not have data for all Ohio wetlands. The Division of Wildlife has a statewide wetland inventory that can give you additional data. Their phone number is (614) 265-6300. For National wetlands Inventory maps, please contact Madge Fitak in the Division of Geological Survey at (614) 265-6576. Aerial photos may be obtained from ODOT at (614) 275-1369. USGS maps can be requested directly from the U.S. Geological Survey at 1-888-275-8747.

Please contact me at (614) 265-6409 if I can be of further assistance.

Sincerely,

Butch Grieszmer, Data Specialist Resource Services Group



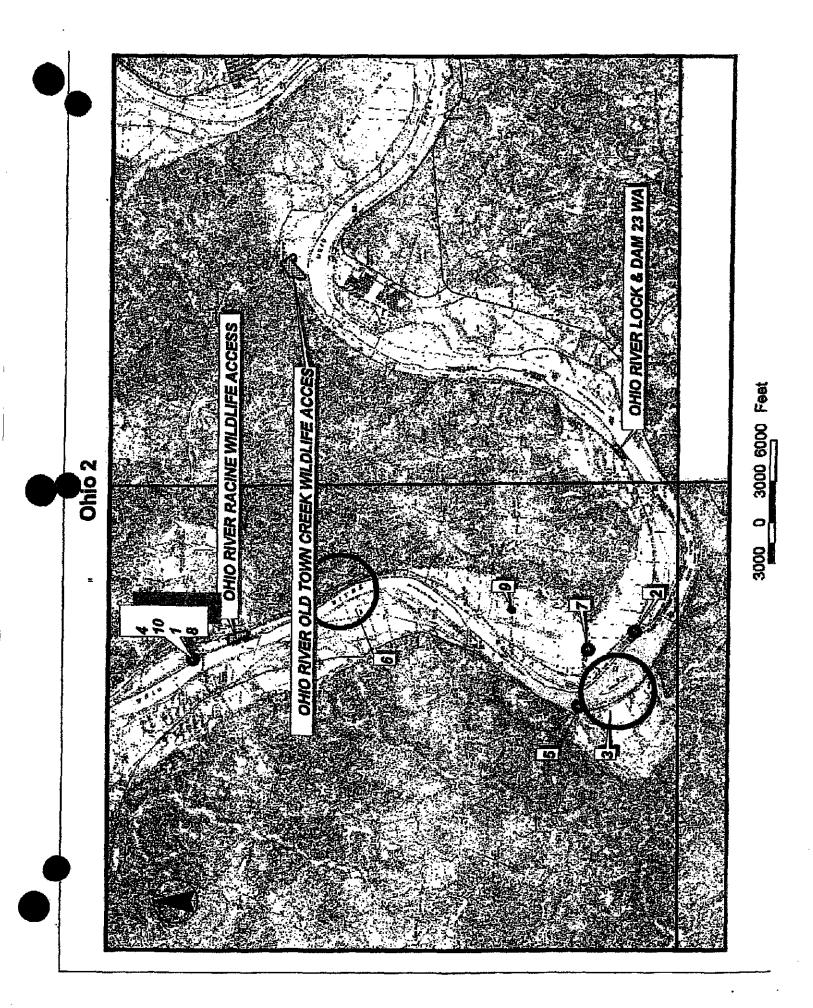
GT Environmental, Inc. Ohio 2 Project

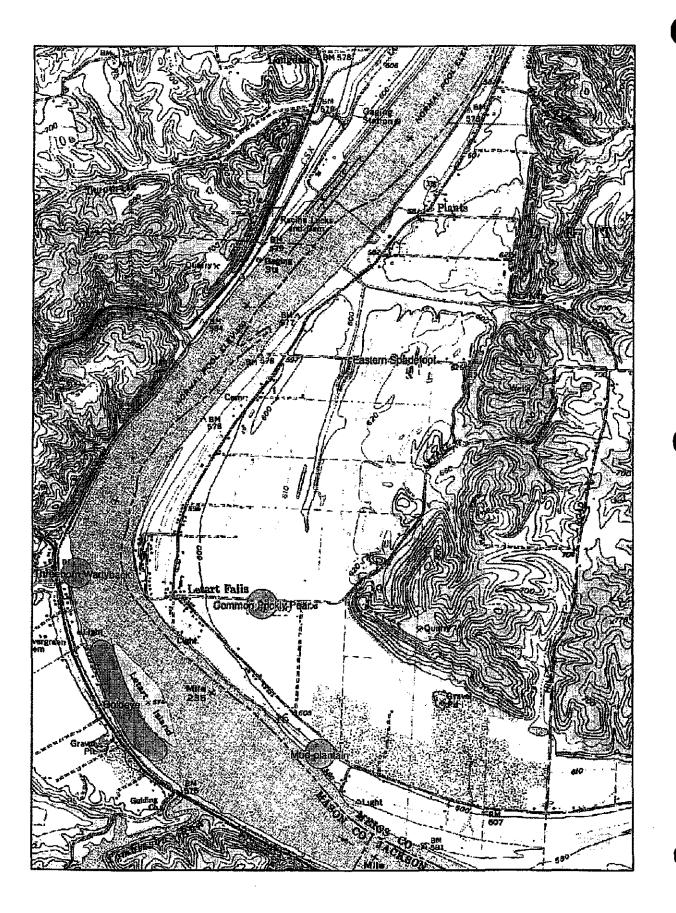
| | Scientific Name | Common Name | State Status | Federal Status |
|----|-------------------------|--------------------------|--------------|----------------|
| • | Cicindela marginipennis | Cobblestone Tiger Beetle | Т | |
| 2 | Heteranthera reniformis | Mud-plantain | E | |
| 3 | Hiodon alosoides | Goldeye | E | |
| 4 | Macrhybopsis aestivalis | Speckled Chub | E | |
| 5 | Obliquaria refiexa | Threehom Wartyback | т | |
| 6 | Obliquaria reflexa | Threehorn Wartyback | Т | |
| 7 | Opuntia humifusa | Common Prickly Pear | P | |
| 8 | Percina copelandi | Channel Darter | Т | |
| 9 | Scaphiopus holbrookii | Eastern Spadefoot | E | , |
| 10 | Spermacoce glabra | Smooth Buttonweed | P | |





E=Endangered FE=Federally Endangered FT=Federally Theatened P=Potentially Threatened SC=Special Concern SI=Special Interest T=Threatened Page 1 of 1





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

July 31, 2006

Lee Pittman U.S. Army Corps of Engineers-Huntington District 502 Eighth Street Huntington, WV 25701

Mike Smith Ohio EPA Division of Surface Water 401 Section **122 South Front Street** Columbus, Ohio 43215

American Municipal Power Generating Station: RE: Submittal of Addendum to the Wetland Delineation, Stream Assessment, and Threatened and Endangered Species Habitat Survey

Attached please find an Addendum to the Wetland Delineation, Stream Assessment, and Threatened and Endangered Species Habitat Survey ("Report") prepared by URS on behalf of American Municipal Power-Ohio, Inc. ("AMP-Ohio") for AMP-Ohio's American Municipal Power Generating Station project in Meigs County, Ohio.

If you have any comments on this Report, please do not hesitate to contact me at your earliest convenience at 614-337-6222. In addition, if you have specific technical questions, please feel free to contact James Nicholas at URS directly at 513-419-3407.

Sincerely,

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

Attachment cc: Jerry Jones, AMP-Ohio, James Nicholas, URS



onio: Ampersi • Arcania • Arcania • Brach City • Blanchetter • Blanchetter • Bowling Cristi • Blanchett • Brañ • Caret • Ceuna • Clumbind CIA · GEOMOTER · GRAFTON ANA = COLINEUS = CUSTAR TOWN SALLS . CYGNET . DESCUSE . COVER ELICARDO + ELMORE + GALICIA + GE CALL TO A LOCAL SALAR ALL WE'F ADENSIÓ A Á MENDON + MULAN + MINETEN + MONTHER + MONTHER + MANOLON + NEW DREADS + NEW KNOWVILLE + MENTON FALLS + MAROR + CHEMIN + CHEC CHE + CHEMILE unes, ale o pumblicalle o pumbler o pumalifi o prospect o republic o st. Clamballe oft. Maria o seally o basch o stath anna o specto republic o st. Clamballe o timaria o specto and re ET CITY TVERSAULES + WADSWCRITH + WAPAKONETA HLOW SPRINGS WYNESHELD . WELLING . WESTERVILLE . WHAT N .WOODSHED . WOODVILL . WANNA BRIN + BARDY + CAMARINA + FUNCANIAON + FAST COMMARCH + CUNCTON CAY + CRAID + SHOVE CAY + MADEDO + COMPRENDER + BARTIONAN ASSIALE . (HAG-R24) . IEWINKINY . MICOLETOWN . MITTINNING . NEW WANEVEDN . OPP-ALG . GUARANTOWN . IOVANKIN . SL OLAR . SCHUMALL HAVEN UNAVERIAL & WASSINGOWN & WEATHERLY ABGINIA: BECCHED = DENVILLE & MARINEMILLE = RICHLANDS WEET VIRGINIA TEW MADIMISYY (E + PHE PH MICHIGAN DOWAGE AC + WYAKOOTH



Municipal Power-Ohio, Inc



AMP-Ohio 2000 Auport Drive Columbus, Ohio 33210 • Phones 614/337-6222 • Fast 614/337-6220 • Avianamp oblig.org

URS

June 19, 2006 Ms. Lee Pittman Regulatory Branch U.S. Army Corps of Engineers, Huntington District 502 Eighth Street Huntington, West Virginia 25701-2070

Re: Comments on Wetland Delineation, AMP-Ohio Coal-Fired Generation Facility, Letart Falls, Ohio

Dear Ms. Pittman:

URS is pleased to provide the attached addendum to the wetland delineation, stream assessment, and threatened and endangered species habitat report for the AMP-Ohio project site in the Letart Falls area of Meigs County, Ohio. Each of the comments provided by Ms. Lee Pittman of the USACE and Mr. Mike Smith of OEPA 401 Section during the May 12, 2006 site visit were considered when making changes to the original report. This addendum supersedes the original wetland delineation, stream assessment, and threatened and endangered species habitat report, however, any conclusions drawn from the original report have not changed. A summary list of the changes addressed in the addendum is provided below. Figures, photographs, and data forms are included in the appendix to the attached addendum.

- 1) The jurisdictional limit of Stream bs-1-3 was extended approximately 130 feet west-northwest, as shown on Revision 1, Figure 3B.
- 2) The jurisdictional limit of Stream bs-8 was extended approximately 800 feet northwest, as shown on Revision 1, Figure 3B.
- 3) Ohio EPA observed a salamander in Stream bs-13 during the May 12, 2006 site visit and commented upon the unusual presence of a pool in a headwater stream. Therefore, Ohio EPA believes Stream bs-13 should be classified as a Class III headwater stream. Stream bs-13 was classified as a Class III headwater stream in the original wetland delineation, stream assessment, and threatened and endangered species survey report, dated March 2006.
- 4) URS identified Wetland d-6 in the wetland delineation report, dated March 2006, as a Palustrine open water/emergent (POW/PEM) wetland area. During the May 12, 2006 site visit, it was stated that the jurisdictional limits of this wetland needed to be revised. Pursuant to these comments, the central portion of this previously delineated wetland has been excluded as jurisdictional wetland. An emergent jurisdictional wetland fringe has been identified along the edge of this open water pond, as shown on Revision 1, Figure 3B.

URS Corporation 36 East Seventh Street, Suite 2300 Cincinnati, OH 45202 Tel: 513-651-3440 Fax: 513-651-3452 WWW.urscorp.com



Ms. Lee Pittman June 19, 2006 Page 2

- 5) The jurisdictional limit of Stream bm-s18 was shortened by approximately 200 feet, as shown on Revision 1, Figure 3C.
- 6) During the May 2006 site visit, it was determined that the character and class of Stream bm-s13 changes the Site from Class III to Class II headwater stream. A second HHEI evaluation, identified as bm-s13b, was performed upstream of HHEI sampling location bm-s13 to document this change. Stream bm-s13b scored 55/100, which is indicative of a Class II headwater stream. The HHEI data sheet for this stream and photograph are provided in the appendix to the addendum.
- 7) URS identified an additional wetland (Wetland d-7) during the May 2006 site visit that was not previously identified in the Wetland Delineation Report. Wetland d-7 was identified approximately 220 feet south of Wetland c-2, as shown on Revision 1, Figure 3C. The ORAM score for this wetland was 28/100, which is indicative of a Category 1, or low quality wetland. The USACE and ORAM data sheets for this wetland and accompanying photograph are provided in the appendix to the addendum.

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Please review the enclosed materials and call James Nicholas (513-419-3407) if you have any questions pertaining to the attached addendum or to the wetland delineation, stream assessment, and threatened and endangered species habitat survey report.

Sincerely, URS Corporation

Von Dart

Joey Van Skaik Environmental Scientist

6 could be

James Nicholas, Ph.D. Project Manager

Addendum to the Wetland Delineation, Stream Assessment, and Threatened and Endangered Species Habitat Survey, Proposed AMP-Ohio Coal Fired Generation Power Plant Site, Meigs County, Ohio

This is an addendum to the original wetland delineation report, stream assessment, and threatened and endangered species habitat survey conducted in November and December, 2005. This addendum supersedes the original report and is based on the field review conducted by URS, USACE, and OEPA in May, 2006. Summary tables of the wetlands and streams encountered in the field survey and review follow the text. Figures, photographs, and data forms for the revisions made to the original report are included in the attached appendix. All other figures, photographs, and data forms can be found in the original report, dated March 2006.

URS conducted a jurisdictional wetland delineation, stream assessment, and threatened and endangered species survey of an approximately 1,000-acre site, located in the Letart Falls area, Meigs County, Ohio. AMP Ohio is proposing construction of a 1,000 megawatt (MW), coal fired electric generating facility at the Site along with a coal combustion by-products landfill, and a barge dock and unloading facility. Site delineation and assessment work began November 28, 2005 and was completed December 2, 2005. A field review was conducted on May 12, 2006 by URS, USACE, and OEPA.

Twenty-two wetlands, including 5 different Cowardin wetland types were identified within the project study area, including 15 palustrine emergent wetlands, 2 palustrine emergent/scrub-shrub wetlands, 2 palustrine emergent/forested wetlands, 1 palustrine open water wetland, and 2 palustrine open water/emergent wetlands. Identified wetlands were evaluated utilizing ORAM v5.0 qualitative evaluation method for categorizing wetlands. The ORAM scores for the wetlands indicated the following: 6 Category 1 emergent wetlands, 1 Category 1 wetland with emergent and forested components, 9 Category 2 emergent wetlands, 2 Category 2 wetlands with emergent and scrub-shrub

1

components, 1 Category 2 wetland emergent and forested components, 1 Category 2 open water wetland, and 2 Category 2 mixed emergent/open water wetlands. No Category 3 wetlands were identified during the November and December field investigation or the May field review.

Sixty-eight primary headwater habitat evaluations (HHEI) were conducted on the sixtyseven streams identified within the limits of the study area. The survey identified the following HHEI stream classes: 23 Class I streams, 7 Modified Class I streams, 20 Class II streams, 7 Modified Class II streams, and 10 Class III streams.

ODNR-DNAP reported 10 records of rare or endangered species within 5 miles of the Site. Of these ten species records, ODNR identified records of the Eastern Spadefoot Toad (*Scaphiopus holbrookii*) and the Common Prickly Pear (*Opuntia humifusa*) in the immediate project vicinity. The USFWS literature review indicated that the proposed project is located within the range of the federally endangered Indiana bat (*Myotis sodalis*) and three federally endangered species of mussels. These mussel species include the pink mucket pearly mussel (*Lampsilis orbiculata*), the fanshell mussel (*Cyprogenia stegaria*), and the sheepnose mussel (*Piethobasus cyphyus*). None of theses species of concern were identified during the November and December field investigation or the May field review. However, potential habitat for the Indiana Bat, Eastern Spadefoot Toad, and several aquatic species of concern were identified during the field investigation.

2

SUMMARY TABLE OF WETLANDS AT THE AMERICAN MUNICIPAL POWER-OHIO (AMP-OHIO) LETART FALLS, OHIO PROPOSED COAL FIRED GENERATION POWER PLANT SITE

| | | | ORAM | | |
|-----------------------|---------------------------|---|----------|-------------------|------------------|
| Wetland Identifier | Cowardian Wetland Type | 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - | | Mapped P Soit* | Observed Soil |
| afs-wl | PEM | 0.06 | 8(1) | No | sandy loam |
| an-wi | PEM/PSS | <u> </u> | 38 (2) | LaB/LaD | silty clay |
| bm-wl | PEM | 0.07 | 27 (1) | UgD | silty loam |
| bm-w2 | PEM | 0.33 | 35 (2) | UgE | silty loam |
| bm-w3 | PEM | 0.18 | 39 (2) | UgD/UgE | silty loam |
| bm-w4 | POW/PEM | 0.07 | 43 (2) | UgE | silty clay loam |
| bm-w5 | PEM | 0.27 | 38 (2) | UgD | silty loam |
| c-1 | PEM | 0.02 | 24 (1) | UgD/UgE | loam |
| c-2 | PEM | 0.04 | 37 (2) | UgD | sandy silty loam |
| c-3 | PEM | 0.01 | 32.5 (2) | UgE | silt |
| c-4 | PEM | 0.02 | 23 (1) | UgD | silty clay |
| d-1 | PEM | 0.03 | 39.5 (2) | UgD | silty clay |
| d-2 | PEM | 0.15 | 38 (2) | UgD | loam |
| d-3 | PEM/PFO | 0.11 | 27 (1) | UgD/UgE | loam |
| d-4 | PEM/PFO | 0.07 | 44 (2) | UgD/UgE | clay loam |
| d-5 | PEM | 0.02 | 37 (2) | UgE | silty clay loam |
| <u>d-6</u> | POW/PEM | 0.09 | 32 (2) | UgE | silty clay |
| w-1 | PEM/PSS | 0.07 | 44 (2) | UgE | silty clay loam |
| w-2 | PEM | 0.18 | 21 (1) | LaD | sandy loam |
| wb-1 | POW | 0.18 | 43.5 (2) | UgE | clay |
| w <u>b-</u> 2 | PEM | 0.09 | 33.5 (2) | LaD | silty clay |
| wd-7 | PEM | 0.08 | 28 (1) | UgD/UgC2 | silty loam |
| Total wetla | and acreage** | 2,32 | | | |

* soil mapped at wetland location

** total is combined acreage of each wetland type: 1.55 acres (PEM); 0.25 acres (PEM/PSS); 0.16 acres (POW/PEM); 0.18 acres (PEM/PFO); and 0.18 acres (POW).

SUMMARY TABLE OF HEADWATER STREAMS AT THE SITE

| Stream Identifier | HHEI Score | HHEI Class | Stream Identifier | HHEI Score | HHEI Class |
|----------------------|---------------|-------------------|----------------------|---------------|-------------------|
| | [| | | | |
| an-s1 | 42 | Class II | bs-9 | 13 | Class I |
| as-si | 41 | Modified Class II | bs-10 | 54 | Class II |
| as-s2 | 41 | Modified Class II | bs-11 | 55 | Class III |
| bm-s1 | 32 | Class II | bs-12 | 43 | Class II |
| bm-s2 | 11 | Class I | bs-13 | 86 | Class III |
| bm-s3 | 11 | Class I | bs-14 | 49 | Class II |
| bm-s4 | 12 | Class I | bs-15 | 40 | Class II |
| bm-s5 | 21 | Class I | bs-16 | 47 | Class II |
| bm-s6 | 41 | Class II | <u>cs-1</u> | 25 | Class I |
| bm-s7 | 17 | Class I | cs-1-2 | 69 | Class III |
| bm-s8 | 11 | Class I | cs-2 | 42 | Class II |
| bm-s9 | 53 | Class II | cs-3-1 | 47 | Class II |
| bm-s10 | 16 | Class I | cs-3-2 | 58 | Class III |
| bm-s11 | 23 | Class I | cs-4 | 34 | Modified Class II |
| bm-s12 | 36 | Class II | cs-4-2 | 77 | Class III |
| bm-s13b | 55 | Class II | cs-5-2 | 23 | Modified Class I |
| bm-s14 | 55 | Class III | сs-б | 21 | Class I |
| bm-s15 | 23 | Class I | ds-1-5 | 45 | Modified Class II |
| bm-s16 | 40 | Class II | ds-1-1 i | 22 | Class I |
| bm-s17 | 35 | Class II | ds-2-2 | 40 | Class II |
| bm-s18 | 24 | Class I | ds-2-5 | 59 | Class III |
| bm-s19 | 24 | Class I | ds-2-10 | 52 | Class III |
| bm-s20 | 33 | Class II | ds-3a | 17 | Modified Class I |
| bm-s21 | 23 | Class I | ds-3b | 17 | Modified Class I |
| bs-1 | 28 | Modified Class I | ds-3c | 17 | Modified Class I |
| bs-1-2 | 40 | Modified Class II | ds-4 | 31 | Modified Class II |
| bs-1-3 | 29 | Modified Class I | s-1 | 27 | Class I |
| bs-2 | 48 | Modified Class II | s-2 | 68 | Class III |
| bs-2-2 | 43 | Class II | s-3 | 81 | Class III |
| bs-3 | 23 | Class I | s-4 | 37 | Class II |
| bs-4 | 15 | Class I | s-5 | 64 | Class II |
| bs-5 | 19 | Class I | s-б | 12 | Class I |
| bs-6 | 11 | Class 1 | s-7 | 12 | Class I |
| bs-8 | 16 | Modified Class I | | | |



APPENDIX

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

| Project/Site: <u>Rotant Gralle anon</u> Applicant/Owner: <u>AMP-OH</u> Investigator: <u>JN/JAV</u> | | Date: <u>5/12/06</u> County: <u>Maist</u> State: <u>Chur</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.) | Yes No Yes No | Community ID : PEM Transect ID: - Plot ID: D-7 |

VEGETATION

| Dominant Plant Species Stratum Indicator | Dominant Plant Species | Stratum Indicator |
|--|------------------------|-------------------|
| 1. Jypha latifalia H_OBL | 9 | |
| 2 compationis caponesis H FACW | 10 | |
| 3 Junices efficience H FACW+ | II | |
| . Cared Sp H FAC-OBL | 12 | |
| 5 toncera japonica H FAC- | 13 | |
| · Jopridendron radicine H FAC | 14 | |
| 7 | 15 | |
| 8 | 16 | |
| Percent of Dominant Species that are OBL. FACW or FAC (excluding FAC-). | 952 | |
| Remarks: | | |
| withand veget | olion | |

HYDROLOGY

| Recorded Data (Describe in Remarks). Stream, Lake, or Tide Gauge Aental Photographs Other No Recorded Data Available | Wetland hydrology Indicators: Primary Indicators: Inundated X Saturated in Upper 12 Inches Water Marks Drift Lines |
|--|---|
| Field Observations: Depth of Surface Water. Depth to Free Water in Pit: Depth to Saturated Soil: | Sedimant Deposits Drainage Patterns in Wellands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12" Water-Stained Leaves Local Soil Survey Data X FAC-Neutral Test Other (Explain in Remarks) |
| Remarks: westland bydr | ology |

SOILS

| 80ILS | <u>D-7</u> |
|---|---|
| Map Unit Name UgD - Updur-Hulpun complex, 15 to 25% de (Series and Phase): UgCD - Upshur- Hulpun complex, Drainage Class: etc 15% elgece Field Observation Texonomy (Subgroup): <u>Typic hapludalfa</u> Confirm Mapp | 15 Ug D-well |
| Profile Description: Maintx Color Moltile Colors Moltile Moltile Texture, C Depth (Munsell Moist) (Munsell Moist) Moltile Colors Moltile Abundance/Contrast Structure, O-5 ⁿ A 107R ⁶ /2 57R ⁵ /8 c/m sutty 5-10 ⁿ B 107R ⁶ /2 57R ⁵ /8 c/m sutty | Concretions, elc <u>f loam</u> <u>loam</u> |
| Hydric Soil Indicators: Concretions Histosol Concretions Histic Epipedon High Organic Content in Suria ce La Suttidic Odor Organic Streaking in Sandy Soils Aquic Moistura Regime Listed on Local Hydric Soils List X Reducing Conditions · Listed on National Hydric Soils List X Glayed or Low-Chroma Colors Other (Explain in Remarks) | yer Sandy Solls |
| Remarks: Mydric sail core | |

WETLAND DETERMINATION

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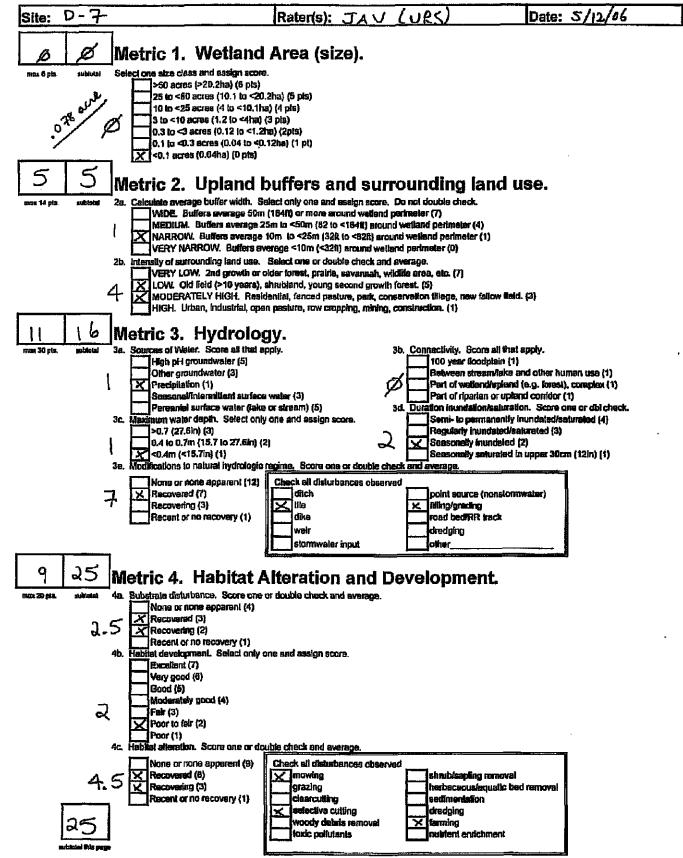
| Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present? | 999 | No No No | (Circie) | Is this Sampling Point Within a Welland? (| (Circle) Yes No |
|--|-----|----------------|----------|--|--------------------|
| Remarks: | | | | | |

Approved by HQUSACE 3/92

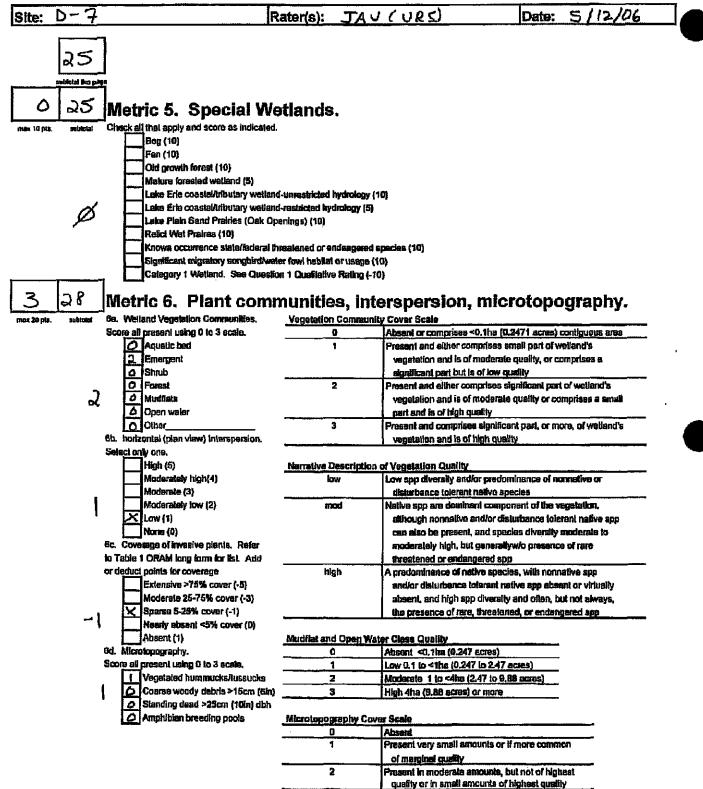
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ORAM v. 5.0 Field Form Quantitative Rating



ସଟ GRAND TOTAL (max 100 pts)

Refer to the most recent ORAS Boore Calibration Report for the acading breakpoints between webland antegories of the following address: http://www.eps.xtais.aiv.us/dow/40/1.break

3

Present in moderate or greater emounts

and of highest quality

ChicEPA Primary Headwater Habitat Evaluation Form HHEI Score (sum of metrics 1, 2, 3): 55

Care I

| SITE NAMELOCATION AMP - Ohio | |
|--|---------------------------|
| SITE NUMBER BM - SIB B RIVER BASIN DRAINAGE AREA (m#) | |
| LENGTH OF STREAM REACH (ft) LAT LONG RIVER CODE RIVER MILE | _ |
| DATE 5/13/06 SCORER JN/JAV COMMENTS | <u> </u> |
| NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructio | 1945 |
| STREAM CHANNEL SINONE / NATURAL CHANNEL CORECOVERED CORECOVERING CORECOVER NO RECOVER | i Y |
| MODIFICATIONS: | |
| TYPE PERCENT TYPE PERCENT Multiple Multi | iHEI etric pints |
| | IX = 40 |
| 30 % GRAVEL (2-84 mm) [9 pts] 0 0 0 MUCK [0 pts] | 5 |
| D SAVD (<2 mm) [e pe] D D ARTIPICIAL [a pre] } | |
| | ÷₿ |
| SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: | • |
| evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check OWLY one box): > 30 cantimeters [20 pts] > 5 cm - 10 cm [15 pts] > 22.5 - 30 cm [30 pts] < 5 cm [5 pts] | Depth ax = 30 |
| COMMENTSMAXIMUM POOL DEPTH (centimeters): | |
| 3. BANK FULL WDTH (Measured as the average of 3-4 measurements) (Gheck ONLY one box): Ba > 4.0 meters (> 13) [30 pts) S > 1.0 m - 1.5 m (> 3' 3" - 4" 6") [16 pts] W > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts] S s t.0 m (< 3' 5") [5 pts] | inkfull //dth axe30 |
| COMMENTSAVERAGE BANKFULL WIDTH (meters) | |
| This information <u>must</u> also be completed RIPARIAN ZONE AND FLOODPLAIN QUALITY ANOTE: River Left (L) and Right (R) as looking downstream from the second | |
| L,R (Per Bank) L, R (Most Predominent per Bank) L, R SS ST Wide >10m SSSS Mature Forest, Weijiand CI Conservation Tillage | |
| Moderate 5-10m Street Immalure Forest, Shrub or Old D Urban or industrial Field | |
| CI CI Nerrow Som | |
| Image: State of the state o | |
| FI.OW REGIME (At Time of Evaluation) (Check ONLY one box): Stream Flowing I Moist Channel, isolated pools, no flow (intermittent) Subsurface flow with isolated pools (interstitial) I bry channel, no water (Ephemoral) COMMENTS | |
| SINUOSITY (Number of bands per 61 m (200 ft) of channel) (Check ONLY one box): None 1.0 43 2.0 3.0 0.5 1.5 2.5 33 | |
| STREAM GRADIENT ESTIMATE Figure (0.5 Moderate) Figure (0.5 Moderate) Figure (0.5 Moder | |

October 24, 2002 Revision

BM-SIBB

| · · · · · · · · · · · · · · · · · · · | (If Yes, Attach Completed CHE) Form) |
|--|---|
| DOWNSTREAM DESIGNATED USE(S) | |
| | 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 Hoven, UV-OH | NRCS Soil Map Page: NRCS Soil Map Stream Order |
| County: Meigs To | |
| MISCELLANEOUS | |
| Base Flow Conditions? (Y/N): Date of lest precipitation: | Unknown ausnitiv: unknown |
| Photograph Information: | |
| Elevated Turbisity? (Y/N): Canopy (% open):} | 5-20% |
| Nete samples collected for water chamistry? (YIN): <u>N</u> (Note | lab sample no. or id, and allach results) Lab Number |
| Field Measures: Temp (*C) Dissolved Oxygen (mg/i) | pH (S.U.) Conductivity (µmhos/cm) |
| | ioi, please axplein: |
| - III COMPUTE ISSUE ISSUE SCHERAR ALLIER BROUDI (1114) | ol, pease exprem: |
| | ₩₩₩ |
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| Additional comments/description of pollution impacts: | |
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October 24, 2002 Revision

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Photograph 1: View of Stream bm-s13b, looking east-southeast.



Photograph 2: View of Wetland d-7, looking north-northwest.





APPENDIX 07-3

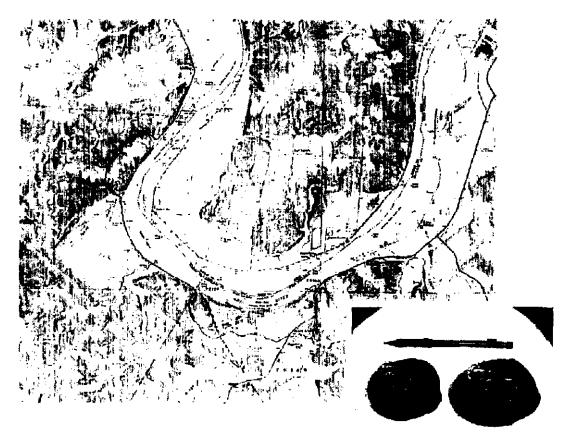
MUSSEL SURVEY

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Freshwater Mussel Survey of the Ohio River at AMP-Ohio's Proposed Generating Facility (Ohio River Mile 236-237)

FINAL



Prepared for: URS 36 East Seventh Street, Suite 2300 Cincinnati, OH 45202

Prepared by: EA Engineering, Science, and Technology 15 Loveton Circle Sparks, MD 21152

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December 26, 2006

1.0 INTRODUCTION

AMP-Ohio is applying for a Section 10 permit under the Rivers and Harbors Act of 1899 for construction of a proposed generating facility in Meigs County, OH. An assessment of the existing biological conditions in the project area is required as part of the permit application, prior to construction or dredging activities. As part of evaluating the proposed instream construction activities, the U.S. Fish and Wildlife Service (FWS) determined that a qualitative survey of the freshwater mussel fauna in the vicinity of the proposed construction sites was necessary to ensure that activities would pose no harm to federally listed mussel species. Several federally endangered mussel species have been reported by FWS as present in Meigs County Ohio and Mason County West Virginia, where both counties border the project site (FWS 2006, FWS 2002):

<u>Meigs Co., OH</u> *Cyprogenia stegari*a (fanshell)

Lampsilis abrupta (pink mucket) Plethobasus cyphus (sheepnose) Mason Co., WV Lempsilis abrupta (pink mucket)

In this reach of the Ohio River, the state of West Virginia has jurisdiction over the natural resources of the river, and tables included in the results section of this report reflect that jurisdiction. This mussel survey was designed to define the presence and abundance of freshwater mussel species within the vicinity of the proposed project site upstream of the Racine Lock and Dam (ORM 236-237).

A study plan was developed and provided to US Fish and Wildlife Service (FWS) and West Virginia Department of Natural Resources (WV DNR) for review and comment. Ms. Janet Clayton (WV DNR), Ms. Barbara Douglas (FWS), and Ms. Patricia Morrison (FWS) provided comment via email or phone calls. Ms. Clayton included the following changes to the study plan: (1) a qualified malacologist should be present, (2) update the definition of fresh dead shells to include those that have shiny nacre and intact hinge, (3) redefine mussel concentration to include 0.5 mussels/m², (4) note that the time limitation for conducting surveys is from May to October, and (5) include minimum visibility requirements (at depth) to be \geq 20 inches. Ms. Morrison sent minor suggestions, which included similar comments to Ms. Clayton's. However she added that while the ORVEMS (2004) protocol suggests using 100 m long transects, this survey may need to include longer transect lines as needed to account for project-related activities beyond the standard 100 meters. Ms. Douglas had no additional comments beyond what WV DNR and FWS had already provided.

A final study plan was sent to Ms. Clayton in September 2006 along with a scientific collecting permit application. The collection permit was issued to Mr. Alan Christian (Arkansas State University) who accompanied EA during the survey. All comments and changes to the draft study play were included in the final study plan (Appendix A).

1

2.0 METHODS

2.1 Mussel Survey

During October 11-12, 2006, the area proposed for use by AMP-Ohio was surveyed for unionid mussels in the mainstem Ohio River. Riverine conditions during the survey were typical for flow conditions (22,000 cfs) and gauge heights (25 ft) during the month of October (USGS 2005). The station is located on the Ohio bank between Ohio River Mile (ORM) 236-237, just upstream of the US Army Corps of Engineer's Racine Lock and Dam (Figure 2-1).

A qualitative survey was conducted to establish baseline conditions and determine the presence of live mussels in the project area. Mainstream Commercial Divers, Inc. (MCDI) provided a professional dive crew that was certified to meet OSHA requirements. The divers used surface supplied diving equipment with voice communications to conduct this survey. Dr. Alan Christian of Arkansas State University was retained by EA to provide additional taxonomic expertise while onsite. Prior to conducting field activities, Dr. Christian obtained scientific collecting permits from the state of West Virginia. Substrate characterization and water quality measurements were also conducted throughout the project reach.

This qualitative survey was designed to meet the following conditions:

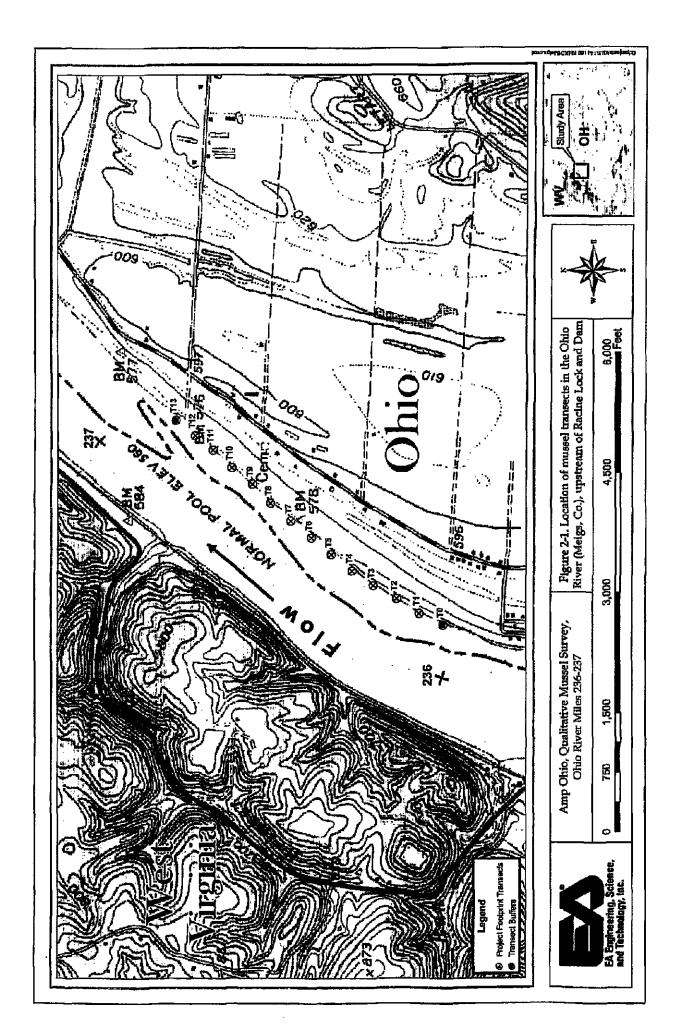
- collect and identify live mussels adjacent to the proposed generating facility,
- collect and identify fresh dead¹ mussels located at the proposed generating facility,
- estimate the abundance and density of live species collected from the survey site, and
- compartmentalize live/fresh dead individuals using external annuli into two age groups:
 <3 years of age and >3 years of age.

Qualitative Sampling of Mussels

The shoreline footprint of the proposed power station is approximately 1,200 m (3,936 ft) in length. Activities within the project footprint include the construction of an offshore intake structure (~40 m in length from the shoreline) located near the center of the project, and numerous mooring cells located near the most upstream reach of the project. Because these project-related activities were less than 100 m from the shoreline, transects used in this study were not extended beyond the standard 100 m length. Mussel concentrations (i.e. defined as 0.5 animals per square meter; see Appendix A Study Plan) at this project were not high enough to require extended (3-4 additional transects) upstream and downstream buffer zones, however, we did include one additional transect at the upstream and downstream ends of the project boundary.

All methods were conducted using the Ohio River Valley Ecosystem Mollusk Subgroup (ORVEMS) protocol for sampling mussels in the Ohio River (ORVEMS 2004). A series of transects were established throughout the project area to survey for live mussels (Figure 2-1). A total of 14 transects were surveyed for the project (Table 2-1). The first transect (T1) was located at the upstream project boundary and all subsequent transects (T2-T12) were positioned downstream of the first transect, 100 m apart. Two additional transects (T0 and T13) were included as buffers for the upstream and downstream boundaries, both positioned 100 m apart

Fresh dead shells in this study will be defined as any shell that has shiny nacre and intact hinge.



from the existing survey transects. Each transect was established perpendicular to flow and marked at every 10 m segment. For each 100 m transect length, there were ten, 10-m segments along each transect. Each 10-m segment was sampled individually by the divers, and any mussels collected in that segment were maintained as a separate replicate. Some excavation (~10 cm) and disturbance of the surface sediments occurred during the survey to collect mussels for species identification.

| | AMP-Ohio Station (~1,200 m shoreline) |
|---|---------------------------------------|
| | Project area = 12 transects (T1-12) |
| 1 | Upstream Buffer = 1 transect (T0) |
| | Downstream Buffer= 1 transect (T13) |
| | TOTAL = 14 transects |

Table 2-1. Transect numbers for mussel surveys at AMP-Ohio Project (ORM 236-237).

All live individuals were identified to species, and while the study plan suggested that each individual be grouped into two age classes (those that were <3 years of age and those that were >3 years of age) all six live mussels were specifically aged using external annuli. During the identification process, mussels were held outside of water less than five minutes then returned to the Ohio River at the same location. The taxonomic key, *Freshwater Mussels of the Midwest*, was used for all species identifications (Cummings and Mayer 1992).

2.2 Water Quality and Substrate Composition

Water quality was measured several times a day, typically once in the morning, midday, and late afternoon. Measurements were taken in the river channel at the surface, middle, and at depth. Water quality measurements included temperature, pH, dissolved oxygen, conductivity, and secchi depth. Visibility at depth was also noted during the survey with diver communication.

Substrate composition was visually estimated to determine the range of particle sizes within the survey areas. The Wentworth (1922) scale was used to characterize substrate at all transect segments.

Additional data collected at the survey area included weather conditions and GPS locations of each transect line used for surveying.

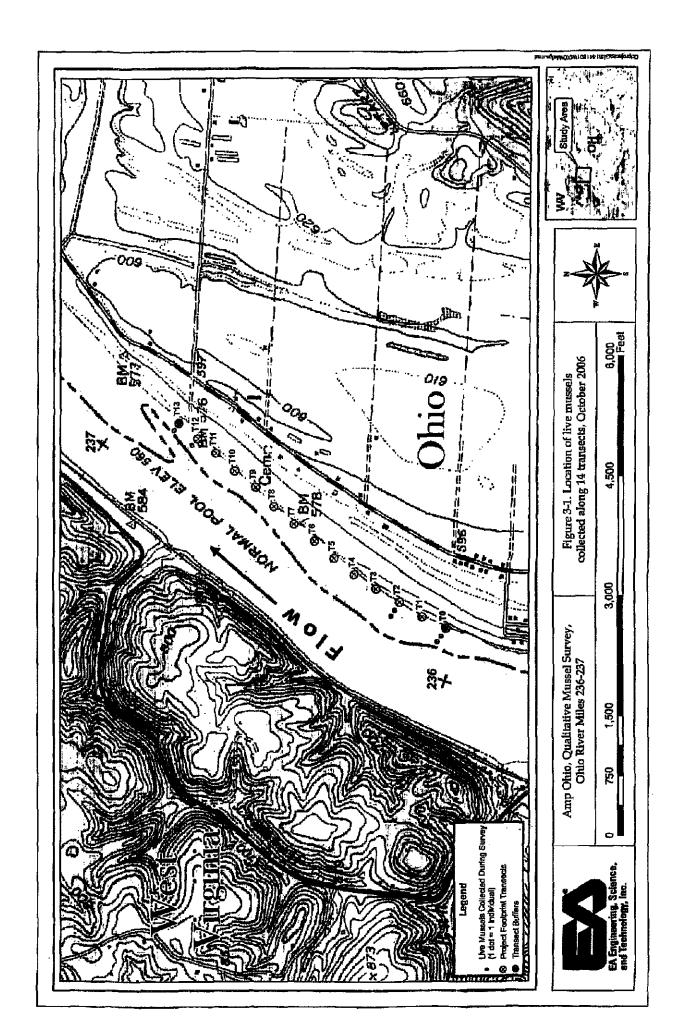
3.0 RESULTS

3.1 Station Transects and Survey Conditions

All transects at each station were located using GPS and latitude/longitude coordinates. A photo log of the survey is provided in Appendix B. Weather during the survey ranged from rain showers to sunny conditions, and daytime air temperatures ranged from 55 to 65°F.

3.2 Freshwater Mussel Results

A total of six live individuals comprising five species were collected during the October survey (Table 3-1; Figure 3-1). Relic shell material was not found in the project area. Species density of live mussels did not exceed 0.1/m² throughout the 1,400 meters surveyed, and therefore did not



qualify as a mussel concentration (e.g. 0.5 mussels/m²). Two Amblema plicata were collected from the upstream buffer transect (T0) at 20-40 meters from the shoreline. Lampsilis siliquoidea and Lasmigona complanata were both collected at Transect 2 at 0-10 meters and 20-30 meters, respectively. Two species were collected at the downstream end of the project footprint, one *Potamilus alatus* was collected at Transect 12 at 10-20 meters, and one *Obliquaria reflexa* was collected at Transect 13 at 20-30 meters from shoreline. There were no other live mussels collected between Transect 2 and Transect 12 (nearly 1,000 meters).

| Species | Common Name | Quantity | Transects Collected | WV Status* |
|-----------------------|---------------------|----------|-------------------------|---------------|
| Ambiema plicata | threerldge | 2 | T0 (upstream buffer) | common |
| Lampsilis siliquoidea | fat mucket | 1 | T2 | common |
| Lasmigona complanata | white heelsplitter | 1 | T2 | S2/G5* |
| Obliquaria reflexa | threehorn wartyback | 1 | T13 (downstream buffer) | S2/G5* |
| Potamilus alatus | pink heelpslitter | 1 | T12 | common |
| | Total Abundance | 6 | | |
| | Total Species | 5 | | |

Table 3-1. Composition, abundance, and status of mussel species collected during a qualitative survey at ORM 236-237, October 2006

*Category S2/G5: indicates a species that is considered "very rare and imperiled" (S2)/ and considered very common and demonstrably secure" (G5) (West Virginia DNR 2006).

Mussel Survey Summary

No federally listed threatened or endangered species were collected during the survey within the 1,200 m project footprint or the additional 200 meters of upstream and downstream buffer transects (USFWS 2004). No mussel concentrations [as defined by ORVEMS (2004) as 0.5 mussels/m²] were identified during the survey and therefore did not require additional transects. A total of six live mussels was collected during the survey comprising five species. Four of these species are considered common by the state of West Virginia. Two species, Obliquaria reflexa and Lasmigona complanata, collected during the survey are considered rare by the West Virginia Natural Heritage (WVNH). While West Virginia does not have state threatened or endangered legislation, it assigns all rare species a ranking that is defined by WVNH. Both species are categorized as S2 by the state of West Virginia, which is considered "very rare and imperiled". However, on a global ranking, both species are categorized as G5, which is considered "very common and demonstrably secure, though rare in parts of its range". Obliguaria reflexa and L. complanata have been reported throughout the Ohio River, and a 10-year monitoring effort conducted just 30 river miles upstream of the proposed AMP-Ohio site indicates that both species were collected annually from 1993-2004 (EA 2005). While total abundance for L. complanata was somewhat low (n= 290) during the 10-year monitoring program, O, reflexe had the second highest abundance (N>5,700) of all species collected at this site, second only to Amblema plicata.

In the present survey, no single species dominated the small collection, and all but one species, *A. plicata*, had only one individual collected. No relic shells or fresh dead shells were collected during the survey either. Few exotic species were identified, two Asian clams (*Corbicula fluminea*) were collected at Transect 1 and no zebra mussels (*Dreissena polymorpha*) were collected throughout the survey footprint. Age estimates of live specimens were all greater than three years of age and ranged from 5-12 years. Shell quality for all species was considered good with very little erosion of the periostracum layer. All raw data, including shell age, substrate composition, water depths are provided in Appendix C.

3.3 Water Quality and Substrate Composition

Water quality was measured twice daily at randomly selected transects to determine whether conditions were suitable for accurate survey assessments (i.e. increased turbidity can inhibit underwater line of sight). Water quality conditions during the survey did not change substantively during the survey (Table 3-2). Secchi depth measurements ranged from 61 to 70 cm and water temperatures ranged from 18.2 to 19.5°C (surface to depth) during the survey. Audio communications with the diver during the survey indicated that the diver could see approximately 22 inches ("arms length") with the assistance of underwater lights.

| Transect | Date _ | Time | Level | Temp (C) | Secchi (cm) | DO (mg/L) | Cond. (uS/cm) | pH_ |
|----------|----------|-----------|-------------|-------------|----------------|--------------|------------------|------|
| T2 | 10-11-06 | 1035-1100 | Surface | 18.7 | | 7.09 | 337 | 5.67 |
| | | | Middle | 18.7 | 62.5 | 7.02 | 336 | 6.24 |
| | | | Depth (28') | 18.7 | | 7.00 | 336 | 6.67 |
| T5 | 10-11-06 | 1239-1306 | Surface | 19.5 | | 7.19 | 327 | * |
| | | | Middle | 18.9 | 68.0 | 7.20 | 336 | * |
| | | | Depth (29') | 18.7 | | 7.24 | 339 | * |
| T9 | 10-11-06 | 1532-1558 | Surface | 18.3 | | 7.67 | 341 | * |
| | | | Middle | 18.3 | 69.5 | 7.48 | 343 | * |
| | | | Depth (35') | 18.4 | | 7.28 | 342 | * |
| T10 | 10-12-06 | 0930-0952 | Surface | 18.3 | | 7.57 | 329 | 6.19 |
| | | | Middle | 18.3 | 64.5 | 7.30 | 329 | 6.42 |
| | | | Depth (35') | 18.3 | | 7.18 | 330 | 6.58 |
| TO | 10-12-06 | 1226-1248 | Surface | 18.2 | | 7.15 | 329 | 6.85 |
| | | | Middle | 18.3 | 60.5 | 7.00 | 329 | 7.03 |
| | | | Depth (28') | 18.3 | | <u>6</u> .97 | 329 | 7.13 |
| | | | Average | 18.5 | 65.0 | 7.22 | 334 | 6.53 |

Table 3-2. Water quality measurements for AMP-Ohio Station October 11-12, 2006

*pH probe malfunctioned, no data collected at these transects.

Average substrate composition at each of the transects is presented in Table 3-3. While substrate was visually estimated at each 10-m segment, all segments within each transects were averaged together for a single value. Substrate at all transects varied slightly, but consisted primarily of mud/clay (41%) and sand (51%), with smaller percentages of silt, gravel, and cobble at some transects. Mussels collected during this survey generally prefer substrates with a mud/sand/gravel mixture (Cummings and Mayer 1992), however, the few individuals collected indicate that while substrate may be suitable, other factors are contributing to the low abundances in this reach of the Ohio River.



4.0 Recommendations

We consider this qualitative survey sufficient to provide the data needed to establish baseline conditions for the Ohio River near AMP-Ohio's proposed generating facility at ORM 236-237. The very low abundance (n=6) of freshwater mussels within the project footprint as well as the lack of mussel concentrations calculated at the site support going forward with the proposed in-stream construction activities. Additionally, the lack of federally listed species in the project area offers additional evidence that these areas are likely void of such species.

| Transect | Clay/Mud (%) | Silt (%) | Sand (%) | Gravel/ Pebble (%) | Cobble (%) |
|-----------------|--------------|----------|----------|-----------------------|------------|
| TO (US buffer) | 30 | 8 | 54 | 0 | 8 |
| T1 | 36 | 0 | 64 | 0 | 0 |
| T2 | 40 | 0 | 60 | 0 | 0 |
| Т3 | 60 | 0 | 40 | 0 | 0 |
| T4 | 60 | 0 | 40 | 0 | 0 |
| Т5 | 50 | D | 50 | 0 | 0 |
| T6 | 65 | 0 | 35 | 0 | 0 |
| T 7 | 44 | 0 | 56 | 0 | 0 |
| T8 | 42 | 0 | 53 | 0 | 5 |
| Т9 | 42 | 0 | 56 | 0 | 2 |
| T10 | 29 | 0 | 51 | 10 | 10 |
| T11 | 29 | 4 | 44 | 17 | 6 |
| T12 | 21 | B | 55 | 4 | 12 |
| T13 (DS buffer) | 26 | 6 | 53 | 8 | 8 |
| Average | 41 | 2 | 51 | 3 | 4 |

Table 3-3. Average percent composition of surficial sediments collected from AMP-Ohio Station (ORM 236-237), October 2006

Clay/Mud; <0.004 mm; Silt: 0.004 - 0.06 mm; Sand: 0.06 - 2 mm; Grave//Pebble: 2 - 64 mm; Cobble: 64 - 256 mm (Wentworth 1922)

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Mussel Study Plan: AMP-Ohlo Qualitative Mussel Survey (ORM 236-237)

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FINAL STUDY PLAN

Qualitative Mussel Survey at AMP Ohio's Proposed Generating Facility (Ohio River Mile 236-237)

Prepared for:

URS 36 East Seventh Street, Suite 2300 Cincinnati, OH 45202

Prepared by:

EA Engineering, Science, & Technology, Inc. 15 Loveton Circle Sparks, MD 21152



INTRODUCTION AND PURPOSE

At the request of URS and AMP Ohio, EA Engineering, Science & Technology, Inc. (EA) has developed a study plan to conduct a qualitative freshwater mussel survey in the Ohio River mainstem near Letart, WV. AMP Ohio is applying for a Section 10 permit under the Rivers and Harbors Act of 1899 for a proposed generating facility in Meigs County, OH. An assessment of the existing biological conditions in the project area is required as part of the permit application, prior to construction or dredging activities. EA will conduct a freshwater mussel survey at the proposed generating facility to determine the presence and abundance of live native mussels.

This qualitative survey is designed to meet the following conditions:

- collect and identify live mussels adjacent to the generating facility.
- collect and identify fresh dead¹ mussels located at the generating facility.
- estimate the abundance and density of live species collected from the survey site, and
- compartmentalize live/fresh dead individuals using external annuli into two age groups: <3 years
 of age and >3 years of age.

US Fish and Wildlife Service (FWS) is increasingly concerned with the potential collection of threatened or endangered (T&E) species in this reach of the Ohio River. While we do not expect to collect any federal or state listed species, we will take necessary precautions to limit their exposure out of water if any are collected during the survey. A list of all state- and federally-listed species is provided in Table 1, and three of the species are known to occur in Meigs County, OH. Additional data will be collected for state or federal T&E species including shell length, specific age of individual, shell condition, and photographic documentation of representative species.

Other tasks that will be completed during the survey include substrate characterization and water quality. No voucher specimens of any live unionids will be preserved for this project.

DESCRIPTION OF WORK

Field Design and Mussel Collection

All methods in a finalized project study plan will be approved by ODNR and FWS biologist prior to any fieldwork.

One station will be surveyed (in the vicinity of ORM 236-237) in the mainstem Ohlo River (Meigs County) in the summer of 2006 during low-flow conditions. Ohio guidance suggests that mussel surveys be conducted between May and October, and we plan to meet these conditions. The station is located on the Ohio bank near Letart, WV.

There is little existing information about mussel populations in the vicinity of this proposed station, therefore a qualitative survey will be conducted to establish baseline conditions and determine the presence of live unionids in the project area. Mainstream Commercial Divers, Inc. (MCDI) has been retained by EA to conduct the diving effort. Additional tasks will also be conducted during the survey,



| Scientific Name | Common Name | Status |
|---------------------------------|--------------------------|--------|
| Cyprogenia stegaria | fanshell* | FE |
| Ellipsaria líneolata | butterfly | SE |
| Elliptio crassidens | elephant ear | SE |
| Epioblasma obliquata obliquata | purple catspaw | FE |
| Epioblasma obliquata perobliqua | white catspaw | FE |
| Epioblasma torulose rangiana | Northern riffleshell | FΕ |
| Epioblasma triquetra | snuffbox | SE |
| Fusconaia ebena | ebonyshell | SE |
| Fusconaia maculate | long-solid | SE |
| Lampsilis ovata | sharp-ridged pocketbook | SE |
| Lampsilis teres | yellow sands heli | SE |
| Lampsils orbiculata | pink mucket* | FE |
| Ligumia nasuta | Eastern pondmussel | \$E |
| Ligumia recte | black sandshell | ST |
| Meglonaias nervosa | washboard | SE |
| Obliquaria reflexa | threehorn wartyback | ST |
| Plethobasus cyphyus | sheepnose* | SE, FC |
| Pleurobema clava | clubshell | FE |
| Pleuroberna cordatum | Ohio pigtoe | SE |
| Pleurobema rubrum | pyramid pigtoe | SE |
| Quadrula cylindrical | rabbitsfoot | SE |
| Quadrula metanevra | monkeyface | SE |
| Quadrula nodulata | wartyback | SE |
| Toxolasma Ilvidus | purple lilliput | SE |
| Truncilla donaciformis | fawns foot | ST |
| Uniomerus tetralasmus | pondhom | ST |
| Villosa fabalis | rayed bean | SE, FC |
| Villosa lienosa | little spectacle case | SE |

Table 1. List of state and federal threatened or endangered mussel species throughout the state of Ohio.

* Species known to occur in Meigs County, OH, FE: federally endangered FC: federal candidate species SE: state (OH) endangered ST: state (OH) threatened

'Fresh dead shells in this study will be defined as any shell that has shiny nacre and intact hinge.

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which include substrate characterization and water quality measurements. Only voucher specimens of *relic shells* will be collected for verification of species identification.

Qualitative Sampling

One station will be surveyed for the presence of live unionid mussels, since the presence of dead shells at the site is often from upstream sources and have no relevance on the existing project. The survey area is approximately 0.7 river miles in length (1,097 meters of shoreline).

A series of transects (12-14 transects) will be established throughout the project area at each station to survey for freshwater mussels (Table 2). Each transect will be established 100 m apart, located perpendicular to flow along the bank, and marked at 10 m segments. While the Ohio River guidance document (ORVEMS 2004²) suggests that transects be spaced 100 m apart and 100 m in length throughout the project footprint (including buffer zones), we will interpret this guidance as required to ensure the health and safety of the divers. Our goal is to meet the specifications outlined in the guidance; however unexpected conditions (e.g. barge traffic, water depths greater than 45', instream hazards, etc.) may require us to modify these for diver safety.

If mussel concentrations in the project area exceed 0.5 animals per square meter (or 5 animals collected from any 10 m segment), which is considered by the state of Ohio as a "mussel bed", we will extend the downstream survey to include a buffer zone at each station that will consist of three additional transects. Additional transects are proposed downstream because the majority of potential effects would be seen downstream of the project area. If we do not identify mussel concentrations in the project vicinity, we will include only one transect upstream and downstream of the station and survey for live mussels.

| No mussel concentrations* | Mussel concentrations identified** |
|-----------------------------|------------------------------------|
| Upstream = 1 transect | Upstream = 1 transect |
| Project area = 10 transects | Project area = 10 transects |
| Downstream = 1 transect | Downstream = 3 transects |
| TOTAL = 12 transects | TOTAL = 14 transects |

Table 2. Transect scenarios for mussel surveys at one Ohio River station (ORM 236-237).

*Number of transects if no mussel concentrations are identified in the project area.

**Number of transects if mussel concentrations (>1/m²) are identified in the project area.

Qualitative sampling will be conducted at each 10 m segment and targeted transect lengths will be 100 m from the shoreline. After review of the proposed project construction, the footprint of construction activities (e.g. intake structure, mooring cells, discharge pipe) do not exceed the 100 m distance into the channel and therefore, no additional areas beyond this distance will need to be surveyed. Live mussels collected during the qualitative sampling will be identified to species and counted for abundance and relative density. Dr. Alan Christian of Arkanses State University has been retained by EA to oversee all mussel taxonomy and we will be utilizing his WV collecting permit for this project. All live and fresh dead



individuals will be grouped into two age classes using external annuli: those that are <3 years of age and those that are >3 years of age. EA is aware of the debate surrounding the accuracy of aging specimens from external growth rings or annuli and will use this method only as an estimate of age. During the identification process, mussels will be held in floatable fish baskets and left in the river water; some containers may be supplemented with battery-powered aerators to assure that dissolved oxygen doesn't decline below acceptable limits (<4 mg/L). All live specimens will be returned immediately following identification and aging. Relic shell material (of non-listed species) will be collected for species validation and taxonomic keys of the Ohio River (Cummings and Mayer 1992)³ will be used for all species identification. Any federal or state listed mussel collected during the survey will undergo additional measurements including shell length measurements, shell condition, specific age determinations, and photographic documentation.

Water Quality

Water quality measurements will be conducted at each station. Water quality will include measurements of temperature, pH, dissolved oxygen, conductivity, and secchi depth. Mussel surveys will be conducted under water guality conditions that meet the minimum visibility of 20 inches at depth. All water guality data, including the required minimum visibility measurements will be provided in the final report.

Additional data will be collected at each station including weather conditions and GPS locations of each transect line used for surveying.

Substrate Characterization

Substrate composition will be visually estimated to determine the range of particle sizes within the survey areas. The Wentworth (1922)⁴ scale, which has been approved by the state of Ohio as the most appropriate method, will be used to characterize substrate at the survey site.

SUMMARY REPORT AND DELIVERABLES

Within 10 days of the survey completion, EA will provide URS with a list of species collected during the survey and their state and federal status.

EA will prepare a draft written report within 30 days of the survey completion that summarizes the study's methodology, technical findings (mussel species and abundance, water quality, and substrate characterization), and recommendations from the mussel survey. No statistical analyses will be required for this program because it is a baseline existing conditions survey. All comments from the draft report by URS, AMP Ohio, and other agencies will be addressed and a final report will be completed. Detailed appendices will be prepared that document the results of the field survey including mussel species and abundance, field data sheets, substrate, water quality, and photo log.

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² Ohio River Valley Ecosystem Moltusk Subgroup (ORVEMS), 2004. Draft Protocol for Mussel Surveys in the Ohio River where Dredging/Disposal/Development Activity is Proposed.

³ Cummings KS and Mayer CA. 1992. Field guide to freshwater mussels of the Midwest. Illinois Natural History Survey Manual 5. 194 pp. *Wentworth, CK. 1922. A scale of grade and class terms for clastic sediments. J Geol 30:377-392.

A table summarizing the mussel species identified during the survey and their abundances will be sent to Ohio DNR and West Virginia DNR by the end of the calendar year (Dec. 31, 2006) in compliance with the requirements for state collecting permits.

Appendix B

Photolog – AMP-Ohio Mussel Survey (ORM 236-237)

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Photographic Record

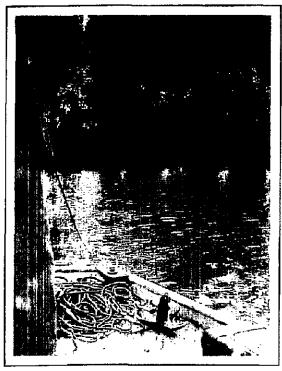
Amp Ohio Proposed Generating Station (ORM 236-237) Letart Falls, OH (Meigs County) October 11-12, 2006



Preparing diver



Diver surveying shallow depths near shoreline. Nuisance aquatic plants located along OH bank.



Laying weighted transect lines for survey. Orange buoy located on shoreline.



Audio communications with diver

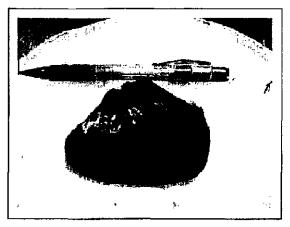


Photographic Record

Amp Ohio Proposed Generating Station (ORM 236-237) Letart Falls, OH (Meigs County) October 11-12, 2006



Diver surveying near shoreline. Orange buoy used to mark the weighted transect line.



Pink heelsplitter (*Potamilus alatus*) collected at Transect 12,



Diver preparing for a dive. Mesh bags were used to hold mussels collected at each 10 m segment.

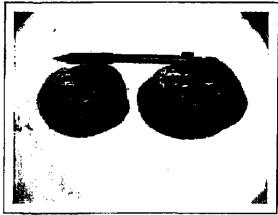


Threehorn wartyback (Obliquaria reflexa) collected at Transect 13.



Photographic Record

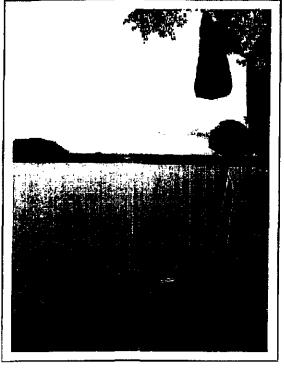
Amp Ohio Proposed Generating Station (ORM 236-237) Letart Falls, OH (Meigs County) October 11-12, 2006



Threeridge (Amblema plicata) collected at the upstream buffer transect (T0).



Diver preparing to survey a transect near the shoreline.



Ohio River looking downstream toward Racine Lock and Dam.



Dive tender holding umbilical line to diver.

Appendix C

Raw Data – AMP-Ohio Mussel Survey (ORM 236-237)

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Appendix C - Raw Data of Meigs Co. (OH) Mussel Survey (ORM 236-237)

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| | Comments | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|-------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------------|------------|------------|------------|------------|
| | Com | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water | Depth (ft) | 24 | 25 | 26 | 28 | | 7 | 17 | 20 | 23 | 25 | 25 | 27 | 28 | 20 | | 9 | 8 | 23 | 24 | 26 | 27 | 28 | 29 | 29 | | 1 | 16 | ស | 25 | 27 | 23 | 30 | 31 | 31 | | 10 | 22 |
| | Cobble | 0 | 0 | 0 | 0 | ¢ | Q | 0 | Ð | 0 | 0 | 0 | o | 0 | 0 | D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | o | 0 | 0 | 0 | 0 | 0 | Q | 0 | 0 | 0 | 0 | 0 |
| Gravel/ | Pebbie | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Sand | <u>10</u> | 100 | 100 | 100 | 0 | Ð | 0 | 0 | 0 | 0 | 100 | <u>9</u> | 100 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 100 | 100 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 5 8 | 1 00 | 10 0 | 0 | a | 0 |
| | Sift | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ¢ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | o | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Age (yr) Clay/Mud | .0 | 0 | 0 | 0 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 10 | 100 | 100 | 0 | o | 0 | 0 | 50 | 100 | 100 | 100 | 100 | 100 | 100 | o | O | 0 | 100 | 100 | 100 |
| | Mussels | none | none | none | none | nane | none | none | none | попе | none | nonê | none | onor | none | none | none | anon | none | none | auou | none | none | enone | none | anon |
| | Date | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 |
| Transect | Segment | 0/ | 80 | 06 | 100 | 10 | 20 | 30 | 40 | <u>9</u> 0 | 60 | 20 | 80 | 06 | 100 | 10 | 20 | 30 | 40 | 50 | 8 | 70 | 8 | 6 | 100 | 10 | 20 | 8 | 40 | 20 | 60 | 70 | 80 | 06 | 100 | 10 | 20 | 30 |
| - | Transect | T 3 | | , | | T4 | | | | | | | | | | T5 | | | | | | | | | | T6 | | | | | | | | | | 11 | | |

Appendix C - Raw Data of Meigs Co. (OH) Mussel Survey (ORM 236-237)

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Appendix C - Raw Data of Meigs Co. (OH) Mussel Survey (ORM 236-237)

| | Comments | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|-------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|----------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|----------------|------------|------------|------------|------------|------------|------------|
| Water | Depth (ft) | 23 | 27 | 29 | 80 | 31 | 32 | 33 | £ | 21 | 28 | 30 | 31 | 32 | 33 | 33 | ¥ | ¥ | Ø | 23 | 27 | 32 | 33 | 33 | 33 | ¥ | 34 | 35 | 17 | 27 | 32 | 33 | 34 | \$ | \$ | 35 | 35 | 35 |
| | Cobble | 0 | 0 | 0 | a | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 50 | ¢ | 0 | 0 | 0 | ¢ | 0 | 0 |
| Gravel | Pebble | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ċ | Sand | 8 | 8 | 00 | 00 | 10 10 | 100 | <u>6</u> | 0 | 0 | 0 | 8 | 8 | 02 | 8 | 8 | <mark>6</mark> | 100 100 | 0 | 0 | 0 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | ٥ | 8 | 8 | 80 | 60 | 60 | 2 | 80 |
| i | Ē | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ٥ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Age (yr) Clay/Mud | 20 | 40 | 40 | 40 | 0 | 0 | 0 | 100 | 100 | 50 | 20 | 40 | 30 | 40 | 40 | 0 | 0 | 100 | 100 | 80 | 20 | ନ୍ଦ | 20 | 2 | ୟ | 8 | 20 | 100 | 0 | 0 | 20 | 50 | 2 | 40 | 40 | 8 | 20 |
| Ma | Mussels | none | auou | none | none | none | anon | none | none | none | none | none | none | none | none | none | none | none | none | 9 00 | none | none | none | none | none | none | none | none | none | none | none | none |
| | Uate | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 | 10/11/2006 |
| Transect | segment | \$ | 50 | 60 | 2 | 8 | 8 | 100 | 10 | 20 | 8 | 4 | 20 | 90 | 2 | 80 | 8 | 100 | 10 | 23 | 8 | 4 | 50 | 60 | 2 | 80 | 06 | 100 | 10 | 20 | 30 | 4 0 | 50 | 60 | 70 | 80 | 06 | 100 |
| T | I ransect | 1 | | | | | | - | 18 | | | | | | | | | | 19 | | | | | | | | | | T10 | | | | | | | | | |

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| | I ransect | | | | | | | | | 12121 | |
|-----------------|------------------|------------|-------------|------------|-----------------|------|-----------|-----------|--------|------------|--|
| Transect | Segment | Date | Mussels | Age (yr) (| e (yr) Clay/Mud | Silt | Sand | Pebble | Cobble | Depth (ft) | Comments |
| T11 | 10 | 10/12/2006 | none | | 100 | 0 | 0 | a | 0 | 12 | |
| | 20 | 10/12/2006 | 910U | | 0 | Ð | ٥ | ß | 50 | 24 | |
| | 30 | 10/12/2006 | none | | 0 | 0 | 0 | 100 | 0 | 32 | |
| | 40 | 10/12/2006 | none | | | • | large del | oris pile | | | |
| | 20 | 10/12/2006 | none | | 0 | | 8 | 0 | 0 | 32 | |
| | 60 | 10/12/2006 | none | | 40 | | 8 | 0 | 0 | R | |
| | 70 | 10/12/2006 | none | | 20 | | ଞ | 0 | 0 | 34 | |
| | B 0 | 10/12/2006 | none | | 40 | | 80 | 0 | 0 | ¥ | |
| | 06 | 10/12/2006 | nonê | | 8 | | 8 | 0 | 0 | 35 | |
| | 100 | 10/12/2008 | none | | 30 | | 2 | 0 | 0 | 35 | |
| T12 | 10 | 10/12/2006 | none | | 20 | 2 | 8 | 0 | 0 | 8 | |
| | 20 | 10/12/2006 | P. alatus | 8-10 | 100 | o | 0 0 | 0 | 0 | 23 | live; picture; shell in good condition |
| | 8 | 10/12/2006 | 900L | | 20 | | 0 | 0 | 80 | 27 | |
| | 40 | 10/12/2006 | none | | D | | 0 | 4 | 40 | 33 | |
| | 50 | 10/12/2006 | none | | 0 | | 8 | 0 | 0 | 94 34 | |
| | 60 | 10/12/2006 | nonê | | 20 | | 8 | 0 | 0 | 34 | |
| | 70 | 10/12/2006 | none | | 20 | | 8 | 0 | 0 | 35 | |
| | 80 | 10/12/2006 | none | | 0 | | 8 | 0 | 0 | 34 | |
| | 90 | 10/12/2006 | none | | 0 | | 8 | 0 | 0 | 32 | |
| | 100 | 10/12/2006 | nonê | | 30 | | 02 | 0 | 0 | 34 | |
| T13 - DS buffer | 10 | 10/12/2006 | none | | 100 | | 0 | 0 | 0 | 23 | |
| | 20 | 10/12/2006 | BUOR | | 30 | | 0 | 35 | 35 | 28 | |
| | 30 | 10/12/2006 | O. reflexa | Q | 0 | | 0 | 4 | 4 | 28 | live; picture |
| | 4 | 10/12/2006 | none | | 20 | | 8 | o | 0 | ŝ | |
| | 20 | 10/12/2006 | none | | 8 | | 8 | 0 | 0 | 32 | |
| | 90 | 10/12/2006 | none | | 20 | | 8 | 0 | a | \$ | |
| | 70 | 10/12/2006 | none | | 0 | | 80 | 0 | a | 35 | |
| | 80 | 10/12/2006 | none | | 0 | | 8 | 0 | 0 | 35 | |
| | 06 | 10/12/2006 | none | | 40 | | 8 | 0 | 0 | 35 | |
| | <mark>1</mark> 8 | 10/12/2006 | none | | 30 | | 22 | ٥ | 0 | 33 | |

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Appendix C - Raw Data of Meigs Co. (OH) Mussel Survey (ORM 236-237)



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APPENDIX 07-4

ARCHAEOLOGY REPORT

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REPORT FOR PHASE I ARCHAEOLOGY SURVEY PROPOSED BASELOAD GENERATING FACILITY, LETART TOWNSHIP, MEIGS COUNTY, OHIO

Submitted to:

URS Corporation 36 East 7th Street, Suite 2300 Cincinnati, Ohio 45202

Submitted by:

Natural & Ethical Environmental Solutions 8857 Cincinnati-Dayton Road, Suite 203 West Chester, Ohio 45069

PIIN MAMO

Jeannine Kreinbrink, MA, RPA Principal Investigator

September 11, 2006

ABSTRACT

URS Corporation requested a Phase I cultural resources survey of an approximately 1,000 acre project area for a proposed Baseload Generating Facility, located in Letart Township, Meigs County, Ohio. The project area includes both upland terrain and terraces of the Ohio River. The project area lies in the Unglaciated Plateau of southern Ohio. The project area includes approximately 1,000 acres, of which approximately 495 acres constitutes the Upper Landfill Portion of the project area, and 505 acres the Lower Terrace Portion of the project area. This report includes the overall background sections such as Literature Review and Methods for the entire project. Also included in this report is the Results Section for the survey of the Lower Terrace Portion of the project. The archaeological survey of the Upper Landfill Portion of the project will be described in a separate Addendum report. The Area of Potential Effect (APE) for the archaeological study equals the 1,000 acre parcel that comprises the project area. Nonarchaeological impacts such as visual impact on surrounding properties will be defined and discussed in a separate Visual Impact/Historic Resources Report.

The project, a proposed baseload electric generating facility, requires review in accordance with regulations of the Ohio Power Siting Board (OPSB). The archaeological investigations are carried out in accordance with regulations put forth by the Ohio Historic Preservation Office and attendant regulations of Section 106 (National Historic Preservation Act, 1966, as amended).

The archaeological survey of the Lower Terrace Portion of the Project Area documented one previously recorded site (33MS288) and 69 previously undocumented sites (33MS474 through 33MS542). Phase II evaluation testing is recommended for site 33MS288 if it cannot be avoided.

Of the overall catalog of previously undocumented sites, 46 are isolated finds that are not considered eligible for the National Register and no further investigation is recommended for these 46 sites: 33MS475-476, 33MS478-481, 33MS483-485, 33MS487-491, 33MS493-508, 33MS510, 33MS513, 33MS515-519, 33MS523-526, 33MS532, 33MS534, and 33MS537-539.

Of the remaining 23 previously undocumented sites, Phase II evaluation testing is recommended for seven sites; 33MS474, 33MS477, 33MS486, 33MS531, 33MS540, 33MS541, and 33MS542.

No further investigation is recommended for sites 33MS482, 33MS492, 33MS509, 33MS511, 33MS512, 33MS514, 33MS520, 33MS521, 33MS522, 33MS527, 33MS528, 33MS529, 33MS530, 33MS533, 33MS535, and 33MS536.

With the exception of the eight sites (33MS288, 33MS474, 33MS477, 33MS486, 33MS531, 33MS540, 33MS541, and 33MS542) recommended for Phase II evaluation, no further investigation is recommended for the 505 acre Lower Terrace Project Area.

Meigs County 1,000 acres AMPOhio Baseload Generating Facility Phase I Archaeology Survey

The geomorphology of the Lower Terrace Project Area was evaluated through a record search, geotechnical drilling results, and comparison with archaeological results. Little potential for buried archaeological sites has been found based on the presence of Early Archaic period projectile points on the ground surface and the evaluation of the geomorphological setting. No systematic deep testing is recommended for the Lower Terrace Project Area.

Natural & Ethical Environmental Solutions, LLE 8857 Cincinnati-Dayton Road, Suite 203, West Chester, Ohio 45069

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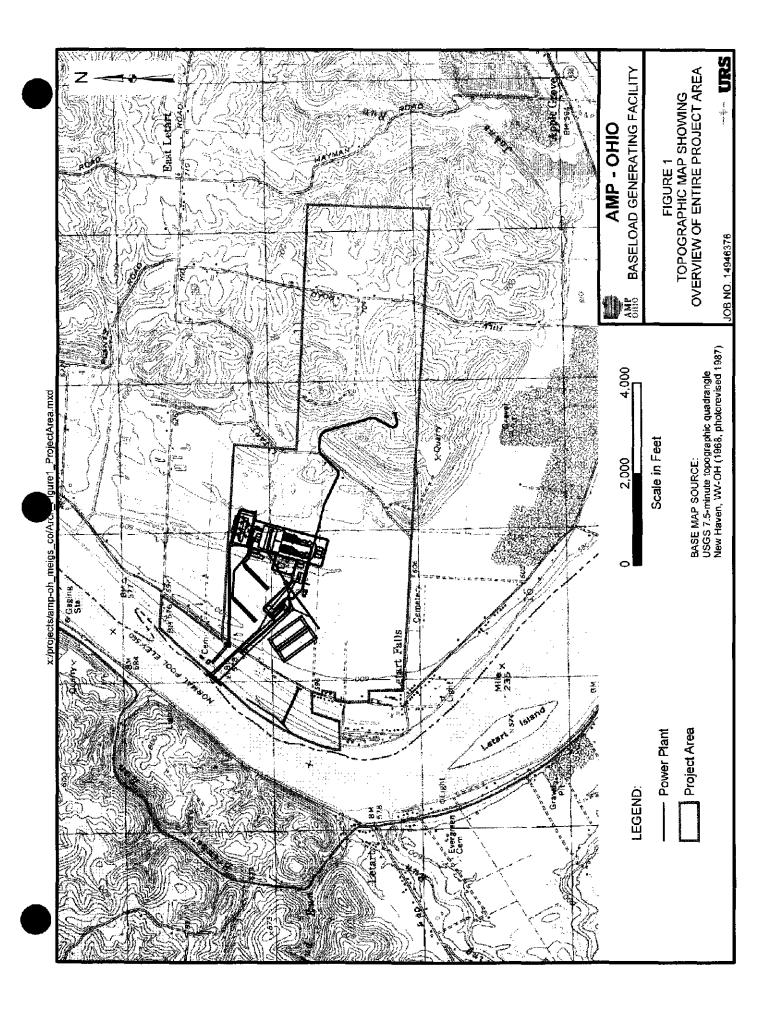


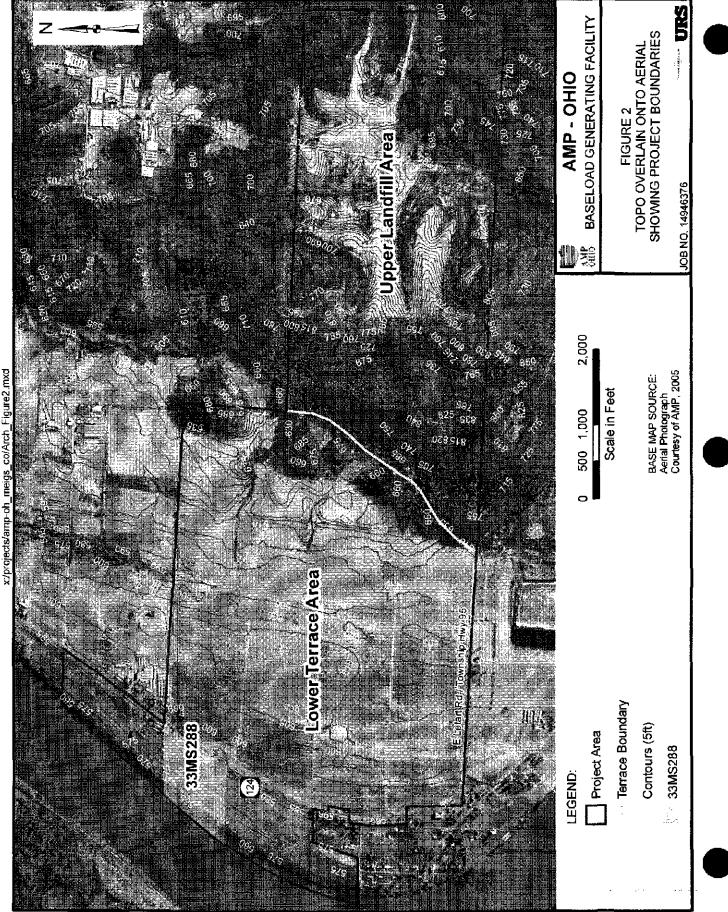
INTRODUCTION

URS Corporation (URS) requested a Phase I archaeology survey of approximately 1,000 acres located in Letart Township, Meigs County, Ohio. The project area is situated in the Allegheny Plateau physiographic region and includes both upland and river terrace settings. The Lower Terrace project area consists of approximately 505 acres. The Upper Landfill Area includes 495 acres and will be discussed in an Addendum Report. This volume describes the archaeological survey of the Lower Terrace region that includes approximately 505 acres of agricultural, fallow, and wooded land. AMP Ohio requested the survey through URS in anticipation of coordination with the OPSB. The project is conducted in accordance with both federal (36CFR800, NHPA 1966, as amended) and Ohio Historic Preservation Office (OHPO 1994, as amended) regulations regarding the conduct of cultural resources investigations.

Ms. Jeannine Kreinbrink, of Natural & Ethical Environmental Solutions, serves as Principal Investigator and Field Director for the project. Fieldwork took place between March and the end of June 2006. She was assisted by crew chiefs Mr. Doug Von Strohe and Mr. Jason Hutchinson. Field crew included Ms. Angie Paolucci, Mr. Shawn Fahrenbach, and Mr. Baird Ullrey. Ms. Kreinbrink conducted the literature review at the Ohio Historic Preservation Office in Columbus, Ohio over several occasions between December 2005 and January 2006. Fieldwork methodology was worked out with the OHPO at a meeting on December 14, 2005.

The Lower Terrace project area consists of approximately 505 acres of agricultural, fallow, and wooded land located on a sweeping bend of the Ohio River. At this location, the Ohio River flows north along the western edge of the project area (Figures 1 and 2). The Lower Terrace project area has been divided into 14 survey sections for ease of discussion. The Upper Landfill project area will be described in a separate Addendum to this report.





co/Arch_Figure2.mxd

RESEARCH DESIGN

A Phase I survey is designed to assess the presence or absence of archaeological sites within a project area using sampling procedures approved by the Ohio Historic Preservation Office (OHPO) and federal guidelines. The sampling procedure includes such techniques as shovel testing, and surface reconnaissance when possible.

Much debate has taken place on the efficacy of shovel test sampling as a site discovery technique (for example, Shott 1989). However, others have illustrated that, although flawed as a sampling technique, shovel testing may be a useful tool when combined with other search methods (Nance and Ball 1989; Lightfoot 1989). Other search methods include examination of ground surface when possible, other subsurface examination techniques (auguring, backhoe testing for example), and using literature reviews to synthesize predictive models that deal with landform, relationship to water sources, slope, and other locational variables. While these methods do not provide 100 percent certainty in intersecting the boundaries of sites, they have been consistently successful in locating archaeological sites in both surface and subsurface contexts. Approaching a project with a clear understanding of the local physiography, cultural setting, and environmental factors such as soils, slope, and water resources, will greatly increase the results of field reconnaissance techniques.

For this project, knowledge of local cultural and environmental variables was synthesized to form a research design aimed at intersecting site boundaries. Techniques planned included a surface reconnaissance of the plowed fields in transects of 5 meters or less. The literature review included a search of references on previous archaeological work in Meigs County, and a review of state site files. Historical research included a review of local historic references and maps, the Ohio Historic Inventory and the National Register files. In addition, the scope of work was discussed with the OHPO in a meeting that took place in December 2005.

Physical Setting

Physiography-Geomorphology-Geology

Meigs County is situated in the unglaciated Allegheny Plateau in Ohio (USDA 1998). The bedrock dates to the Pennsylvanian Age and includes primarily sandstone, shale, coal, iron ore, and limestone. Coal, limestone, and gravel have historically been mined throughout the county.

The project area is situated on both riverine and upland settings along a sharp bend in the Ohio River (Figure 1). The Ohio River flows generally north along the western edge of the project area. Please see the Results Section for a more detailed discussion of the geomorphology of the project area.

Meigs County 1,000 acres AMPOhio Baseload Generating Facility Phase I Archaeology Survey

Soils

The soils in the project area form a complex arrangement that correspond to high and low areas on the terraces, older and more recent alluvium, and drainage. Soils found at the site can be divided into two areas. Soils that are found along the alluvial terrace of the site are predominately friable silty loam with large sand or gravel units that truncate abruptly (USDA 2001). The color is typically dark brown to brownish-yellow at the surface and grades towards a yellow-brown below approximately 10 inches. Soils located within the upland forested area of the site are predominantly friable silty loam to silty clay loam (USDA 2001). The color typically ranges from dark brown to yellowish-brown at the surface and grades towards a yellow-brown to red below approximately 10 inches.

Soils on the alluvial terrace of the property are classified as part of the Cidermill, Conotton and Lakin series (USDA 2001). The Cidermill and Conotton series have smooth boundaries and are often mapped together within the same area. The Lakin series is dominantly mapped on the leeward side of major stream valleys. The Conotton series is reported to have 0 to 2% slope variability, while the Cidermill series is reported to have 0% to 6% slope variability. The Lakin series is reported to have the greatest variability where slopes can range from 1% to 40%. Outwash or water-laden materials usually along stream terraces or valleys formed these soils. Each of the mapped soil units in the site area are very deep, well to excessively draining, and with slow to moderate water runoff.

Soils on the upland forested area of the property are classified by the USDA (2001) as part of the Omulga and Vandalia series and the Upshur-Gilpin complex. The Omulga series consists of very deep, moderately well drained soils formed in loess, colluvium, or old alluvium, and in most areas by underlying lacustrine sediments. These soils are on valley fills in abandoned preglacial drainage systems in the Allegheny Plateau that lack glacial influence. The Upshur-Gilpin complex series consists of very deep to moderately deep, well-drained soils formed in residuum derived from siltstone, sandstone, and shale. They are typically located on strongly sloping or steep uplands (ridgetops and hillsides). The Vandalia series consists of very deep, well-drained soils formed in colluvium from shale, siltstone, and some sandstone. They are on foot slopes and colluvial fans.

The Omulga series is reported to have a 2 to 12% slope variability, while the Vandalia series is reported to have 8% to 25% slope variability. The Upshur-Gilpin complex is reported to have the greatest variability where slopes can range from 8% to 50%. Each of the mapped soil units in the site area are very to moderately deep with medium to rapid water runoff.

The USDA NRCS (2001) has described the soil types on the alluvial terrace of the property as the following: The Conotton series is Type IIIs, which indicates special conservation needs with regard to root zone limitation. The Cidermill series soils are Type IIe and Type I. Type IIe indicates moderate conservation needs with regard to erosion, and Type I indicates there are few limitations restricting use. The Lakin series soils are divided as Types IVs, VIs, and VIIs. All these types indicate severe conservation needs with regard to root zone limitations. Reported



building site development information indicates frost action as a limitation for the use of Conotton and Cidermill soils especially for local roads and streets due to low strength. Lakin soils have moderate to severe limitations of all building site development due to slope.

The USDA (2001) has described the soil types in the upland forest of the property range from Type IIe to Type VIIe. This indicates that all soils types in this area have moderate to severe limitations and conservation needs with regard to erosion. Reported building site development information indicates slope, wetness, shrink-swell, and slippage as a moderate to severe limitation for the use of these soils in all aspects of building development.

Climate and Vegetation/Wildlife Patterns

Climactic changes have influenced the patterns of vegetation and wildlife in Meigs County and southeastern Ohio throughout its past history. The effects of the Pleistocene glaciation on Ohio valley flora and fauna have been well documented (Shane 1994; McDonald 1994; Delcourt and Delcourt 1981; Walker and Hartman 1960; Guilday 1967; USDA 1998; and others). Although Meigs County is below the southern extremes of the glaciers themselves, the climactic changes influenced the patterns of vegetation and faunal life along the Ohio River. Once Native Americans moved into the area, they experienced these changes and adapted over time to the northward movement of colder weather vegetation and animals, and the influx of temperate zone flora/fauna. The increasingly continental climate that has developed in the region is characteristically humid and temperate (USDA 1998).

By the end of the Native American habitation of the region and the beginnings of European migration to Meigs County, the region was included in the Eastern Deciduous Forest Province. Much of Meigs County was covered with virgin, mixed hardwood forest (USDA 1998).

Literature Review

The literature review for this project took place in December 2005. Cultural resources files reviewed at the Ohio Historic Preservation Office (OHPO) in Columbus, Ohio include the National Register of Historic Places (NRHP), Ohio Historic Inventory (OHI), Ohio Archaeological Inventory (OAI), and Cultural Resource Management (CRM) report files. Local historical research was conducted at the Meigs County Library in Pomeroy and at the Public Library of Cincinnati and Hamilton County, a regional history and genealogy center.

The review found that no NRHP properties are located within the project area boundary. Meigs County only has ten properties listed on the NRHP and none are within at least ten kilometers of the project area. Based on the most current data available on the National Park Service NRHP website, two properties are in Chester, one in Alfred, one in Rocksprings, three in Middleport, two in Pomeroy, plus the Buffington Island Civil War site, upriver from the project area near Portland in Lebanon Township.

The OAI site file check documents one archaeological site (33MS288) located inside the project area boundary (Figure 2). The site is located on the Ohio River floodplain, between Route 124 (old Rt 338) and the river, on property associated with an historic period house (now gone, see below) (the Cross House, MEG 384-12). The house had been previously documented by OHS personnel perhaps in 1984, although the OHI form does not list a specific year. Sprague (1992) documented site 33MS288 during a survey for a proposed sand and gravel barge loading facility. The site produced Native American artifacts that date to the Early and Late Archaic, and Adena (Early Woodland) time periods. The Sprague (1992) report does not include a site boundary size, but based on an illustration in that report, the site size measures at least 800 ft (244 m) in diameter. The site produced a continuous scatter of artifacts and apparently encompasses most of the area between Rt 338 and the Ohio River. They conducted some deep testing toward the river side of the site and did not find any evidence of buried archaeological sites (Sprague 1992). The presence of Early Archaic diagnostic artifacts (over 6,000 years old) on the ground surface indicates that at least in this area, the ground surface has been stable for thousands of years. No followup reports are documented at the OHPO and the barge facility was not built in this location. Please see the Results Section for further discussion of this site.

A review of the OAI files for the surrounding area finds that most of the documented archaeological sites are located on the floodplains and terraces of the Ohio River, or along drainages with adjacent terraces. This is more likely because greater attention has been given to the river drainage than the adjacent uplands. Similar terrace/upland settings both up and down river were reviewed.

Only one other archaeological site has been documented along the same floodplain/terrace setting as the project area. Site 33MS005 is landowner reported site located about a mile downstream of the project area. The OAI form does not include any data on artifact types, site size, or time period. Just downstream from the project area, the hills close in on the river and the floodplain shifts to the Kentucky side of the river. Further downstream, but still in Letart Township, the floodplain opens up again on the Ohio side of the Ohio River at Racine. At least eight sites are documented in the Racine vicinity. They include several sites found on upper terraces along a stream that joins the Ohio River at this point, plus several sites on the terraces and floodplain of the Ohio River. These sites include a range of Native American time periods from Paleoindian through Ft Ancient. Site types include a mound, small camp sites and at least one probable village site.

On the first terrace of this downstream area, Graybill (1976) documented Fort Ancient period cultural material (post 1000AD) eroding out of the river bank (33MS31). He examined buried deposits that appear to range from just below plowzone to several feet in depth (less than one meter). These deposits included Late Archaic, Late Woodland, and Ft Ancient material (OAI form).

In the same section of floodplain as site 33MS31, Keener and Pecora (2003) conducted Phase II excavations at site 33MS29. This site is located between Route 124 and the Ohio River on a terrace. The cultural deposits at this site were confined to within one meter of the ground



surface. Similarly to site 33MS31, they encountered a midden/cultural zone between 30 and 70 cm deep. The site produced Late Archaic and Late Woodland artifacts and pottery, along with two radiocarbon date ranges (calibrated intercepts at 1430 and 1520 BC, or Late Archaic in origin).

Upstream of the project area in the Great Bend section of Lebanon Township, several archaeological studies have documented both riverine and upland archaeological sites. Documented during a variety of CRM projects, sites include all Native American time periods from Paleoindian through Fort Ancient (cf. Sewell 2004; Bush et al 1995; Kollecker 1995; or Merry 1980).

Table 1 tabulates the data from the above referenced areas, the Great Bend, the current project area, and downstream of the project area. A total of 80 archaeological sites documented in these three areas are reviewed for relevant data. The 80 sites contain at least 141 individual components. Archaeological components are listed by site type in Table 1 and by setting and time period in Table 2. Table 2 excludes isolated finds and historical period components. Any particular site may have more than one archaeological component. Components are tabulated by quantifying the diagnostic time periods represented at each location.

| TIME PERIOD | MOUND | LITHIC SCATTER | -ISOLATED FIND | TOTAL |
|-------------------------------|-------|----------------|----------------|-------|
| Paleoindian | | 3 | | 3 |
| Early Archaic | | 8 | | 8 |
| Middle Archaic | | 5 | | 5 |
| Late Archaic/Terminal Archaic | | 14 | | 14 |
| Early Woodland | · | 7 | | 7 |
| Middle Woodland | | 4 | | 4 |
| Late Woodland | | 6 | | 6 |
| Undifferentiated Woodland* | 5 | 7 | | 12 |
| Late Prehistoric | | 6 | | 6 |
| Unknown Prehistoric | | 43 | 19 | 62 |
| Historic, non-aboriginal | | 14 | | 14 |
| TOTAL | 5 | 117 | 19 | 141 |

Table 1. Archaeological components by site type.

*Undifferentiated Woodland includes unexcavated mounds and sites with untyped pottery sherds.

Table 2. Archaeological components sorted by topographic setting.

| TIME PERIOD | FLOODPLAIN | TERRACES (ALL) | UPBANDRIDGES |
|--|------------|----------------|---------------------|
| Paleoindian | 1 | 1 | 1 |
| Early Archaic | 2 | 6 | 0 |
| Middle Archaic | 2 | 2 | 1 |
| Late Archaic/Terminal Archaic | 3 | 9 | 2 |
| Early Woodland | 1 | 6 | 0 |
| Middle Woodland | 2 | 1 | 1 |
| Late Woodland | 1 | 4 | 1 |
| Undifferentiated Woodland Mounds | 0 | 3 | 2 |
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| TIME PERIOD | FLOODPLAIN | TERRACES (ALL) | UPEAIND/RIDGES |
|----------------------------------|------------|----------------|----------------|
| Undifferentiated Woodland-lithic | 4 | 2 | 1 |
| scatter | | | |
| Late Prehistoric | 2 | 3 | 1 |
| Unknown Prehistoric | 2 | 38 | 3 |
| TOTAL | 20 | 75 | 13 |

A review of Tables 1 and 2 provides important data for evaluating the potential of the Project Area to contain significant archaeological sites. Data on site setting is also important as listed in Table 2. It is important to keep in mind that upland/ridge top data is very likely missing due to lack of studies conducted in those settings. The information is very likely skewed somewhat toward the valley settings. However, the presence of artifacts from almost all the prehistoric cultural time periods in the upland settings indicates that the relative presence is probably accurate, but quantity of sites is lacking.

All Native American time periods are represented in this section of Ohio River valley. Three sites have produced artifacts from the Paleoindian period, the first period of occupation by the Native Americans with dates older than at least 10,000 years ago. These three sites are spread out among all three major topographic settings in the area, floodplain, terrace, and upland/ridge top. This fits well with the overall view of Paleoindians as opportunistic hunters and gatherers.

The Archaic period, represented by three divisions, Early, Middle, and Late, is also well represented in the region with an emphasis on the late Archaic. Middle and Late Archaic components have been found on both river and upland settings.

Woodland period sites are found more commonly on the upper terraces, this includes both mounds and open sites. Mounds and lithic scatter Woodland period sites have also been documented on the nearby ridge tops.

Except for two sites as noted above (33MS29 and 33MS31), all the above referenced archaeological sites are surface sites. Site 33MS31 is situated near the confluence of a stream channel and the Ohio River and was buried just below plowzone level. Reworking of this stream entrance into the Ohio River may have buried this site over time by the accumulation of alluvial material. Site 33MS29 is situated nearby and also has a stream channel that crosses near the site edge.

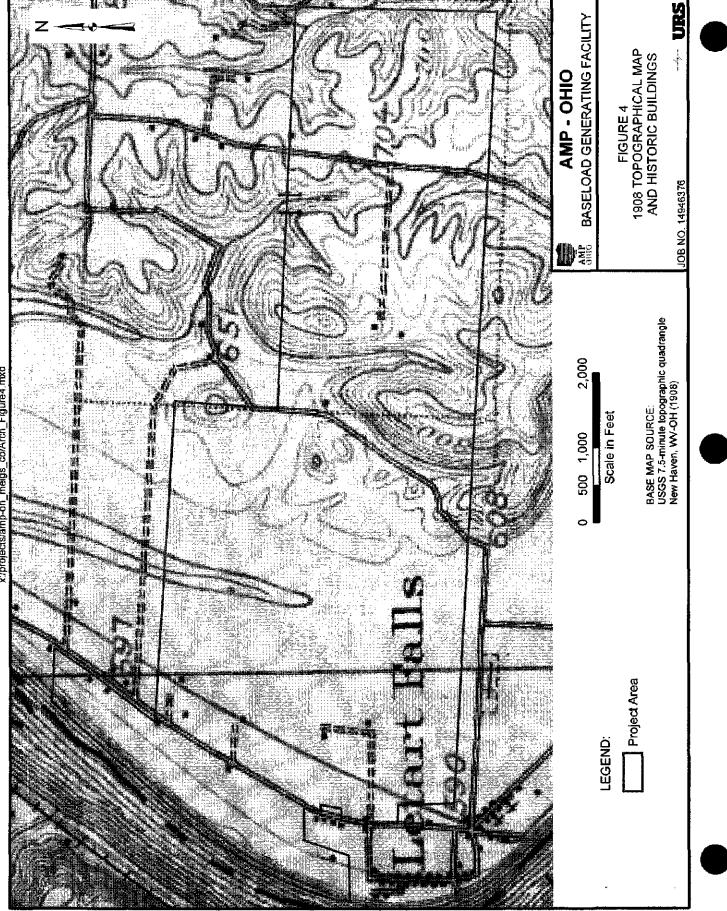
Components from Paleoindian through Fort Ancient have been found on the ground surface, or within the plowzone, on both floodplain and terrace settings both upstream and downstream of the Project Area. The presence of ancient artifacts, over 5,000 years old (Archaic and Paleo) on the ground surface indicates the stable nature of this section of the Ohio River. Areas with Archaic and Paleoindian components on or near the surface are unlikely to contain deeply buried human occupation levels. Site 33MS288 is located within the project area. That site is an extensive surface artifact scatter that has produced Early and Late Archaic, and Adena (Early Woodland) period artifacts from the surface. Project area soils appear stable, although in-depth

analysis of micro-environmental settings will be required to identify areas with possible overbank deposits, buried stream channels, and so forth that may have contributed to the overlay of alluvial deposits in sections of the floodplains and terraces. The Project Area is highly likely to contain both upland and riverine archaeological sites from the Native American occupation of the region. These may range from isolated finds to intensive village sites. It is unlikely that previously unrecorded mounds will be documented.

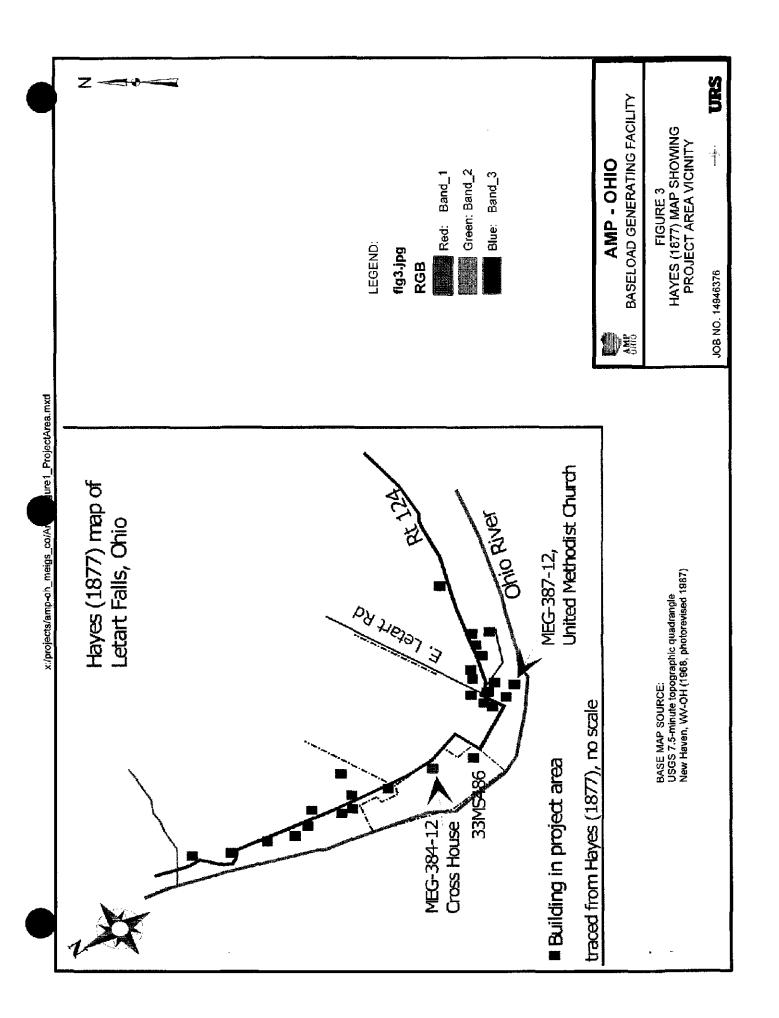
Historic Properties

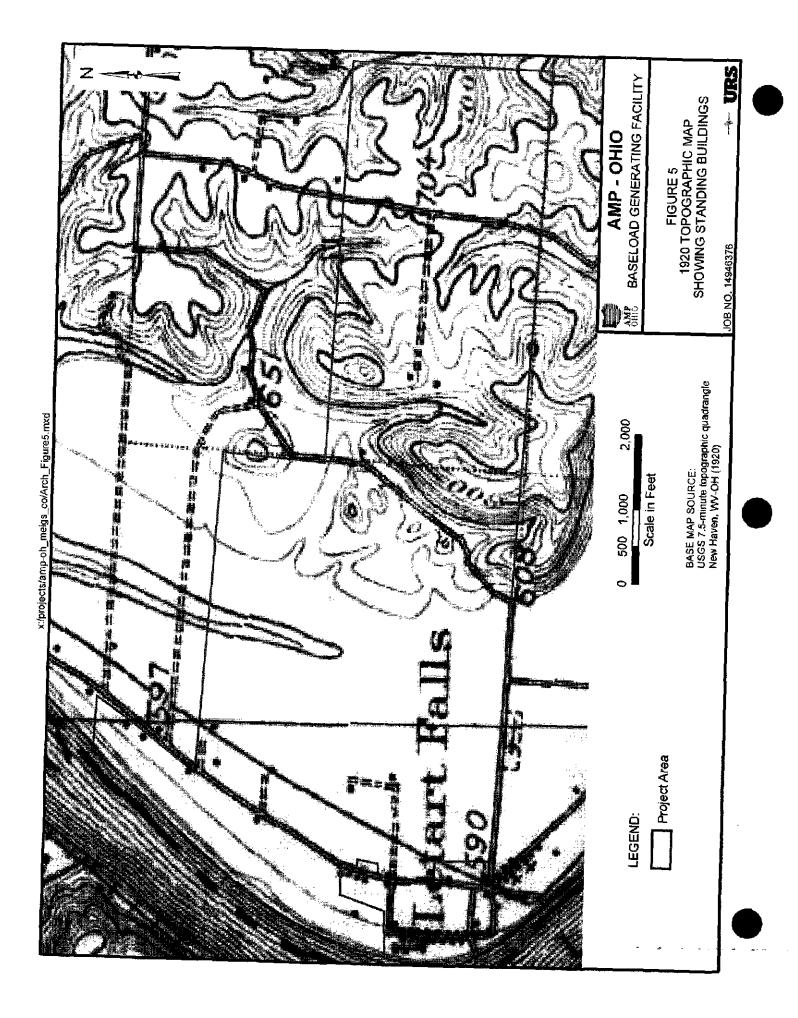
Historically, the project area lies within Letart Township of Meigs County. Primarily a rural area, Meigs County was originally part of the Ohio Company's purchase. The Letart Falls area was settled as early as 1780 and Letart Township was one of the original townships in the county. Truck farming became an important part of the agricultural system for Letart Falls beginning late in the nineteenth century (Ervin 1949, MCPHS 1979). Additional historical context on Letart Falls is included in the Cultural Overview section. Figure 3 illustrates a tracing of the Hayes 1877 *Illustrated Atlas of the Upper Ohio River Valley from Pittsburgh to Cincinnati, Ohio.* Found at the Public Library of Cincinnati and Hamilton County, photographs and copying of the image were not allowed.

The community of Letart Falls was well established by the late 1870s. Only two structures illustrated in the 1877 map fall within the project area (Figure 3). The more southern building corresponds with one historical site (33MS486 discussed in the Results Section). No standing building is currently located in this spot, and no OHI was completed for any property in this immediate vicinity in the early 1980s when the properties listed in Table 3 were documented. Review of the 1908 and 1920 topographic maps for the project area vicinity (Figures 4 and 5) show that the building was still standing at that time. However, a review of the 1950 aerial photo (Figure 6) finds no standing building in that location.



x:/projects/amp-oh_meigs_co/Arch_Figure4.mxd





The second building shown in red on Figure 3 (the more northern building) is most likely the Cross House (MEG-384-12) as documented on an OHI (Table 3 below). This was a brick house that sat adjacent to Route 124 at the same elevation as the road. The house is visible on Figures 4-6). Local informants indicate that this house was torn down and the site mechanically leveled after the 1997 Ohio River flood (Hill family, 2006 personal communication). Today this location is a graveled and graded parking area for farm access along the west side of Route 124.

Further review of the 1908 and 1920 topographic maps and the 1950 aerial photography (Figures 4-6) finds additional properties within the project area. Hill family members have stated that these were small tenant houses that 'came and went in the twentieth century'. Several of these correspond with archaeological sites documented during this survey (See Results Section).

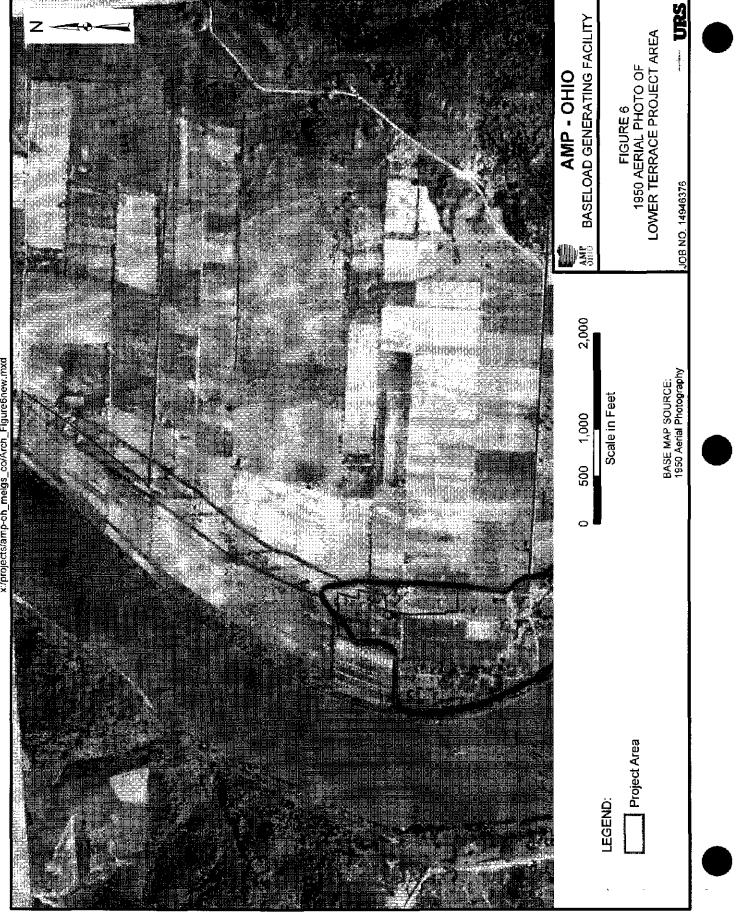
A total of 17 properties (standing buildings) in the Letart Falls vicinity have been documented on OHI forms at the OHPO. The historical resources review is documented in a separate report. That report documents the current status of the OHI listed properties and of other undocumented properties over 50 years old that still stand in the vicinity of the project area. Visual impacts from construction of the facility to those properties are also evaluated in that separate report. Of the 17 OHI properties, 13 are summarized in Table 3. They are the closest listed properties to the project area.

Most of the older buildings in Letart Falls are gone. Many have been replaced by trailers or small prefabricated homes. The Cross House (MEG-384-12, bolded in Table 3) was the only standing structure in the project area. However, as noted above, it was removed and any potential archaeological site destroyed after the 1997 flood.

The OHPO mapping system shows OHI property MEG-387-12 within the project area. However, the original site of this church was named on the Hayes (1877) map (Figure 3). The church was later moved up onto Route 124 but has since been torn down (Patty Pickens, personal communication July 2006).

Historically, the project area is likely to contain archaeological sites that may date to the nineteenth and twentieth centuries. These may include house and outbuilding sites related to the agricultural community of Letart Falls and their related commercial activities.





x:/projects/amp-oh_melgs_co/Arch_Figure6new.mxd

| ОНІ # | STYLE/DESIGN | DATE/PERIOD | COMMENTS | CURRENT STATUS |
|------------|--|-------------|---|-----------------------------|
| MEG-370-12 | Vernacular | Not listed | On Bucktown Rd | Poor condition, vacant |
| MEG-371-12 | Vernacular, hall and parlor | Not listed | On Bucktown Rd | Gone |
| MEG-372-12 | Vernacular, 'Georgian plan' | Circa 1850 | On Bucktown Rd | Gone |
| MEG-373-12 | Vernacular 'Cumberland house' wraparound porch | Not listed | On Bucktown Rd | Poor condition, vacant |
| MEG-374-12 | Vernacular, I house | Circa 1830 | On Bucktown Rd, reportedly oldest house in Letart Falls | Gone |
| MEG-375-12 | Vernacular, board and batten | Not listed | On Bucktown Rd | Gone |
| MEG-376-12 | Vernacular, pyramidal roof | Circa 1890 | Off Bucktown Rd | Gone |
| MEG-383-12 | Vernacular, saltbox roof line | Circa 1850 | On Rt124 | Fair condition, occupied |
| MEG-384-12 | Vernacular, brick I house | Circa 1860s | Cross House, site | Gone |
| MEG-387-12 | Vernacular, 'Greek Revival touches' | Circa 1865 | Letart Falls United Methodist Church | Gone |
| MEG-388-12 | Vernacular, commercial | Not listed | Had been store and post office | Gone |
| MEG-389-12 | Vernacular, end gable | Not listed | Remodeled | Good |
| MEG-390-12 | Vernacular, school | Circa 1930 | Brick school building | Poor condition, vacant |

Table 3. OHI properties within or near the project area.

Cultural Overview

The prehistoric and historical period occupations of the upper Ohio River valley are briefly examined in regard to changing settlement patterns, and cultural and chronological changes.

Paleoindian Period (c. ?10,000+ - 8,000 BC)

Paleoindian peoples entered the eastern United States after the Wisconsin glacial retreat, during a time of rapid environmental shifting (Seeman et al. 1994; Tankersley 1994). The initial, recognized Paleoindian tradition was the Clovis period, typified by characteristic projectile points and tool kits. Artifact types within the tool kit remained consistent from the western United States into eastern sites (Fitting et al. 1966; MacDonald 1968; Frison 1991).

During the late Paleoindian period, after approximately 10,800-10,000 years Before Present (BP), regional archaeological complexity increased (Ellis and Deller 1988). Regionally specific projectile point styles such as Quad, Dalton, and Hardaway-Dalton replaced the Clovis type (Justice 1987).

Extensive research through the 1980s and 1990s has increased the amount of information available with which to interpret the subsistence strategies, settlement patterns and changing culture of the Paleoindian peoples (c.f. Dancey 1994; Roper and Lepper 1991; Tankersley and Isaac 1990; Ellis and Lothrop 1989). However, the influx of data has led to conflicting interpretations of subsistence and settlement changes in the Ohio valley (Seeman et al. 1994).

What can be agreed upon is that the late Paleoindian sites in the Ohio valley included evidence of a shift toward smaller game with greater regional specialization of tool kits (Tankersley 1994; Seeman et al. 1994). Larger sites such as Welling, Nobles Pond and Sandy Spring have been identified that may indicate aggregation of smaller families or populations at some period during the year (Seeman et al. 1994).

The sites served to illustrate the changing nature of the Paleoindian occupation of the Ohio valley. The ensuing Archaic period continued the shift from an emphasis on larger game pursued in a migratory pattern, to a reliance on more locally available plant and animal resources.

Archaic Period (c. 8,000 BC-1,500 BC)

The Archaic Period continued the development of region-specific adaptations to local environments begun in the late Paleoindian period. Site investigations indicated that they made use of seasonal camps, often using a base camp with outlying activity/procurement camps, and extractive sites for periodic use throughout the year (Dragoo 1976; Chapman and Otto 1976). Recent excavations at sites such as Henderson (Kozarek et al. 1994) and Manning (Roper and Lepper 1991) indicate that many Archaic sites were utilized repeatedly during this period. They provided base camps situated on stable terraces from which to disperse in search of specific resources (Kozarek at al. 1994:163).

Throughout the Archaic period, the types and quantities of processing tools of all types increased in variety and form. Wood and plant processing tools including groundstone items were plentiful by the Middle Archaic period (generally placed after 6,000 BC). Most artifact data from this time period, however, is based on typological data rather than intact, datable sites (Dragoo 1976).

The Late Archaic period represented a time frame of increasing local complexity and specialization among the various regional groups (Dragoo 1976; Winters 1969; Vickery 1980). Through the Late Archaic period, many aspects of what is called the Woodland period were already becoming apparent by 2,000 BC (Griffin 1978; Winters 1969). Evidence included expanded trade networks, evidence of status differentiation, and possible horticultural activities (Griffin 1978; Driskell 1979; Cowan et al. 1981).

Woodland Period (c. 1500 BC - AD 1000)

The Woodland period was marked by significant shifts in subsistence strategy, technological changes, and changing settlement patterns. Divided traditionally into the Early Woodland, Middle Woodland, and Late Woodland periods, those periods have been assigned the time frames: 1500 BC-AD 100, 200BC - AD 500, and AD 500 - AD 1000, respectively. Note that the Early and Middle Woodland periods overlap. Some cultures have been identified as Middle Woodland (ex. Hopewell) while evidence exists that cultures identified as Early Woodland (ex. Adena) continued in other parts of the Ohio Valley.

The Early Woodland period represented a shift in subsistence and settlement strategies by the Native American occupants of the Ohio Valley. Developing horticultural strategies by the Late Archaic peoples led to a significant increase in their use after that time (Yarnell 1973; Cowan et al. 1981). A related development was the use of clay pottery for cooking and storage vessels.

Some burial mounds included significant evidence of social status differentiation. The presence of copper and shell ornaments in burial contexts provided evidence for extensive trade networks among the eastern woodlands and southeast. Referred to as the Adena culture in the Ohio Valley, researchers have found evidence for their settlements on river and stream terraces, with possible winter upland resource extraction. Most research on Adena during the greater part of the twentieth century was on the burial and ceremonial earthworks. Increasing interest in their culture as a whole has increased our knowledge of the Adena (Farnsworth and Emerson 1986).

The Middle Woodland period is defined by the Hopewell complex, probably centered near Chillicothe, Ohio on the Scioto River. Another focus of development was in Illinois (Griffin 1978). The Hopewellian period was characterized by elaborate geometric earthworks, burial mounds, an extensive trade network producing exotic goods, flint bladelets of a particular type, distinctive pottery and other artifacts, and a complex mortuary system. Much of the early research centered on the elaborate earthworks and burial mounds, producing extensive information about the mortuary practices, but little about subsistence or settlement. Recent research has found evidence of smaller habitations in the Ohio Valley, but larger villages such as seen in Illinois have not been identified as yet in Ohio (Genheimer 1994). Subsistence strategies for the Middle Woodland period are still being researched and little substantive interpretation has been agreed upon.

Mound building as a mortuary custom continued throughout the late Woodland period, although on a smaller scale and possibly of a different nature (Seeman 1981; Kreinbrink 1992). Regional settlement patterns become better understood during this time period.

Subsistence strategies included a growing reliance on domesticated plants including squash, seed plants, and maize agriculture by the end of the Late Woodland period (Seeman 1981; Wymer 1992). Wymer (1992) found an intensification and diversity in Late Woodland deposits from a number of Ohio valley sites for this time period. Toward the end of the late Woodland, however, she noted a decrease in diversity as maize increased in importance (Wymer 1992:67).





Much of the identification of Late Woodland manifestations in the upper Ohio Valley have so far been based on ceramic assemblages. Several different pottery types, distinguished primarily by the tempering agent, characterize these assemblages. Southern Ohio is characterized by two cordmarked pottery types, Peters, which can be grit, limestone, or chert tempered; and Chesser which is limestone tempered (Prufer and McKenzie 1966:241; Prufer 1967:12). The Late Woodland lithic assemblage is represented by triangular side notched points, triangular blades, Raccoon side-notched, and Chesser notched points (Seeman 1992; 1981). Chert material was generally obtained from local sources as opposed to higher quality, distant flint sources.

Fort Ancient Period (AD 1000-AD 1600+)

By 800-900 AD, the bow and arrow may have been introduced into the Ohio Valley (Seeman et. al. 1994). Other changes in settlement and subsistence soon changed the character of the Late Woodland archaeological record. By 1000 AD, the local Native American inhabitants of southwest Ohio practiced maize agriculture, used the bow and arrow, and tempered their pottery with shell instead of grit or limestone. Social and political changes may have also accompanied the technological changes.

The Mississippian period as seen in the Mississippi Valley included large town and mound complexes that influenced and controlled many of their neighbors. Influence reached the Ohio Valley in terms of technological change as mentioned above, and perhaps social changes as well, although those are not as well documented.

During the Fort Ancient period, permanently occupied villages have been documented along most of the major streams and rivers in southern Ohio. Divided into three time frames by many researchers, the Fort Ancient period saw changes in pottery styles and village layout/plans through the more than 600 year period (Griffin 1943; Essenpreis 1982; Cowan 1986; Henderson 1992).

Historic Period Euro-American Settlement

During the Iroquoian wars of the seventeenth century, many Native groups were pushed or moved out of their traditional homelands. Conflicts among the French, English, the fledgling Colonies, and the Iroquois caused much of Ohio to be depopulated during this period (Hunter 1978). European trade goods are known from some sites in the upper Ohio Valley, including two sites in Greenup County, Kentucky (Pollack and Henderson 1984), down river from the Meigs County, Ohio project area.

At the beginning of the eighteenth century, most of what is now the United States, from the Mississippi River east, had been explored. The Atlantic seaboard was held under the British crown, Florida was controlled by Spain, and the French were established along the Mississippi and St. Lawrence River Valleys (Buck and Buck 1939). However, the upper Ohio Valley still remained relatively unexplored.

Throughout the first half of the eighteenth century, colonial land agents, as well as traders, maintained steadily growing interests in the Ohio area, interests that served to further strain Anglo-French relations. In the latter half of the eighteenth century, after the area was once again populated by Indian groups governed by the Iroquois, it became apparent that control of the mid-continent would rest with whomever controlled its primary east-west access, the Ohio Valley. As a result, in the late 1740s, the Ohio Land Company was organized, and subsequently requested a grant of 500,000 acres from the British crown, part of which included southeastern Ohio. French retaliatory actions included sending Celeron de Blanville to the upper Ohio Valley to reassert French authority in 1749.

Prior to the formal declaration of war between England and France in 1756, the relationship between the two countries continued to deteriorate. Various skirmishes broke out in the early 1750s, culminating in the French and Indian Wars of 1756-1763. The Treaty of 1763 granted the victorious English Canada and the eastern half of the continental United States. The authority of the British over the area was, however, relatively short-lived, since the upper Ohio Valley was shortly embroiled in the American Revolution, which led to a general rising of most of the Ohio tribes. Because Ohio remained largely unsettled by Euro-Americans, Indian hostilities were directed primarily against white strongholds in neighboring states. Although the 1783 Treaty of Paris finalized the American colonists' victory, it did not end the British inspired Indian raids. Furthermore, since the frontier was continually being forced back by land speculators, traders, woodsmen, and settlers, Indian territorial rights, even though nominally protected by the government, were openly ignored by the citizenry.

Following the American Revolution, the peace treaty signed with the British granted the new American nation a boundary that extended not just to the Appalachians, but all the way to the Mississippi River. Along with this territory, the British abandoned their native allies as well, and it was within this context that post-war Indian policy was formulated. The treaty signed at Fort Stanwix in 1784, for example, reflected the notion that the Iroquois has forfeited all claim to their land by fighting with the British against the emerging American nation (Johnson et al. 1979). Prior to the Treaty of Fort Stanwix, the area was still claimed by the Iroquois Confederacy.

Also in the aftermath of the Revolutionary War, several of the original colonies pressed claims on the Ohio territory. In 1794, Virginia relinquished rights to Eastern Ohio, but retained privileges over the land between the Scioto and Little Miami Rivers. Indian title to the balance of the territory was purchased by Congress in 1787, although not until General Mad Anthony Wayne's 1794 victory at the Battle of Fallen Timbers were Indian-settler conflicts somewhat dampened. Wayne's triumphant march defined the Indian treaty boundary spelled out in the 1795 Treaty of Greenville. The line ran roughly on the diagonal from Lake Erie to a point opposite the Kentucky River embouchure (Roseboom and Weisenburger 1973).

This treaty formally marked the beginning of American and Euro-American permanent inhabitance of most of the lands north and west of the Ohio River, although several settlements like Marietta and Losantiville (Cincinnati) were founded as early as 1788. Likewise, the Land Ordinance of 1785 and the 1787 Northwest Ordinance had already delineated how the western lands would be surveyed and governed, respectively. In fact, as early as 1785, a survey of the first seven ranges (vertical rows of townships) of eastern Ohio was undertaken, tracts of which were sold in 1787 (Sherman 1925:52).

Meigs County – Letart Township

Primarily a rural area, Meigs County was originally part of the Ohio Company's purchase. In 1819, the county was formed out of portions of Athens and Gallia counties (Gerlach and Parker 1977). Letart Township was first organized in 1803 while it was still part of Gallia County. The Letart Falls area was settled as early as 1780 and Letart Township was one of the original townships in the county. The earliest settlers included farmers and flat boat men (Ervin 1949). By 1810, the Sayre family had started the first grist mill, on the Ohio River southwest of Bucktown Road (out of the project area) (Gerlach and Parker 1979). During most of the nineteenth century, local farming remained a subsistence activity with surpluses sold in the local market (MCPHS 1979).

By the late nineteenth century, the coal and salt industries and river transportation work drew away young men from the farms. Local farmers began to shift to increased production in order to produce a livable income. On the terraces around Letart Falls, the light sandy loam was very well suited to certain vegetables and fruits. Strawberries, potatoes and cabbage were the first commercial crops grown in the valley (MCPHS 1979). By the early twentieth century, the farmers were producing good harvests of fruits and vegetables. Strawberries were the major crop in the early twentieth century. Harvesters consisted of primarily local children, paid a few cents per quart to pick the berries. The last strawberries were grown about 1965 (MCPHS 1979). At least some of the smaller houses noted on the 1908 and 1920 topographic maps were probably the homes of sharecroppers and their families during the early boom period of cash/truck farming in the valley (MCPHS 1979).

Modern labor laws and other considerations ended the use of children in the farm fields. Today, immigrant and migrant labor is used to plant, tend, and harvest the fields in the region. By the 1950s-1960s most of the small tenant houses were gone. Some have been replaced by trailers but most have disappeared from the landscape.

Many of the major farms were sold in the 1950s to a coal company, who still hold much of the property in the valley. They leased out the terraces for farming to some of the same families who had previously owned the land. Cash farming is still the major industry, although currently, tomatoes, peppers, watermelon, and squash are the major crops. However, growth of these crops involves major soil movement as the soil is gathered into long, raised platforms in which the plants are grown. Repeated gathering and tilling has impacted the integrity of any sites found in the central portion of the project area, especially east of Route 124 and north of East Letart Road.

METHODS

Field Methods

The field methods employed general techniques recommended by the Ohio Historic Preservation Office (OHPO) Guidelines (1994) and amended recommendations provided at an OHPO meeting with Ohio consultants in early 1998. Survey of the project area included a combination of surface reconnaissance survey and shovel testing. The scope of work was discussed in a meeting with the OHPO on December 15, 2005. As determined in that meeting, the survey of the Lower Terrace included three main tasks. Each is discussed below regarding methodology.

TASK 1: Relocate previously recorded 33MS288 and reassess its horizontal boundary along the Ohio River bank. As recorded, the site encompasses a large field located between Route 124 and the Ohio River (see Results Section) The survey of the site included a surface reconnaissance because the field had been plowed/disked. Transects were walked at less than 5 meter intervals. Artifact locations were marked with pin flags. Additional transects were then walked in the areas that produced artifacts to refine site boundaries. A lathe stake or pin flag marker was placed at the approximate center point of the artifact distribution and marked "Cluster A", and so forth. Surveyors provided by URS then used a GPS unit to map in several of the site clusters within site 33MS288. All observed artifacts were collected, except for modern historic debris, brick fragments, or fire cracked rock.

TASK 2: Conduct an archaeological survey of the Lower Terrace Portion of the Project Area, document the presence/absence of previously unrecorded archaeological sites, and make recommendations regarding their eligibility for the National Register of Historic Places.

The Lower Terrace project area was divided into 14 Survey Sections (see Results Section). These sections are based on a combination of field, road, and natural boundaries. In fields with sufficient surface visibility (more than 30%), the crew conducted a surface reconnaissance. Transects were walked at less than 5 meter intervals. Artifact locations were marked with pin flags. Additional transects were then walked in the areas that produced artifacts to refine site boundaries. A lathe stake or pin flag marker was placed at the approximate center point of the artifact distribution and marked "Site 1", and so forth. The diameter of the artifact scatter was noted. Surveyors provided by URS then used a GPS unit to map in the locations of documented sites and several individual datums used during field mapping. The site locations were then accurately plotted onto the figures used in this report.

Where ground surface visibility was insufficient, the crew conducted shovel testing based on a 15 meter (50 foot) grid system. In the Lower Terrace project area, Survey Section 11 was shovel tested. Small portions of Sections Each test was 50 cm in diameter and excavated 10 cm into subsoil or 50 cm in depth. All soil was sifted through 1/4 inch wire mesh. Data on each test including soil profile (depth, Munsell soil color, soil type), location, setting, and

presence/absence of artifacts were noted on shovel test forms. Artifacts were bagged by shovel test coordinate.

A shovel test was excavated at each archaeological site that had more than two artifacts. These tests followed the test parameters described above and recorded data on stratigraphy and depth of plowzone for the recorded sites.

TASK 3: Evaluate the Lower Terrace project area regarding geomorphological setting and potential for buried archaeological sites.

URS personnel including Dr. James Nicholas and John Hurd conducted a literature review that included topographic maps, aerial photographs, published geological and soil data, internet resources, and other references in order to best characterize the terrace system in the Lower Terrace Project Area. N&E provided shovel test results to aid in their review. Their results are described in the Results Section.

<u>Artifact Analysis</u>

Prehistoric Artifacts: Artifact analysis included several steps; washing and sorting, catalog preparation, and analysis. Artifacts are listed in the Results Section text. Analysis of the lithic artifacts includes the following tasks:

- identification of raw materials when possible,
- description of morphological characteristics,
- macroscopic examination for evidence of utilization, and
- artifact type description based on physical attributes and assigned functional names such as drill, scraper, and so forth.

In-depth debitage analysis was not included at this level of investigation. References such as Justice (1987) were used for identification of diagnostic projectile points. DeRegnaucourt and Georgiady (1998) provided reference information on chert raw material types.

Analysis of prehistoric artifact assemblages may be used to infer site function, seasonality of occupation settlement patterns and other aspects of prehistoric activities. However, at a Phase I level of investigations, assemblages typically include small amounts of material from spatially separated shovel tests or surface collection transects. At the Phase I level, prehistoric materials provide some information about chronological/cultural affiliation when possible, raw materials usage, and some data on site function. The resulting information is combined with data on site integrity and regional comparisons to make recommendations on potential eligibility for inclusion on the National Register of Historic Places.

Historic Period Artifacts: Historic archaeologists have begun to use material culture to discern how patterns in the archaeological record may provide data on cultural patterns such as economics,

social change, ethnicity, and human choices and behavior (Miller 1991; Cheek and Friedlander 1990; Spencer-Wood 1987).

Phase I artifact recovery methods at rural historic sites routinely include artifacts recovered from surface reconnaissance or from patterned shovel testing. These techniques are designed to provide a sample from which to make inferences about site function, chronology, and to answer research questions designed to determine whether further investigation is warranted.

Artifacts recovered during this project were washed and sorted at the Natural & Ethical Environmental Solutions laboratory. In general, material, morphology and decoration define each artifact. This type of analysis serves to define temporal site affiliation, site function, and assist in answering research questions. References include archaeological manuals, books, and articles such as Jones and Sullivan (1985), Majewski and O'Brien (1987), Samford 1997, Miller et al (2000), Ball (1983), and many others listed individually as needed. The historical archaeological community relies on a large number of books and manuals compiled by collectors and identification experts. These include excellent and well known references such as Godden (1964), McKearin and Wilson (1978), Laidacker (1954 v1 and 2), Camehl (1916), Spargo (1926), McAllister (2001), Hughes (1961), Ketchum (1991), or Gaston (2002). References compiled by or for archaeologists include Jones and Sullivan (1985), Majewski and O'Brien (1987), Miller et al (2000), (Hunter 2001), Samford (1997), and the contents of the Society for Historical Archaeology Journal; *Historical Archaeology*, published quarterly each year. These and many other references provide source material for historic artifact typological and morphological descriptions.

A taxonomic classification system is used to sort and identify the historic artifact assemblage. This system uses the following hierarchical categories: Category, Type, Form, Style, and Description. Each item is defined briefly below.

Category: This is the primary sorting column. Items are sorted based on material type. This includes metal, ceramic, faunal, glass, or stone.

Type: The Type column subdivides the items by either physical or cultural characteristics. Metal and stone objects are further sorted by type of raw material such as ferrous (containing iron), brass, silver, chert/flint, or limestone. Categories that consist of culturally produced objects such as glass and ceramic are sorted based on physical characteristics and and/or form. Glass artifacts are divided in this column by flat or curved. This sets up the further classification of glass by Form in the next column. Ceramics are defined by type of ware such as Stoneware, Whiteware, Pearlware, or Porcelain. The definition of these types is based on physical characteristics such as firing temperature, and type and color of clay (fabric). The identification of ceramic ware type is based on experience and use of a reference library of both archaeological and collector pictorial resources.

Form: Form defines each object morphologically. Ceramics are defined by form when possible, hollow or flat, plate, bowl, etc. Glass is classified by whether it is a container or tableware, or window glass for example. If the container type is identifiable, such as bottle or jar, that is listed here. For metal, terms such as nail, bolt, etc, provide information on morphology.

Style: This column provides further detailed information and generally constitutes a subset of the Form column. For example, in the style category, nails (Form category) may be broken down into cut, wire, or wrought. Ceramic styles include decorative techniques such as transfer print or hand painted.

Description: The Description Column provides the opportunity to add significant details such as decoration color, size for nails or buttons, or presence of makers' marks or other imprint/embossing.

The overall artifact catalog also records vital information such as provenience, bag number, minimum vessel number for ceramics, artifact dimensions when appropriate, and quantity. The artifact catalog is included in Appendix 1 in its entirety. Individual site collections may also be summarized in the Results Section.