APPENDIX V:

V3 COMPANIES FIELD DATA SHEETS

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 46.75

River Code: _____ **RM:** _____ **Stream:** Ashtabula River

Date: 9/8 **Location:** Station #1

Scorers Full Name: MK, GL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]		
☐☐-BOULDER [9]			☐☐-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☒☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☒☐-SILT [2]					

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☐-4 or More [2]
☒-3 or Less [0]

SUBSTRATE ORIGIN — Check ONE (OR 2 & AVERAGE)
☐ -LIMESTONE [1]
☒-TILLS [1]
☐ -WETLANDS[0]
☐ -HARDPAN [0]
☐ -SANDSTONE [0]
☐-RIP/RAP [0]
☐ -LACUSTRINE [0]
☐ -SHALE [-1]
☐-COAL FINES [-2]

SUBSTRATE QUALITY — Check ONE (OR 2 & AVERAGE)
SILT:
☐- SILT HEAVY [-2]
☒-SILT MODERATE [-1]
☐ -SILT NORMAL [0]
☐ -SILT FREE [1]
EMBEDDEDNESS:
☐-EXTENSIVE [-2]
☒-MODERATE [-1]
☐ -NORMAL [0]
☐ -NONE [1]

Substrate: 5 (Max 20)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)
___UNDERCUT BANKS [1]
X OVERHANGING VEGETATION [1]
___SHALLOWS (IN SLOW WATER) [1]
___ROOTMATS [1]

TYPE: Score All That Occur
X POOLS> 70 cm [2]
___ROOTWADS [1]
___BOULDERS [1]
___OXBOWS, BACKWATERS [1]
___AQUATIC MACROPHYTES [1]
X LOGS OR WOODY DEBRIS [1]

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☒ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

COMMENTS: _____

Cover: 11 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☒ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☐ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☒ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 14 (Max 20)

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH — L R (Per Bank)
☐☒ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☐☐ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) — L R (Most Predominant Per Bank)
☐☒-FOREST, SWAMP [3]
☐☐-SHRUB OR OLD FIELD [2]
☐☐-RESIDENTIAL,PARK,NEW FIELD [1]
☐☐-FENCED PASTURE [1]
☐☐-CONSERVATION TILLAGE [1]
☐☐-URBAN OR INDUSTRIAL [0]
☐☐-OPEN PASTURE,ROWCROP [0]
☐☐-MINING/CONSTRUCTION [0]

BANK EROSION — L R (Per Bank)
☐☐-NONE/LITTLE [3]
☒☒-MODERATE [2]
☐☐-HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 5.75 (Max 10)

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☒- >1m [6]
☐- 0.7-1m [4]
☐- 0.4-0.7m [2]
☐- 0.2-0.4m [1]
☐- < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☐-POOL WIDTH > RIFFLE WIDTH [2]
☐-POOL WIDTH = RIFFLE WIDTH [1]
☒-POOL WIDTH < RIFFLE W. [0]
no riffle

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☐-EDDIES[1]
☐-FAST[1]
☐-MODERATE [1]
☒-SLOW [1]
☐-TORRENTIAL[-1]
☐-INTERSTITIAL[-1]
☐-INTERMITTENT[-2]
☐-VERY FAST[1]

COMMENTS: _____

Pool/Current: 7 (Max 12)

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☐ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐-STABLE (e.g.,Cobble, Boulder) [2]
☐-MOD. STABLE (e.g.,Large Gravel) [1]
☐-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☐ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS: _____ ☒- NO RIFFLE [Metric=0]

Riffle/Run: 0 (Max 8)

Gradient: 4 (Max 10)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____

%POOL: 100 %GLIDE: ____
%RIFFLE: ____ %RUN: ____

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Anderson River	LOCATION Hwy 545	
STATION # 1 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		
FORM COMPLETED BY WL	DATE 9/8 TIME 7:45 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☒ No
	☐ storm (heavy rain)	☐	**Air Temperature** 17 °C
	☐ rain (steady rain)	☐	
	☐ showers (intermittent)	☐	**Other** _____
	___% ☐ %cloud cover	☒ 20 %	
	☒ clear/sunny	☒	
SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**		
STREAM CHARACTERIZATION	**Stream Subsystem** ☒ Perennial ☐ Intermittent ☐ Tidal		**Stream Type** ☐ Coldwater ☒ Warmwater
	Stream Origin ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☒ Mixture of origins ☐ Swamp and bog ☐ Other _____		**Catchment Area** _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☒ Forest ☒ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☐ Some potential sources ☒ Obvious sources **Local Watershed Erosion** ☐ None ☒ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☒ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous **dominant species present** Maple sp.
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 20 m **Sampling Reach Area** _____ m² **Area in km² (m²x1000)** _____ km² **Estimated Stream Depth** >1 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☒ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle _____ % ☐ Run _____ % ☒ Pool 100 % **Channelized** ☐ Yes ☒ No **Dam Present** ☐ Yes ☒ No
LARGE WOODY DEBRIS	**LWD** 3 m² **Density of LWD** _____ m²/km² (LWD/ reach area)
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☒ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** Lemna sp. **Portion of the reach with aquatic vegetation** _____ %
WATER QUALITY	**Temperature** 21.1 °C **Specific Conductance** 281.2 **Dissolved Oxygen** 3.74 **pH** 8.31 **Turbidity** 39 **WQ Instrument Used** _____ Salinity = 0.1 conductivity = 204 **Water Odors** ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☒ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☐ Slightly turbid ☒ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	15%
Boulder	> 256 mm (10")	—			
Cobble	64-256 mm (2.5"-10")	—	Muck-Mud	black, very fine organic (FPOM)	
Gravel	2-64 mm (0.1"-2.5")	—			
Sand	0.06-2mm (gritty)	5	Marl	grey, shell fragments	
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)	85			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Middle Fork Anderson	LOCATION Jones Mill
STATION # 2 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY MK, WL DATE 9/18/06	LOT #
TAXONOMIST WL DATE 10/4/06	SUBSAMPLE TARGET ☒ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta					
Hirudinea					
Isopoda					
Amphipoda	I	1	A	WGL	1
Decapoda Crayfish	III	3	A	WGL	1
shrimp	I	1	A	WGL	1
Ephemeroptera					
Baetidae	III	3	I	WGL	1
Heptageniidae	~~IIII~~ ~~IIII~~ ~~IIII~~ II	17	I	WGL	1
Plecoptera					
Trichoptera					
Hydropsychidae	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~	25	I	WGL	1
Hemiptera Notonectidae	I	1	A	WGL	1
Diving Beetle	I	1	A	WGL	1
H_2O strider	I	1	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Sialidae	I	1	I	WGL	1
Coleoptera					
Haliplidae	I	1	A	WGL	1
Elmidae	~~IIII~~ ~~IIII~~ ~~IIII~~	15	A	WGL	2
Diptera					
Chironomidae	IIII	4	I	WGL	1
Gastropoda					
Pi hem?	~~IIII~~ ~~IIII~~ I	11	A	WGL	1
L. he.	III	3	A	WGL	1
Pelecypoda					
Asian Clam	II	2	A	WGL	1
Other					
planaria	I	1	A	WGL	1
Aeshnidae	II	2	I	WGL	2
Coenagrionidae	~~IIII~~ II	7	I	WGL	1

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 19

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Middle Fork Anderson	LOCATION Jones Mill	
STATION # 2 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/8 TIME 10:45 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☒ Cobble 70 % ☒ Snags 10 % ☒ Vegetated Banks 5 % ☐ Sand ____ % ☒ Submerged Macrophytes 5 % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☒ Cobble ____ ☒ Snags ____ ☒ Vegetated Banks ____ ☐ Sand ____ ☒ Submerged Macrophytes ____ ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	0	(1)	2	3	4
Filamentous Algae	0	1	(2)	3	4	Macroinvertebrates	0	1	2	(3)	4
Macrophytes	0	1	(2)	3	4	Fish	0	1	(2)	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 89.5

River Code: _____ **RM:** _____ **Stream:** Middle Fork Anderson R.
Date: 9/8/06 **Location:** Station #2
Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐ ☐ -BLDR /SLBS[10]			☒ ☒ -GRAVEL [7]		
☐ ☐ -BOULDER [9]			☐ ☐ -SAND [6]		
☒ ☒ -COBBLE [8]			☐ ☐ -BEDROCK[5]		
☐ ☐ -HARDPAN [4]			☐ ☐ -DETRITUS[3]		
☐ ☐ -MUCK [2]			☐ ☐ -ARTIFICIAL[0]		
☐ ☐ -SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐ -LIMESTONE [1] ☒ -TILLS [1] ☐ -WETLANDS[0] ☐ -HARDPAN [0] ☐ -SANDSTONE [0] ☐ -RIP/RAP [0] ☐ -LACUSTRINE [0] ☐ -SHALE [-1] ☐ -COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)): SILT: ☐ - SILT HEAVY [-2] ☐ -SILT MODERATE [-1] ☒ -SILT NORMAL [0] ☐ -SILT FREE [1]; EMBEDDEDNESS: ☐ -EXTENSIVE [-2] ☐ -MODERATE [-1] ☐ -NORMAL [0] ☒ -NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☒ -4 or More [2] ☐ -3 or Less [0]

Substrate: 19 Max 20

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

X UNDERCUT BANKS [1] X POOLS> 70 cm [2] X OXBOWS, BACKWATERS [1]
X OVERHANGING VEGETATION [1] ___ ROOTWADS [1] X AQUATIC MACROPHYTES [1]
X SHALLOWS (IN SLOW WATER) [1] X BOULDERS [1] X LOGS OR WOODY DEBRIS [1]
X ROOTMATS [1] COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE) ☒ - EXTENSIVE > 75% [11] ☒ - MODERATE 25-75% [7] ☐ - SPARSE 5-25% [3] ☐ - NEARLY ABSENT < 5%[1]

Cover: 19 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☒ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☒ - MODERATE [3]	☒ - GOOD [5]	☐ - RECOVERED [4]	☒ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

Channel: 16 Max 20

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH L R (Per Bank)	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) L R (Most Predominant Per Bank)	L R	BANK EROSION L R (Per Bank)
☒ ☒ - WIDE > 50m [4]	☒ ☒ -FOREST, SWAMP [3]	☐ ☐ -CONSERVATION TILLAGE [1]	☐ ☒ -NONE/LITTLE [3]
☐ ☐ - MODERATE 10-50m [3]	☐ ☐ -SHRUB OR OLD FIELD [2]	☐ ☐ -URBAN OR INDUSTRIAL [0]	☒ ☐ -MODERATE [2]
☐ ☐ - NARROW 5-10 m [2]	☐ ☐ -RESIDENTIAL,PARK,NEW FIELD [1]	☐ ☐ -OPEN PASTURE,ROWCROP [0]	☐ ☐ -HEAVY/SEVERE[1]
☐ ☐ - VERY NARROW <5 m[1]	☐ ☐ -FENCED PASTURE [1]	☐ ☐ -MINING/CONSTRUCTION [0]	
☐ ☐ - NONE [0]			

Riparian: 9.5 Max 10

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)	
☒ - >1m [6]	☒ -POOL WIDTH > RIFFLE WIDTH [2]	☒ -EDDIES[1]	☐ -TORRENTIAL[-1]
☐ - 0.7-1m [4]	☐ -POOL WIDTH = RIFFLE WIDTH [1]	☐ -FAST[1]	☐ -INTERSTITIAL[-1]
☐ - 0.4-0.7m [2]	☐ -POOL WIDTH < RIFFLE W. [0]	☒ -MODERATE [1]	☐ -INTERMITTENT[-2]
☐ - 0.2-0.4m [1]		☒ -SLOW [1]	☐ -VERY FAST[1]
☐ - < 0.2m [POOL=0]			

Pool/Current: 11 Max 12

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
☐ - Best Areas >10 cm [2]	☒ - MAX > 50 [2]	☒ -STABLE (e.g.,Cobble, Boulder) [2]	☐ - NONE [2]
☒ - Best Areas 5-10 cm[1]	☐ - MAX < 50[1]	☒ -MOD. STABLE (e.g.,Large Gravel) [1]	☒ - LOW [1]
☐ - Best Areas < 5 cm [RIFFLE=0]		☐ -UNSTABLE (Fine Gravel,Sand) [0]	☐ - MODERATE [0]
			☐ - EXTENSIVE [-1]

Riffle/Run: 5 Max 8

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Gradient: 10 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 50 %GLIDE: — %RIFFLE: 30 %RUN: 20

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Middle Fork Anderson	LOCATION Jones Mill (CR 13)	
STATION # 2 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		
FORM COMPLETED BY WL	DATE 9/8 TIME 10:45 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☒ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 18 °C
	☐ showers (intermittent)	☐	
	____% ☐ %cloud cover	☐ ____%	**Other** _____
	☒ clear/sunny	☒	

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☒ Mixture of origins
☐ Other_____

Catchment Area_____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☑ No evidence ☐ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☑ Trees ☐ Shrubs ☐ Grasses ☑ Herbaceous **dominant species present** Maple Jewcap
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 5 m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** _____ m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☑ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☑ Riffle 30 % ☑ Run 20 % ☑ Pool 50 % **Channelized** ☐ Yes ☑ No **Dam Present** ☐ Yes ☑ No
LARGE WOODY DEBRIS	**LWD** 4 m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☑ Attached Algae **dominant species present** Water Willow **Portion of the reach with aquatic vegetation** 15 %
WATER QUALITY	**Temperature** 20.4 °C Total Flow = 1.246 ft/sec **Specific Conductance** 221.7 **Dissolved Oxygen** 5.61 **pH** 7.99 **Turbidity** 17 **WQ Instrument Used** _____ Salinity = 0.1 Cond = 203.1 **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☑ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		10	Detritus	sticks, wood, coarse plant materials (CPOM)	15
Boulder	> 256 mm (10")	10			
Cobble	64-256 mm (2.5"-10")	30	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	30			
Sand	0.06-2mm (gritty)	5	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm				
Clay	< 0.004 mm (slick)	15			

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 44.25

River Code: _____ **RM:** _____ **Stream:** Anderson River
Date: 9/9/06 **Location:** Station #3
Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]	___	___	☐☐-GRAVEL [7]	___	___
☐☐-BOULDER [9]	___	___	☐☐-SAND [6]	___	___
☐☐-COBBLE [8]	___	___	☐☐-BEDROCK[5]	___	___
☐☐-HARDPAN [4]	___	___	☐☐-DETRITUS[3]	___	___
☐☐-MUCK [2]	___	___	☐☐-ARTIFICIAL[0]	___	___
☑☑-SILT [2]	___	___			

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☒-4 or More [2]
☐-3 or Less [0]

SUBSTRATE ORIGIN — Check ONE (OR 2 & AVERAGE)
☐-LIMESTONE [1]
☑-TILLS [1]
☐-WETLANDS[0]
☐-HARDPAN [0]
☐-SANDSTONE [0]
☐-RIP/RAP [0]
☐-LACUSTRINE [0]
☐-SHALE [-1]
☐-COAL FINES [-2]

SUBSTRATE QUALITY — Check ONE (OR 2 & AVERAGE)
SILT:
☑-SILT HEAVY [-2]
☐-SILT MODERATE [-1]
☐-SILT NORMAL [0]
☐-SILT FREE [1]
EMBEDDEDNESS:
☐-EXTENSIVE [-2]
☑-MODERATE [-1]
☐-NORMAL [0]
☐-NONE [1]

Substrate: 4 (Max 20)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur
X UNDERCUT BANKS [1]
X OVERHANGING VEGETATION [1]
X SHALLOWS (IN SLOW WATER) [1]
___ ROOTMATS [1]
X POOLS > 70 cm [2]
X ROOTWADS [1]
X BOULDERS [1]
___ OXBOWS, BACKWATERS [1]
___ AQUATIC MACROPHYTES [1]
X LOGS OR WOODY DEBRIS [1]

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☐ - MODERATE 25-75% [7]
☑ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 11 (Max 20)

COMMENTS: _____

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☒ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☑ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☒ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

Channel: 12 (Max 20)

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH L R (Per Bank)	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) L R (Most Predominant Per Bank)	L R	BANK EROSION L R (Per Bank)
☐☐ - WIDE > 50m [4]	☒☐-FOREST, SWAMP [3]	☐☐-CONSERVATION TILLAGE [1]	☐☐-NONE/LITTLE [3]
☐☐ - MODERATE 10-50m [3]	☐☐-SHRUB OR OLD FIELD [2]	☐☐-URBAN OR INDUSTRIAL [0]	☑☑-MODERATE [2]
☐☐ - NARROW 5-10 m [2]	☐☐-RESIDENTIAL, PARK, NEW FIELD [1]	☐☐-OPEN PASTURE, ROWCROP [0]	☐☐-HEAVY/SEVERE[1]
☐☐ - VERY NARROW <5 m[1]	☐☐-FENCED PASTURE [1]	☐☐-MINING/CONSTRUCTION [0]	
☐☐ - NONE [0]			

Riparian: 6.25 (Max 10)

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)	
☑ - >1m [6]	☐-POOL WIDTH > RIFFLE WIDTH [2]	☐-EDDIES[1]	☐-TORRENTIAL[-1]
☐ - 0.7-1m [4]	☐-POOL WIDTH = RIFFLE WIDTH [1]	☐-FAST[1]	☐-INTERSTITIAL[-1]
☐ - 0.4-0.7m [2]	☐-POOL WIDTH < RIFFLE W. [0]	☐-MODERATE [1]	☐-INTERMITTENT[-2]
☐ - 0.2-0.4m [1]	↳ no riffle	☑-SLOW [1]	☐-VERY FAST[1]
☐ - < 0.2m [POOL=0]			

Pool/Current: 7 (Max 12)

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
☐ - Best Areas >10 cm [2]	☐ - MAX > 50 [2]	☐-STABLE (e.g.,Cobble, Boulder) [2]	☐ - NONE [2]
☐ - Best Areas 5-10 cm[1]	☐ - MAX < 50[1]	☐-MOD. STABLE (e.g.,Large Gravel) [1]	☐ - LOW [1]
☐ - Best Areas < 5 cm [RIFFLE=0]		☐-UNSTABLE (Fine Gravel,Sand) [0]	☐ - MODERATE [0]
			☐ - EXTENSIVE [-1]

Riffle/Run: 0 (Max 8)

COMMENTS: No riffle

☑ - NO RIFFLE [Metric=0]

Gradient: 4 (Max 10)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 100 %GLIDE: ___ %RIFFLE: ___ %RUN: ___

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Anderson River	LOCATION Huffman Rd
STATION # 3 RIVERMILE	STREAM CLASS
LAT LONG	RIVER BASIN Anderson Riv
STORET #	AGENCY
INVESTIGATORS MK. WL	
FORM COMPLETED BY WL	DATE 7/9 TIME 12:15 AM (PM) / REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☒ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 26 °C
	☐ showers (intermittent)	☐	
	30 % ☒ %cloud cover	☒ %	**Other**
	☐ clear/sunny	☒	

SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**
STREAM CHARACTERIZATION	**Stream Subsystem** ☒ Perennial ☐ Intermittent ☐ Tidal **Stream Type** ☐ Coldwater ☒ Warmwater **Stream Origin** ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☒ Mixture of origins ☐ Other **Catchment Area** km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☒ Forest ☒ Field/Pasture ☐ Agricultural ☐ Residential ☐ Commercial ☐ Industrial ☐ Other _____ **Local Watershed NPS Pollution** ☐ No evidence ☒ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☒ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☐ Trees ☐ Shrubs ☐ Grasses ☒ Herbaceous **dominant species present** Giant Ragweed
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 10 m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** 71 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☒ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle _____ % ☐ Run _____ % ☒ Pool 100 % **Channelized** ☐ Yes ☒ No **Dam Present** ☐ Yes ☒ No
LARGE WOODY DEBRIS	**LWD** 2.5 m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☒ Attached Algae **dominant species present** _____ **Portion of the reach with aquatic vegetation** 2 %
WATER QUALITY	**Temperature** 20.3 °C **Specific Conductance** 291.8 **Dissolved Oxygen** 4.15 **pH** 8.14 **Turbidity** 17.8 **WQ Instrument Used** _____ Cond 266.3 Sal = 0.1 **Water Odors** ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☒ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☐ Slightly turbid ☒ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			**ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)**		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	15
Boulder	> 256 mm (10")	20			
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")				
Sand	0.06-2mm (gritty)	5	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	25			
Clay	< 0.004 mm (slick)	50			

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 54.25

River Code: _____ **RM:** _____ **Stream:** Middle Fork Anderson River

Date: 9/9/06 **Location:** Station #4

Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]	___	___	☐☐-GRAVEL [7]	___	___
☐☐-BOULDER [9]	___	___	☐☐-SAND [6]	___	___
☐☐-COBBLE [8]	___	___	☐☐-BEDROCK[5]	___	___
☐☐-HARDPAN [4]	___	___	☐☐-DETRITUS[3]	___	___
☐☐-MUCK [2]	___	___	☐☐-ARTIFICIAL[0]	___	___
☑☑-SILT [2]	___	___			

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☑-4 or More [2]
☐-3 or Less [0]

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)
☐ -LIMESTONE [1]
☑-TILLS [1]
☐ -WETLANDS[0]
☐ -HARDPAN [0]
☐ -SANDSTONE [0]
☐ -RIP/RAP [0]
☐ -LACUSTRINE [0]
☐ -SHALE [-1]
☐ -COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)

SILT:
☐ - SILT HEAVY [-2]
☒ -SILT MODERATE [-1]
☐ -SILT NORMAL [0]
☐ -SILT FREE [1]

EMBEDDEDNESS:
☐ -EXTENSIVE [-2]
☑ -MODERATE [-1]
☐ -NORMAL [0]
☐ -NONE [1]

Substrate: 9 (Max 20)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)
___ UNDERCUT BANKS [1]
☒ OVERHANGING VEGETATION [1]
☒ SHALLOWS (IN SLOW WATER) [1]
___ ROOTMATS [1]

TYPE: Score All That Occur
☒ POOLS> 70 cm [2]
☒ ROOTWADS [1]
☒ BOULDERS [1]
___ OXBOWS, BACKWATERS [1]
☒ AQUATIC MACROPHYTES [1]
☒ LOGS OR WOODY DEBRIS [1]

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☑ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 15 (Max 20)

COMMENTS: _____

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☑ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☑ - LOW [2]	☑ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

Channel: 13 (Max 20)

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH
L R (Per Bank)
☐☐ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☑☑ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m [1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)
L R.(Most Predominant Per Bank)
☐ ☐-FOREST, SWAMP [3]
☐ ☐-SHRUB OR OLD FIELD [2]
☐ ☑-RESIDENTIAL,PARK,NEW FIELD [1]
☐ ☐-FENCED PASTURE [1]
☐ ☐-CONSERVATION TILLAGE [1]
☐ ☐-URBAN OR INDUSTRIAL [0]
☑ ☐-OPEN PASTURE,ROWCROP [0]
☐ ☐-MINING/CONSTRUCTION [0]

BANK EROSION
L R (Per Bank)
☐ ☐-NONE/LITTLE [3]
☑ ☑-MODERATE [2]
☑ ☐-HEAVY/SEVERE[1]

Riparian: 4.25 (Max 10)

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☑ - >1m [6]
☐ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☐ -POOL WIDTH > RIFFLE WIDTH [2]
☐ -POOL WIDTH = RIFFLE WIDTH [1]
☑ -POOL WIDTH < RIFFLE W. [0]
no riffle

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☐ -EDDIES[1]
☐ -FAST[1]
☐ -MODERATE [1]
☑ -SLOW [1]
☐ -TORRENTIAL[-1]
☐ -INTERSTITIAL[-1]
☐ -INTERMITTENT[-2]
☐ -VERY FAST[1]

Pool/Current: 7 (Max 12)

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☐ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐-STABLE (e.g.,Cobble, Boulder) [2]
☐-MOD. STABLE (e.g.,Large Gravel) [1]
☐-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☐ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

Riffle/Run: 0 (Max 8)

COMMENTS: no riffle ☑ NO RIFFLE [Metric=0]

Gradient: 6 (Max 10)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 100 %GLIDE: ___ %RIFFLE: ___ %RUN: ___

*- Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Middle Fork Anderson	LOCATION Hwy 145	
STATION # 4 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK WL		
FORM COMPLETED BY WL	DATE 9/9 TIME 7:45 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
30 % ☐	%cloud cover	☑ ___ %
☐	clear/sunny	☑

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 17 °C

Other

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin
☐ Glacial ☐ Spring-fed
☐ Non-glacial montane ☑ Mixture of origins
☐ Swamp and bog ☐ Other

Stream Type
☐ Coldwater ☑ Warmwater

Catchment Area ___ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☐ Forest ☒ Commercial ☐ Field/Pasture ☐ Industrial ☒ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☒ No evidence ☐ Some potential sources ☒ Obvious sources **Local Watershed Erosion** ☐ None ☒ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☒ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous **dominant species present** Maple
INSTREAM FEATURES	**Estimated Reach Length** _____m **Estimated Stream Width** 7 m **Sampling Reach Area** _____m² **Area in km² (m²x1000)** _____km² **Estimated Stream Depth** _____m **Surface Velocity (at thalweg)** _____m/sec **Canopy Cover** ☐ Partly open ☒ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle _____% ☐ Run _____% ☒ Pool 100 % **Channelized** ☐ Yes ☐ No **Dam Present** ☐ Yes ☒ No ← 1 below sample area
LARGE WOODY DEBRIS	**LWD** 1 m² **Density of LWD** _____m²/km² (LWD/ reach area)
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** Yellow lily **Portion of the reach with aquatic vegetation** 15 %
WATER QUALITY	**Temperature** 19.9 °C **Specific Conductance** 213.8 **Dissolved Oxygen** 2.19 **pH** 8.45 **Turbidity** 14 **WQ Instrument Used** _____ cond = 197.0 Sal = 0.1 **Water Odors** ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☒ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☐ Slightly turbid ☒ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☐ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☒ Anaerobic ☐ None ☐ Other _____ **Oils** ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	
Boulder	> 256 mm (10")	5			
Cobble	64-256 mm (2.5"-10")	—	Muck-Mud	black, very fine organic (FPOM)	
Gravel	2-64 mm (0.1"-2.5")	—			
Sand	0.06-2mm (gritty)	40	Marl	grey, shell fragments	
Silt	0.004-0.06 mm	35			
Clay	< 0.004 mm (slick)	20			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Brushy Fork	LOCATION
STATION # 5 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY mk, WL DATE 9/8	LOT #
TAXONOMIST WL DATE 10/4	SUBSAMPLE TARGET ☐ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta					
Hirudinea					
Isopoda					
Amphipoda	II	2	A	WGL	1
Decapoda					
Ephemeroptera	Baetid IIII	4	I	WGL	1
	Hept. I	1	I	WGL	1
Plecoptera					
Trichoptera					
Hydro.	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~	46	I	WGL	1
	~~IIII~~ ~~IIII~~				
philo potamidae	~~IIII~~	5	I	WGL	2
Hemiptera					
H2O strider	I	1	A	WGL	1

Organisms		No.	LS	TI	TCR	
Megaloptera						
Coleoptera						
Beetle	~~IIII~~ II					
Elmidae	IIII	4	A	WGL	2	
Dryopidae	III	3	A	WGL	2	
Diptera						
Black Fly	IIII	4	I	WGL	1	
mosq.	III	3	I	WGL	1	
Tabanidae	III	3	I	WGL	1	
brownishin	IIII	4	I	WGL	1	
Gastropoda						
Pelecypoda						
Other dragonfly	II	2	I	WGL	2	- Aeshnidae
calip.	~~IIII~~ ~~IIII~~	10	I	WGL	1	- calopteryx
coen.	~~IIII~~ III	8	I	WGL	1	- argia

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 15

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Brushy Fork	LOCATION	
STATION # 5 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/8 TIME 9:30 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☒ Cobble____% ☒ Snags____% ☒ Vegetated Banks____% ☐ Sand____% ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☒ Cobble____ ☒ Snags____ ☒ Vegetated Banks____ ☐ Sand____ ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	(0)	1	2	3	4
Filamentous Algae	0	(1)	2	3	4	Macroinvertebrates	0	1	2	(3)	4
Macrophytes	(0)	1	2	3	4	Fish	0	1	2	(3)	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 71.5

River Code: _____ **RM:** _____ **Stream:** Rocky Fork
Date: 9/8 **Location:** Site 5
Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☑☐-GRAVEL [7]		
☐☐-BOULDER [9]			☐☑-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN[4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]					

NOTE: Ignore Sludge Originating From Point Sources

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☑-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SILT: ☐-SILT HEAVY [-2] ☑-SILT MODERATE [-1] ☐-SILT NORMAL [0] ☐-SILT FREE [1]

EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☐-MODERATE [-1] ☑-NORMAL [0] ☐-NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☑-4 or More [2] ☐-3 or Less [0]

COMMENTS _____

Substrate: 15 Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☑ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 14 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☑ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☑ - MODERATE [3]	☑ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 16 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R (Per Bank)):
☑☑ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☐☐ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank)):
☑☑ FOREST, SWAMP [3]
☐☐ SHRUB OR OLD FIELD [2]
☐☐ RESIDENTIAL, PARK, NEW FIELD [1]
☐☐ FENCED PASTURE [1]
☐☐ CONSERVATION TILLAGE [1]
☐☐ URBAN OR INDUSTRIAL [0]
☐☐ OPEN PASTURE, ROWCROP [0]
☐☐ MINING/CONSTRUCTION [0]

BANK EROSION (L R (Per Bank)):
☐☐ NONE/LITTLE [3]
☐☑ MODERATE [2]
☑☐ HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 8.5 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ - >1m [6]
☑ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☑ - POOL WIDTH > RIFFLE WIDTH [2]
☐ - POOL WIDTH = RIFFLE WIDTH [1]
☐ - POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☑ - EDDIES[1]
☐ - FAST[1]
☑ - MODERATE [1]
☑ - SLOW [1]
☐ - TORRENTIAL[-1]
☐ - INTERSTITIAL[-1]
☐ - INTERMITTENT[-2]
☐ - VERY FAST[1]

COMMENTS: _____

Pool/Current: 9 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☑ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☑ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐ - STABLE (e.g., Cobble, Boulder) [2]
☑ - MOD. STABLE (e.g., Large Gravel) [1]
☐ - UNSTABLE (Fine Gravel, Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☑ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 3 Max 8

Gradient: 6 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 75 %GLIDE: _____ %RIFFLE: 10 %RUN: 15

** Best areas must be large enough to support a population of riffle-obligate species.

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Brushy Fork	LOCATION	
STATION # 5 RIVERMILE ____	STREAM CLASS	
LAT ____ LONG ____	RIVER BASIN Arkansas River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		
FORM COMPLETED BY WL	DATE 9/8 TIME 9:30 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☒ No
	☐ storm (heavy rain)	☐	**Air Temperature** 21 °C
	☐ rain (steady rain)	☐	
	☐ showers (intermittent)	☐	
	____% ☐ %cloud cover	☒ ____%	**Other** ____
	☒ clear/sunny	☒	
SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**		
STREAM CHARACTERIZATION	**Stream Subsystem** ☒ Perennial ☐ Intermittent ☐ Tidal		**Stream Type** ☐ Coldwater ☒ Warmwater
	Stream Origin ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☒ Mixture of origins ☐ Other ____		**Catchment Area** ____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FI DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other ____ ☐ Residential **Local Watersh** ☑ No evidence ☐ Obvious sour **PS Pollution** ome potential sources **Local Watersh** ☐ None ☑ M **rosion** te ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species pres** ☑ Trees ☐ Shrubs ☐ Grasses ☑ Herbaceous **dominant species present** Maple Giant Ragweed
INSTREAM FEATURES	**Estimated Reach Length** ____ m **Estimated Stream Width** 2 m **Sampling Reach Area** ____ m² **Area in km² (m²x1000)** ____ km² **Estimated Stream Depth** ____ m **Surface Velocity (at thalweg)** ____ m/sec **Canopy Cover** ☐ Partly open artly shaded ☑ Shaded **High Water M** 2 m **Proportion of n Represented by Stream Morphology** ☑ Riffle 10 ☑ Run 15 % ☑ Pool 75 **Channelized** es ☑ No **Dam Present** es ☑ No
LARGE WOODY DEBRIS	**LWD** 1 m² **Density of LWD** ____ m²/km² (LWD/ reach area)
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant spe es pre** ☐ Rooted emergent ☐ Rooted submergent ☐ Roo ating ☐ Free floating ☐ Floating Algae ☑ Attached Algae **dominant species present** ____ **Portion of the reach with aquatic vegetation** 2 %
WATER QUALITY	**Temperature** 18.5 °C Total Flow = 0.209 ft³/sec **Specific Conductance** 237.2 **Dissolved Oxygen** 6.63 **pH** 8.35 **Turbidity** 100 **WQ Instrument Used** ____ Cond - 207.8 Salinity - 0.1 **Water Odors** ☑ Normal/Non ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other ____ **Wate Surfac** ☐ Slic ☑ None ☐ Globs ☐ Flecks **Turbidity (if easured)** ☐ Clear ☐ Opaque ☐ y turbid ☑ Turbid ☐ Other ____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other ____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Relict shell st ☐ Paper fiber ☐ Sand ☐ Other ____ **Looking at s embedded, a** ☐ Yes ☑ **which are not deeply undersides black in color?**

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBS E COMPONENTS (does not neces add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteri	% Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coar materials (CPOM)	
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")	5	Muck-Mud	black, very fine or (FPOM)	
Gravel	2-64 mm (0.1"-2.5")	30			
Sand	0.06-2mm (gritty)	40	Marl	grey, shell fragme	
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)	15			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Kraus Creek	LOCATION Atlanta Road
STATION # 6 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY MK, WL DATE 9/8	LOT #
TAXONOMIST WL DATE 10/31/00	SUBSAMPLE TARGET ☑ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	III	3	A	WGL	1
Hirudinea					
Isopoda					
Amphipoda					
Decapoda crayfish	III	3	A	WGL	1
Ephemeroptera					
Caenid	~~IIII~~ ~~IIII~~ II	12	I	WGL	1
baetid	~~IIII~~ ~~IIII~~ ~~IIII~~ II	17	I	WGL	1
Stenonema heptagenid	~~IIII~~ ~~IIII~~ II	12	I	WGL	1
Plecoptera					
Trichoptera					
Hydro	III	3	I	WGL	1
unknown	III	3	I	WGL	2
Ophiogomphidae					
Hemiptera					
H2O strider	IIII	4	A	WGL	1
Water Scorpion measure	I	1	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Coleoptera black	IIII	4	A	WGL	2
lg. black	II	2	A	WGL	1
riffle	II	2	A	WGL	2
riffle larvae	I	1	I	WGL	2
Diptera bloodred	I	1	I	WGL	1
brown chir.	~~IIII~~ ~~IIII~~	9	I	WGL	1
Black Fly	I	1	I	WGL	1
Mosq.	I	1	I	WGL	1
Tabanidae	II	2	I	WGL	2
Gastropoda					
H. hemi	IIII	4	A	WGL	1
Pelecypoda	IIII	5	A	WGL	1
Other					
~~Corn~~	~~IIII~~ ~~III~~	~~8~~			
Calip	III	3	I	WGL	1
Gomphidae	III	3	I	WGL	1
argia	IIII	4	I	WGL	1

Dryopidae
Hydrophilidae
Tabanidae

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Hydrometridae

Total No. Organisms 100 **Total No. Taxa** 23

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Kraus Creek	LOCATION Atlanta Rd	
STATION # 6 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/8 TIME 13:30 AM (PM)	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☒ Cobble 65 % ☐ Snags ____ % ☒ Vegetated Banks 10 % ☐ Sand ____ % ☐ Submerged Macrophytes ____ % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other ____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☒ Cobble ____ ☐ Snags ____ ☒ Vegetated Banks ____ ☐ Sand ____ ☐ Submerged Macrophytes ____ ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	0	(1)	2	3	4
Filamentous Algae	0	1	2	(3)	4	Macroinvertebrates	0	1	2	(3)	4
Macrophytes	0	1	(2)	3	4	Fish	0	1	2	(3)	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 68

River Code: _____ **RM:** _____ **Stream:** Kraus Ck

Date: 9/8 **Location:** 76

Scorers Full Name: MK, NDL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☑☐-GRAVEL [7]		
☐☐-BOULDER [9]			☐☐-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]					

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☐-4 or More [2] ☐-3 or Less [0]

SUBSTRATE ORIGIN Check ONE (OR 2 & AVERAGE): ☐-LIMESTONE [1] ☑-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SUBSTRATE QUALITY Check ONE (OR 2 & AVERAGE)

SILT: ☐-SILT HEAVY [-2] ☐-SILT MODERATE [-1] ☑-SILT NORMAL [0] ☐-SILT FREE [1]

EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☐-MODERATE [-1] ☐-NORMAL [0] ☑-NONE [1]

Substrate: 19 Max 20

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☑ - EXTENSIVE > 75% [11]
☑ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5% [1]

Cover: 16 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☑ - MODERATE [3]	☑ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☑ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

Channel: 13 Max 20

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH L R (Per Bank)
☐☐ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☑☑ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m [1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) L R.(Most Predominant Per Bank)
☐☐-FOREST, SWAMP [3]
☐☐-SHRUB OR OLD FIELD [2]
☐☐-RESIDENTIAL,PARK,NEW FIELD [1]
☐☐-FENCED PASTURE [1]
☐☐-CONSERVATION TILLAGE [1]
☐☐-URBAN OR INDUSTRIAL [0]
☑☑-OPEN PASTURE,ROWCROP [0]
☐☐-MINING/CONSTRUCTION [0]

BANK EROSION L R (Per Bank)
☐☐-NONE/LITTLE [3]
☑☑-MODERATE [2]
☐☐-HEAVY/SEVERE [1]

Riparian: 4 Max 10

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ - >1m [6]
☐ - 0.7-1m [4]
☑ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☑ -POOL WIDTH > RIFFLE WIDTH [2]
☐ -POOL WIDTH = RIFFLE WIDTH [1]
☐ -POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☑ -EDDIES[1] ☐ -TORRENTIAL[-1]
☐ -FAST[1] ☐ -INTERSTITIAL[-1]
☑ -MODERATE [1] ☐ -INTERMITTENT[-2]
☑ -SLOW [1] ☐ -VERY FAST[1]

COMMENTS: _____

Pool/Current: 7 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm [1]
☑ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☑ - MAX < 50 [1]

RIFFLE/RUN SUBSTRATE
☑ STABLE (e.g.,Cobble, Boulder) [2]
☑ MOD. STABLE (e.g.,Large Gravel) [1]
☐ UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☑ - NONE [2]
☐ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 5 Max 8

Gradient: 4 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 40 %GLIDE: ___ %RIFFLE: 70 %RUN: 40

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Kraus Creek	LOCATION Atlanta Rd.
STATION # 6 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Ardmison
STORET #	AGENCY
INVESTIGATORS MK, WL	
FORM COMPLETED BY WL	DATE 9/8 TIME 13:30 AM (PM) — REASON FOR SURVEY

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
20%	%cloud cover	☐ ___%
☐	clear/sunny	☑

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 27 °C

Other ____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☑ Mixture of origins
☐ Other ____

Stream Type
☐ Coldwater ☑ Warmwater

Catchment Area ____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
- ☐ Forest
- ☐ Field/Pasture
- ☑ Agricultural
- ☐ Residential
- ☐ Commercial
- ☐ Industrial
- ☐ Other _____

Local Watershed NPS Pollution
- ☐ No evidence
- ☑ Some potential sources
- ☐ Obvious sources

Local Watershed Erosion
- ☐ None
- ☑ Moderate
- ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
- ☐ Trees
- ☐ Shrubs
- ☐ Grasses
- ☑ Herbaceous

dominant species present Amb tri

INSTREAM FEATURES

Estimated Reach Length _____ m

Estimated Stream Width 1 m

Sampling Reach Area _____ m^2

Area in km^2 (m^2x1000) _____ km^2

Estimated Stream Depth .3 m

Surface Velocity (at thalweg) _____ m/sec

Canopy Cover
- ☑ Partly open
- ☐ Partly shaded
- ☐ Shaded

High Water Mark 1 m

Proportion of Reach Represented by Stream Morphology Types
- ☑ Riffle 60 %
- ☑ Run 40 %
- ☑ Pool 40 %

Channelized ☐ Yes ☐ No

Dam Present ☐ Yes ☐ No

LARGE WOODY DEBRIS

LWD _____ m^2

Density of LWD _____ m^2/km^2 (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
- ☑ Rooted emergent
- ☐ Rooted submergent
- ☐ Rooted floating
- ☐ Free floating
- ☐ Floating Algae
- ☑ Attached Algae

dominant species present Leersia

Portion of the reach with aquatic vegetation 15 %

WATER QUALITY

Temperature 26.7 °C Flow = 0.686 ft^3/sec

Specific Conductance 295.1

Dissolved Oxygen 8.50

pH 8.57

Turbidity 2.4

WQ Instrument Used _____

Ca 305.8 Sal. = 0.1

Water Odors
- ☑ Normal/None
- ☐ Petroleum
- ☐ Fishy
- ☐ Sewage
- ☐ Chemical
- ☐ Other _____

Water Surface Oils
- ☐ Slick
- ☑ Sheen
- ☐ Globs
- ☐ Flecks
- ☑ None
- ☐ Other _____

Turbidity (if not measured)
- ☐ Clear
- ☑ Slightly turbid
- ☐ Turbid
- ☐ Opaque
- ☐ Stained
- ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
- ☑ Normal
- ☐ Sewage
- ☐ Petroleum
- ☐ Chemical
- ☐ Anaerobic
- ☐ None
- ☐ Other _____

Oils
- ☑ Absent
- ☐ Slight
- ☐ Moderate
- ☐ Profuse

Deposits
- ☐ Sludge
- ☐ Sawdust
- ☐ Paper fiber
- ☐ Sand
- ☑ Relict shells
- ☐ Other _____

Looking at stones which are not deeply embedded, are the undersides black in color?
- ☐ Yes
- ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	10			
Cobble	64-256 mm (2.5"-10")	40	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	40			
Sand	0.06-2mm (gritty)	5	Marl	grey, shell fragments	1
Silt	0.004-0.06 mm	—			
Clay	< 0.004 mm (slick)	5			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Theis Ck	LOCATION Atlanta Road
STATION # 7 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Andrews River
STORET #	AGENCY
COLLECTED BY MK, WL DATE 9/8/06	LOT #
TAXONOMIST WGL DATE 10/31/06	SUBSAMPLE TARGET ☒ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	1	1	A	WGL	1
Hirudinea					
Isopoda					
Amphipoda					
Decapoda Crayfish	1	1	A	WGL	1
Shrimp	IIII	5	A	WGL	1
Ephemeroptera					
Hept.	1	1	I	WGL	1
Plecoptera					
Trichoptera					
Philopotam. Jen	1	1	I	WGL	1
Hemiptera					
Diving Beetle	II	2	A	WGL	1
Water Strider	IIII	4	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Coleoptera					
Spotted	1	1	A	WGL	1
Elmidae	II	2	A	WGL	2
Diptera					
Blood Red	IIII II	7	I	WGL	1
Chironomidae	III	3	I	WGL	1
Culicidae	III	3	I	WGL	1
Tabanidae	I	1	I	WGL	2
Gastropoda Physa	IIII	5	A	WGL	2
R. hand	I	1	A	WGL	1
L. hand	I	1	A	WGL	1
Pelecypoda	IIII IIII I	11	A	WGL	1
Other					
H_2O mite	I	1	A	WGL	1
Turbellaria	II	2	A	WGL	1
Caterpillar	I	1	I	WGL	3
Dragonfly					
→ Aeshnidae	IIII	5	I	WGL	2
→ Gomphidae	IIII	4	I	WGL	1
Coen.					
→ Argia	IIII IIII IIII II	17	I	WGL	1
→ Ensallgrne	IIII IIII IIII IIII	20	I	WGL	1

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 24

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Theis Creek	LOCATION Atlanta Rd	
STATION # 7 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson Rim	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/8/06 TIME 16:15 AM (PM)	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☐ Cobble____% ☒ Snags 10 % ☒ Vegetated Banks 30 % ☒ Sand 10 % ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☐ Cobble____ ☒ Snags 10 ☒ Vegetated Banks 10 ☒ Sand 10 ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	(0)	1	2	3	4
Filamentous Algae	(0)	1	2	3	4	Macroinvertebrates	0	1	(2)	3	4
Macrophytes	0	1	2	3	(4)	Fish	0	1	(2)	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 55

River Code: _____ **RM:** _____ **Stream:** Thaw Ck

Date: 9/8 **Location:** Station #7

Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]	___	___	☐☐-GRAVEL [7]	___	___
☐☐-BOULDER [9]	___	___	☐☐-SAND [6]	___	___
☐☐-COBBLE [8]	___	___	☐☐-BEDROCK[5]	___	___
☐☐-HARDPAN [4]	___	___	☐☐-DETRITUS[3]	___	___
☐☐-MUCK [2]	___	___	☐☐-ARTIFICIAL[0]	___	___
☐☐-SILT [2]	___	___	NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☑-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)):
SILT: ☐-SILT HEAVY [-2] ☑-SILT MODERATE [-1] ☐-SILT NORMAL [0] ☐-SILT FREE [1]
EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☑-MODERATE [-1] ☐-NORMAL [0] ☐-NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☐-4 or More [2] ☑-3 or Less [0]

COMMENTS _____

Substrate: 7 Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE) ☑-EXTENSIVE > 75% [11] ☐-MODERATE 25-75% [7] ☐-SPARSE 5-25% [3] ☐-NEARLY ABSENT < 5%[1]

Cover: 19 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐-HIGH [4]	☐-EXCELLENT [7]	☐-NONE [6]	☐-HIGH [3]	☐-SNAGGING	☐-IMPOUND.
☐-MODERATE [3]	☐-GOOD [5]	☐-RECOVERED [4]	☐-MODERATE [2]	☐-RELOCATION	☐-ISLANDS
☑-LOW [2]	☐-FAIR [3]	☑-RECOVERING [3]	☑-LOW [1]	☐-CANOPY REMOVAL	☐-LEVEED
☐-NONE [1]	☑-POOR [1]	☐-RECENT OR NO RECOVERY [1]		☐-DREDGING	☐-BANK SHAPING
				☐-ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 7 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R (Per Bank)): ☐☐-WIDE > 50m [4] ☑☐-MODERATE 10-50m [3] ☐☐-NARROW 5-10 m [2] ☑☐-VERY NARROW <5 m[1] ☐☐-NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank)): ☐☐-FOREST, SWAMP [3] ☑☐-SHRUB OR OLD FIELD [2] ☐☐-RESIDENTIAL,PARK,NEW FIELD [1] ☐☐-FENCED PASTURE [1] ☐☐-CONSERVATION TILLAGE [1] ☐☐-URBAN OR INDUSTRIAL [0] ☑☐-OPEN PASTURE,ROWCROP [0] ☐☐-MINING/CONSTRUCTION [0]

BANK EROSION (L R (Per Bank)): ☐☐-NONE/LITTLE [3] ☑☑-MODERATE [2] ☐☐-HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 5 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!): ☑->1m [6] ☐-0.7-1m [4] ☐-0.4-0.7m [2] ☐-0.2-0.4m [1] ☐-< 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE): ☐-POOL WIDTH > RIFFLE WIDTH [2] ☐-POOL WIDTH = RIFFLE WIDTH [1] ☑-POOL WIDTH < RIFFLE W. [0] no riffle

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply): ☐-EDDIES[1] ☐-FAST[1] ☐-MODERATE [1] ☑-SLOW [1] ☐-TORRENTIAL[-1] ☐-INTERSTITIAL[-1] ☐-INTERMITTENT[-2] ☐-VERY FAST[1]

COMMENTS: _____

Pool/Current: 7 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH: ☐-Best Areas >10 cm [2] ☐-Best Areas 5-10 cm[1] ☐-Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH: ☐-MAX > 50 [2] ☐-MAX < 50[1]

RIFFLE/RUN SUBSTRATE: ☐-STABLE (e.g.,Cobble, Boulder) [2] ☐-MOD. STABLE (e.g.,Large Gravel) [1] ☐-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS: ☐-NONE [2] ☐-LOW [1] ☐-MODERATE [0] ☐-EXTENSIVE [-1]

☑-NO RIFFLE [Metric=0]

no riffle

COMMENTS: no riffle

Riffle/Run: 0 Max 8

Gradient: 10 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 100 %GLIDE: ___ %RIFFLE: ___ %RUN: ___

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Thom Ck	LOCATION Atlanta Rd	
STATION # 7 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson	
STORET #	AGENCY	
INVESTIGATORS MK - WL		
FORM COMPLETED BY WL	DATE 9/8 TIME 16:15 AM (PM)	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☒ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 26 °C
	☐ showers (intermittent)	☐	
	15 % ☒ %cloud cover	☐ ___ %	**Other** _____
	☐ clear/sunny	☐	
SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**		
STREAM CHARACTERIZATION	**Stream Subsystem** ☒ Perennial ☐ Intermittent ☐ Tidal	**Stream Type** ☐ Coldwater ☒ Warmwater	
	Stream Origin ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☒ Mixture of origins ☐ Other _____	**Catchment Area** _____ km²	

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☑ Agricultural ☐ Other _____
☐ Residential

Local Watershed NPS Pollution
☐ No evidence ☑ Some potential sources
☐ Obvious sources

Local Watershed Erosion
☐ None ☑ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☐ Trees ☐ Shrubs ☐ Grasses ☑ Herbaceous

dominant species present Giant Ragweed

INSTREAM FEATURES

Estimated Reach Length _____ m

Estimated Stream Width 5 m

Sampling Reach Area _____ m²

Area in km² (m²x1000) _____ km²

Estimated Stream Depth 1 m

Surface Velocity (at thalweg) _____ m/sec

Canopy Cover
☑ Partly open ☐ Partly shaded ☐ Shaded

High Water Mark 3 m

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle _____ % ☐ Run _____ %
☑ Pool 100 %

Channelized ☑ Yes ☐ No

Dam Present ☐ Yes ☑ No → not in sample area

LARGE WOODY DEBRIS

LWD 1 m²

Density of LWD _____ m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

dominant species present Yellow lily, Water willow

Portion of the reach with aquatic vegetation 70 %

WATER QUALITY

Temperature 21.5 °C Flow= 0.58 ft³/sec

Specific Conductance 225.8

Dissolved Oxygen 3.60

pH 8.04

Turbidity 8.07

WQ Instrument Used _____
Cond - 209.4 Sa 1 0.1

Water Odors
☑ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

Water Surface Oils
☐ Slick ☑ Sheen ☐ Globs ☐ Flecks
☐ None ☐ Other _____

Turbidity (if not measured)
☐ Clear ☑ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other _____

Oils
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☐ Other _____

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☑ No

No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")		Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")				
Sand	0.06-2mm (gritty)	40	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	40			
Clay	< 0.004 mm (slick)	20			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Sulfur Fork Ck	LOCATION Hwy 145
STATION # 8 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY MK, WL DATE 8/30	LOT #
TAXONOMIST WL DATE 11/1/01	SUBSAMPLE TARGET ☒ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta					
Hirudinea					
Isopoda					
Amphipoda					
Decapoda					
Shrimp	卌	5	A	WGL	1
Ephemeroptera					
Baetid	1111	4	I	WGL	1
Hept.	111	3	I	WGL	1
Plecoptera					
Trichoptera					
Hydro	卌 卌 卌 卌 1111	24	I	WGL	1
philopot	111	3	I	WGL	2
Hemiptera					
Giant bug	1	1	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Dryopidae	卌 111	8	A	WGL	2
Coleoptera Hydrophilidae	111	3	A	WGL	1
whirligig	1	1	A	WGL	1
Notonidae	卌	5	A	WGL	2
Elmidae	卌 111	9	I	WGL	2
Diptera					
Chiron	111	3	I	WGL	1
Culicida	1	1	I	WGL	1
Gastropoda					
R. Hand	1	1	A	WGL	1
L. Hand	卌 111	8	A	WGL	1
Pelecypoda					
Fingernail	1	1	A	WGL	1
Asian	卌 1111	9	A	WGL	2
Other					
Acshnidae	11	2	I	WGL	1
gomphidae	1	1	I	WGL	1
Macromiidae	1	1	I	WGL	1
Calip.	1	1	I	WGL	1
Argia	11	2	I	WGL	1
Cryptocerus	1111	4	I	WGL	1

Johny DARTER
Catfish
bluegill
Creek chub

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 23

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Sulphur Fork	LOCATION Hwy 145	
STATION # 8 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Arkansas River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/9 TIME 8:30 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☑ Cobble 30 % ☑ Snags 5 % ☑ Vegetated Banks 30 % ☐ Sand ____ % ☑ Submerged Macrophytes 30 % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☑ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☑ Cobble 10 ☑ Snags 10 ☑ Vegetated Banks 10 ☐ Sand ____ ☑ Submerged Macrophytes 10 ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	(1)	2	3	4	Slimes	0	(1)	2	3	4
Filamentous Algae	(0)	1	2	3	4	Macroinvertebrates	0	1	2	(3)	4
Macrophytes	0	1	2	3	(4)	Fish	0	1	(2)	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 66.5

River Code: _____ **RM:** _____ **Stream:** Sulfur Fork Creek
Date: 9/9/06 **Location:** Station 8
Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☑☑-GRAVEL [7]		
☐☐-BOULDER [9]			☐☐-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☑-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)):
SILT: ☐- SILT HEAVY [-2] ☐-SILT MODERATE [-1] ☑-SILT NORMAL [0] ☐-SILT FREE [1]
EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☐-MODERATE [-1] ☐-NORMAL [0] ☑-NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☑-4 or More [2] ☐-3 or Less [0]

COMMENTS _____

Substrate: 17 Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur
☑ UNDERCUT BANKS [1]
☑ OVERHANGING VEGETATION [1]
☑ SHALLOWS (IN SLOW WATER) [1]
___ ROOTMATS [1]
☑ POOLS > 70 cm [2]
___ ROOTWADS [1]
___ BOULDERS [1]
☑ OXBOWS, BACKWATERS [1]
☑ AQUATIC MACROPHYTES [1]
☑ LOGS OR WOODY DEBRIS [1]

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☑- EXTENSIVE > 75% [11]
☐- MODERATE 25-75% [7]
☐- SPARSE 5-25% [3]
☐- NEARLY ABSENT < 5%[1]

COMMENTS: _____

Cover: 19 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐- HIGH [4]	☐- EXCELLENT [7]	☐- NONE [6]	☐- HIGH [3]	☐- SNAGGING	☐- IMPOUND.
☑- MODERATE [3]	☐- GOOD [5]	☐- RECOVERED [4]	☑- MODERATE [2]	☐- RELOCATION	☐- ISLANDS
☐- LOW [2]	☑- FAIR [3]	☐- RECOVERING [3]	☐- LOW [1]	☐- CANOPY REMOVAL	☐- LEVEED
☐- NONE [1]	☐- POOR [1]	☑- RECENT OR NO RECOVERY [1]		☐- DREDGING	☐- BANK SHAPING
				☐- ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 9 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R (Per Bank)):
☐☐- WIDE > 50m [4]
☑☑- MODERATE 10-50m [3]
☐☐- NARROW 5-10 m [2]
☑☐- VERY NARROW <5 m [1]
☐☐- NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank)):
☐☐-FOREST, SWAMP [3]
☐☐-SHRUB OR OLD FIELD [2]
☐☐-RESIDENTIAL,PARK,NEW FIELD [1]
☐☐-FENCED PASTURE [1]
☐☐-CONSERVATION TILLAGE [1]
☐☐-URBAN OR INDUSTRIAL [0]
☑☑-OPEN PASTURE,ROWCROP [0]
☐☐-MINING/CONSTRUCTION [0]

BANK EROSION (L R (Per Bank)):
☐☐-NONE/LITTLE [3]
☑☑-MODERATE [2]
☐☐-HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 4 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☑- >1m [6]
☐- 0.7-1m [4]
☐- 0.4-0.7m [2]
☐- 0.2-0.4m [1]
☐- < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☑-POOL WIDTH > RIFFLE WIDTH [2]
☐-POOL WIDTH = RIFFLE WIDTH [1]
☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☐-EDDIES[1] ☐-FAST[1] ☑-MODERATE [1] ☑-SLOW [1]
☐-TORRENTIAL[-1] ☐-INTERSTITIAL[-1] ☐-INTERMITTENT[-2] ☐-VERY FAST[1]

COMMENTS: _____

Pool/Current: 10 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐- Best Areas >10 cm [2]
☑- Best Areas 5-10 cm[1]
☐- Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐- MAX > 50 [2]
☑- MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐-STABLE (e.g.,Cobble, Boulder) [2]
☑-MOD. STABLE (e.g.,Large Gravel) [1]
☑-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐- NONE [2]
☑- LOW [1]
☐- MODERATE [0]
☐- EXTENSIVE [-1]

COMMENTS: _____ ☐- NO RIFFLE [Metric=0]

Riffle/Run: 3.5 Max 8

Gradient: 4 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 50 %GLIDE: ___ %RIFFLE: 20 %RUN: 30

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Sulphur Fork Ck	LOCATION Hwy 145	
STATION # 8 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson Run	
STORET #	AGENCY	
INVESTIGATORS MK WL		
FORM COMPLETED BY WL	DATE 9/9 TIME 8:30 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☑ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 15 °C
	☐ showers (intermittent)	☐	
	15 % ☑ %cloud cover	☑ 15 %	**Other** _____
	☐ clear/sunny	☑	

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☑ Mixture of origins
☐ Other _____

Stream Type
☐ Coldwater ☑ Warmwater

Catchment Area _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☐ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☑ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☑ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☐ Trees ☐ Shrubs ☑ Grasses ☐ Herbaceous **dominant species present** Rice Cut Grass, Reed Canary Grass
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 2 m **Sampling Reach Area** _____ m² **Area in km² (m²x1000)** _____ km² **Estimated Stream Depth** .1 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☑ Partly open ☐ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle 20 % ☐ Run 30 % ☐ Pool 50 % **Channelized** ☑ Yes ☐ No **Dam Present** ☐ Yes ☑ No
LARGE WOODY DEBRIS	**LWD** .5 m² **Density of LWD** _____ m²/km² (LWD/ reach area)
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☑ Rooted emergent ☐ Rooted submergent ☑ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** Water willow pondweed **Portion of the reach with aquatic vegetation** 90 %
WATER QUALITY	**Temperature** 21.7 °C **Specific Conductance** 220.4 **Dissolved Oxygen** 5.55 **pH** 8.4 Flow = 0.6325 Ft³/sec **Turbidity** 12 **WQ Instrument Used** _____ Cond. - 204.7 Sal. - 0.1 **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☑ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☑ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	5			
Cobble	64-256 mm (2.5"-10")	5	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	70			
Sand	0.06-2mm (gritty)	15	Marl	grey, shell fragments	5
Silt	0.004-0.06 mm	—			
Clay	< 0.004 mm (slick)	5			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Little Sulphur Ck	LOCATION French Ridge Rd
STATION # 9 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY MK WL DATE 9/9	LOT #
TAXONOMIST WL DATE 11/1/06	SUBSAMPLE TARGET ☑ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	1	1	A	WGL	1
Hirudinea					
Isopoda					
Amphipoda	1	1	A	WGL	1
Decapoda crayfish	1	1	A	WGL	1
shrimp	///	3	A	WGL	1
Ephemeroptera					
Caenid	1	1	I	WGL	1
Baetid	//	2	I	WGL	1
Hept	卌 卌 //	12	I	WGL	1
Plecoptera					
Trichoptera					
Hydropsychidae	////	4	I	WGL	1
philopotamidae	1	1	I	WGL	1
Hemiptera Dwin bug	1	1	A	WGL	1
H_2O strider	///	3	A	WGL	1
H_2O measurer	1	1	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Coleoptera Curculionidae	1	1	A	WGL	1
Dryopidae	卌 //	7	A	WGL	2
Elmidae	1	1	I	WGL	2
Hydrophilidae	1	1	A	WGL	1
Diptera					
Red Chir	卌	5	I	WGL	1
Chironomid	卌 ///	8	I	WGL	1
Mosquito	//	2	I	WGL	1
Gastropoda					
Pelecypoda					
Clam	1	1	A	WGL	1
Other					
Turbellaria	1	1	A	WGL	1
Ancylidae	//	2	I	WGL	1
Gomphidae	//	2	I	WGL	1
Corduliidae	//	2	I	WGL	1
Calopteryx	卌	5	I	WGL	1
Argia	卌 卌 ///	13	I	WGL	1
Ensallyma	卌 卌 卌 卌 ///	18	I	WGL	1

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 27

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Little Sulphur Ck	LOCATION French Ridge Rd.	
STATION # 9 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/9 TIME 9:30 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☑ Cobble 30 % ☐ Snags ____ % ☑ Vegetated Banks 10 % ☐ Sand ____ % ☑ Submerged Macrophytes 50 % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☑ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☑ Cobble 10 ☐ Snags ____ ☑ Vegetated Banks 10 ☐ Sand ____ ☑ Submerged Macrophytes 10 ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	0	(1)	2	3	4
Filamentous Algae	0	(1)	2	3	4	Macroinvertebrates	0	1	2	(3)	4
Macrophytes	0	1	2	3	(4)	Fish	0	1	(2)	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 61.75

River Code: _____ **RM:** _____ **Stream:** Little Sulphur Creek
Date: 9/9 **Location:** Station #9
Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☒☒-GRAVEL [7]		
☐☐-BOULDER [9]			☐☐-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☒☒-SILT [2]					

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☒-4 or More [2] ☐-3 or Less [0]

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☒-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)):
SILT: ☐-SILT HEAVY [-2] ☒-SILT MODERATE [-1] ☐-SILT NORMAL [0] ☐-SILT FREE [1]
EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☐-MODERATE [-1] ☒-NORMAL [0] ☐-NONE [1]

Substrate: 11 (Max 20)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☒ - EXTENSIVE > 75% [11]
☐ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 18 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING ☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☒ - MODERATE [2]	☐ - RELOCATION ☐ - ISLANDS
☒ - LOW [2]	☒ - FAIR [3]	☒ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL ☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING ☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS

Channel: 10 (Max 20)

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R Per Bank)	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R Most Predominant Per Bank)	L R	BANK EROSION (L R Per Bank)
☐☐ - WIDE > 50m [4]	☐☐-FOREST, SWAMP [3]	☐☐-CONSERVATION TILLAGE [1]	☐☐-NONE/LITTLE [3]
☐☐ - MODERATE 10-50m [3]	☐☐-SHRUB OR OLD FIELD [2]	☐☐-URBAN OR INDUSTRIAL [0]	☒☒-MODERATE [2]
☒☒ - NARROW 5-10 m [2]	☐☐-RESIDENTIAL,PARK,NEW FIELD [1]	☐☒-OPEN PASTURE,ROWCROP [0]	☐☐-HEAVY/SEVERE[1]
☒☒ - VERY NARROW <5 m[1]	☒☐-FENCED PASTURE [1]	☐☐-MINING/CONSTRUCTION [0]	
☐☐ - NONE [0]			

Riparian: 4.25 (Max 10)

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☒ - >1m [6]
☐ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☒-POOL WIDTH > RIFFLE WIDTH [2]
☐-POOL WIDTH = RIFFLE WIDTH [1]
☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☒-EDDIES[1] ☐-FAST[1] ☒-MODERATE [1] ☒-SLOW [1] ☐-TORRENTIAL[-1] ☐-INTERSTITIAL[-1] ☐-INTERMITTENT[-2] ☐-VERY FAST[1]

Pool/Current: 11 (Max 12)

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
☐ - Best Areas >10 cm [2]	☐ - MAX > 50 [2]	☐-STABLE (e.g.,Cobble, Boulder) [2]	☐ - NONE [2]
☒ - Best Areas 5-10 cm[1]	☒ - MAX < 50[1]	☒-MOD. STABLE (e.g.,Large Gravel) [1]	☒ - LOW [1]
☐ - Best Areas < 5 cm [RIFFLE=0]		☒-UNSTABLE (Fine Gravel,Sand) [0]	☐ - MODERATE [0]
			☐ - EXTENSIVE [-1]

☐ - NO RIFFLE [Metric=0]

Riffle/Run: 3.5 (Max 8)

COMMENTS: _____

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 85 %GLIDE: ___ %RIFFLE: 5 %RUN: 10

Gradient: 4 (Max 10)

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Little Sulphur Ck	LOCATION French Riche Road	
STATION # 9 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		
FORM COMPLETED BY WL	DATE 9/9 TIME 9:30 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☐ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 23 °C
	☐ showers (intermittent)	☐	
	___% ☐ %cloud cover	☐ ___%	**Other** _____
	☑ clear/sunny	☑	

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☑ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☑ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☑ Mixture of origins
☐ Other _____

Catchment Area _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest ☐ Commercial
☑ Field/Pasture ☐ Industrial
☑ Agricultural ☐ Other _____
☐ Residential

Local Watershed NPS Pollution
☐ No evidence ☐ Some potential sources
☑ Obvious sources

Local Watershed Erosion
☐ None ☑ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☐ Trees ☐ Shrubs ☑ Grasses ☑ Herbaceous

dominant species present Giant Ragweed, Reed Canary Grass

INSTREAM FEATURES

Estimated Reach Length _____ m

Estimated Stream Width 3 m

Sampling Reach Area _____ m²

Area in km² (m²x1000) _____ km²

Estimated Stream Depth 1 m

Surface Velocity (at thalweg) _____ m/sec

Canopy Cover
☐ Partly open ☑ Partly shaded ☐ Shaded

High Water Mark 1.5 m

Proportion of Reach Represented by Stream Morphology Types
☑ Riffle 5 % ☑ Run 10 %
☑ Pool 85 %

Channelized ☑ Yes ☐ No

Dam Present ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD .5 m²

Density of LWD _____ m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☑ Rooted emergent ☐ Rooted submergent ☑ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

dominant species present Water Willow

Portion of the reach with aquatic vegetation 60 %

WATER QUALITY

Temperature 21.5 °C

Specific Conductance 281.2

Dissolved Oxygen 6.61

pH 8.03

Flow = 0.153 ft³/sec

Turbidity 11

WQ Instrument Used _____

Cond = 264 Sal = 0.1

Water Odors
☑ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

Water Surface Oils
☐ Slick ☑ Sheen ☐ Globs ☐ Flecks
☐ None ☐ Other _____

Turbidity (if not measured)
☐ Clear ☑ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other _____

Oils
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☑ Relict shells ☐ Other _____

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	–			
Cobble	64-256 mm (2.5"-10")	15	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	30			
Sand	0.06-2mm (gritty)	15	Marl	grey, shell fragments	5
Silt	0.004-0.06 mm	30			
Clay	< 0.004 mm (slick)	10			

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Lanner Run	LOCATION Arch Rd	
STATION # 10 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/9 TIME 11:10 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☑ Cobble____% ☐ Snags____% ☑ Vegetated Banks____% ☐ Sand____% ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☑ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☑ Cobble____ ☐ Snags____ ☑ Vegetated Banks____ ☐ Sand____ ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	(1)	2	3	4	Slimes	0	(1)	2	3	4
Filamentous Algae	0	(1)	2	3	4	Macroinvertebrates	0	1	(2)	3	4
Macrophytes	0	1	2	(3)	4	Fish	0	1	2	(3)	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Lanman Run	LOCATION Angola Rd
STATION # 10 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY MK, WL DATE 9/9	LOT #
TAXONOMIST WL DATE 11/1/06	SUBSAMPLE TARGET ☑ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta					
Hirudinea					
Isopoda					
Amphipoda	1	1	A	WL	1
Decapoda					
Ephemeroptera					
Caenidae	~~||||~~ ||||	4	I	WL	1
Baetid	~~||||~~ ~~||||~~ ~~||||~~ |||	18	I	WL	1
Hept. → Stenacron	||	2	I	WL	1
→ Stenonema	~~||||~~ |||	8	I	WL	1
Plecoptera					
Trichoptera					
Hydro	~~||||~~ ~~||||~~ ||	12	I	WL	1
philopot	1	1	I	WL	2
Hemiptera					
H_2O strider	1	1	A	WL	1

Organisms		No.	LS	TI	TCR
Megaloptera Sialidae	1	1	I	WL	1
Nuterridae	1	1	A	WL	1
Coleoptera Dytiscidae	1	1	A	WL	2
Elmidae	~~||||~~	5	A	WL	2
Hydrophilidae	1	1	I	WL	1
Hydrophilidae	1	1	A	WL	1
Diptera					
Red chir	~~||||~~ ~~||||~~ 1	11	I	WL	1
Chiron	||||	4	I	WL	1
Tabanidae	||	2	I	WL	1
Gastropoda					
L hand	||||	4	A	WL	1
Pelecypoda					
Other					
Aeshnidae	||	2	I	WL	1
Gomphidae	|||	3	I	WL	1
Calip	1	1	I	WL	1
Argia	~~||||~~ |||	8	I	WL	1
Engallyma	|||	3	I	WL	1

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 23

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 60.5

River Code: _____ **RM:** _____ **Stream:** Lanman Run

Date: 9/9 **Location:** Station #10

Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]	___	___	☑☑-GRAVEL [7]	___	___
☐☐-BOULDER [9]	___	___	☑☑-SAND [6]	___	___
☐☐-COBBLE [8]	___	___	☐☐-BEDROCK[5]	___	___
☐☐-HARDPAN [4]	___	___	☐☐-DETRITUS[3]	___	___
☐☐-MUCK [2]	___	___	☐☐-ARTIFICIAL[0]	___	___
☐☐-SILT [2]	___	___	NOTE: Ignore Sludge Originating From Point Sources		

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☑-4 or More [2]
☐-3 or Less [0]

COMMENTS_____

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)):
☐-LIMESTONE [1]
☑-TILLS [1]
☐-WETLANDS[0]
☐-HARDPAN [0]
☐-SANDSTONE [0]
☐-RIP/RAP [0]
☐-LACUSTRINE [0]
☐-SHALE [-1]
☐-COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)):
SILT:
☐- SILT HEAVY [-2]
☑-SILT MODERATE [-1]
☐-SILT NORMAL [0]
☐-SILT FREE [1]
EMBEDDEDNESS:
☐-EXTENSIVE [-2]
☐-MODERATE [-1]
☑-NORMAL [0]
☐-NONE [1]

Substrate: 15 (Max 20)

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS:_____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☑ - EXTENSIVE > 75% [11]
☐ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 17 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☑ - LOW [2]	☑ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☑ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS:_____

Channel: 8 (Max 20)

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R (Per Bank)):
☐☐ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☐☐ - NARROW 5-10 m [2]
☐☑ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank)):
☐☐-FOREST, SWAMP [3]
☐☐-SHRUB OR OLD FIELD [2]
☐☐-RESIDENTIAL,PARK,NEW FIELD [1]
☐☐-FENCED PASTURE [1]
☐☐-CONSERVATION TILLAGE [1]
☐☐-URBAN OR INDUSTRIAL [0]
☑☑-OPEN PASTURE,ROWCROP [0]
☐☐-MINING/CONSTRUCTION [0]

BANK EROSION (L R (Per Bank)):
☐☐-NONE/LITTLE [3]
☑☑-MODERATE [2]
☐☐-HEAVY/SEVERE[1]

COMMENTS:_____

Riparian: 3.5 (Max 10)

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ - >1m [6]
☑ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☑-POOL WIDTH > RIFFLE WIDTH [2]
☐-POOL WIDTH = RIFFLE WIDTH [1]
☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☐-EDDIES[1]
☐-FAST[1]
☑-MODERATE [1]
☑-SLOW [1]
☐-TORRENTIAL[-1]
☐-INTERSTITIAL[-1]
☐-INTERMITTENT[-2]
☐-VERY FAST[1]

COMMENTS:_____

Pool/Current: 8 (Max 12)

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☑ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐-STABLE (e.g.,Cobble, Boulder) [2]
☑-MOD. STABLE (e.g.,Large Gravel) [1]
☐-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☑ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS:_____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 3 (Max 8)

Gradient: 6 (Max 10)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) :_____ %POOL: 50 %GLIDE: ___ %RIFFLE: 20 %RUN: 30

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Larimer Run	LOCATION Angela Rd
STATION # 10 RIVERMILE	STREAM CLASS
LAT LONG	RIVER BASIN Anderson
STORET #	AGENCY
INVESTIGATORS MK, WL	
FORM COMPLETED BY WL	DATE 9/9 TIME 11:10 (AM) PM / REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☒ No
	☐ storm (heavy rain)	☐	**Air Temperature** 26 °C
	☐ rain (steady rain)	☐	**Other**
	☐ showers (intermittent)	☐	
	50% ☒ %cloud cover	☒ %	
	☐ clear/sunny	☒	

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial ☐ Spring-fed
☐ Non-glacial montane ☒ Mixture of origins
☐ Swamp and bog ☐ Other

Catchment Area km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☐ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☒ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☐ Some potential sources ☒ Obvious sources **Local Watershed Erosion** ☐ None ☒ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☐ Trees ☐ Shrubs ☒ Grasses ☒ Herbaceous **dominant species present** Reed Canary Grass Giant Ragweed
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 2 m **Sampling Reach Area** _____ m² **Area in km² (m²x1000)** _____ km² **Estimated Stream Depth** .5 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☒ Partly open ☐ Partly shaded ☐ Shaded **High Water Mark** 3 m **Proportion of Reach Represented by Stream Morphology Types** ☒ Riffle 20 % ☒ Run 30 % ☒ Pool 50 % **Channelized** ☒ Yes ☐ No **Dam Present** ☐ Yes ☒ No
LARGE WOODY DEBRIS	**LWD** — m² **Density of LWD** _____ m²/km² **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☒ Floating Algae ☒ Attached Algae **dominant species present** Reed Canary Grass **Portion of the reach with aquatic vegetation** 60 %
WATER QUALITY	**Temperature** 21.4 °C **Specific Conductance** 312.4 COND. = 337A **Dissolved Oxygen** 10.02 **pH** 7.67 SAL. = 0.2 **Turbidity** 9.4 **WQ Instrument Used** _____ Flow = 0.18981 ft³/sec **Water Odors** ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☒ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☒ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☒ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			**ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)**		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	5			
Cobble	64-256 mm (2.5"-10")	20	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	25			
Sand	0.06-2mm (gritty)	30	Marl	grey, shell fragments	5
Silt	0.004-0.06 mm	20			
Clay	< 0.004 mm (slick)				

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 74

River Code: _____ **RM:** _____ **Stream:** Tipsaw
Date: 9/6/06 **Location:** Tipsaw Station 11
Scorers Full Name: EB TJK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]	___	___
☐☐-BOULDER [9]	___	___
☐☐-COBBLE [8]	___	___
☐☐-HARDPAN [4]	___	___
☐☐-MUCK [2]	___	___
☐☐-SILT [2]	___	___
☒☐-GRAVEL [7]	___	___
☐☒-SAND [6]	___	___
☐☐-BEDROCK[5]	___	___
☐☐-DETRITUS[3]	___	___
☐☐-ARTIFICIAL[0]	___	___

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☑-4 or More [2]
☐-3 or Less [0]

SUBSTRATE ORIGIN Check ONE (OR 2 & AVERAGE)
☐-LIMESTONE [1]
☑-TILLS [1]
☐-WETLANDS[0]
☐-HARDPAN [0]
☐-SANDSTONE [0]
☐-RIP/RAP [0]
☐-LACUSTRINE [0]
☐-SHALE [-1]
☐-COAL FINES [-2]

SUBSTRATE QUALITY Check ONE (OR 2 & AVERAGE)
SILT:
☐- SILT HEAVY [-2]
☐-SILT MODERATE [-1]
☑-SILT NORMAL [0]
☐-SILT FREE [1]
EMBEDDEDNESS
☐-EXTENSIVE [-2]
☐-MODERATE [-1]
☑-NORMAL [0]
☐-NONE [1]

Substrate: 16 / Max 20

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur
☒ UNDERCUT BANKS [1]
☒ OVERHANGING VEGETATION [1]
☒ SHALLOWS (IN SLOW WATER) [1]
☒ ROOTMATS [1]
☒ POOLS> 70 cm [2]
☒ ROOTWADS [1]
___ BOULDERS [1]
___ OXBOWS, BACKWATERS [1]
___ AQUATIC MACROPHYTES [1]
☒ LOGS OR WOODY DEBRIS

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☑ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 15 / Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER
☑ - HIGH [4]	☐ - EXCELLENT [7]	☑ - NONE [6]	☐ - HIGH [3]	☐ - IMPOUND.
☐ - MODERATE [3]	☑ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]	☐ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - BANK SHAPING
				☐ - DIKE/REVETMENT
				☐ - CHANNEL MODIFICATIONS

Channel: 17 / Max 20

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE) River Right Looking Downstream (bank)

RIPARIAN WIDTH L R (Per Bank)
☑☑ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☐☐ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meters RIPARIAN) L R (Most Predominant Per Bank)
☑☑ FOREST, SWAMP [3]
☐☐ SHRUB OR OLD FIELD [2]
☐☐ RESIDENTIAL,PARK,NEW FIELD [1]
☐☐ FENCED PASTURE [1]
☐☐ CONSERVATION TILLAGE [1]
☐☐ URBAN OR INDUSTRIAL [0]
☐☐ OPEN PASTURE,RECREATION [0]
☐☐ MINING/CONSTRUCTION [0]

BANK EROSION L R (Per Bank)
☐☐ -NONE/LITTLE [3]
☑☑ -MODERATE [2]
☐☐ -HEAVY/SEVERE[1]

Riparian: 9 / Max 10

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☑ - >1m [6]
☐ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2- 0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☐ -POOL WIDTH > RIFFLE WIDTH [2]
☐ -POOL WIDTH = RIFFLE WIDTH [1]
☑ -POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY (Check [POOLS & RIFFLES!] That Apply)
☐ -EDDIES[1]
☐ -FAST[1]
☐ -MODERATE [1]
☑ -SLOW [1]
TORRENTIAL[-1]
INTERSTITIAL[-1]
INTERMITTENT[-2]
VERY FAST[1]

Pool/Current: 7 / Max 12

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☐ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐-STABLE (e.g.,Cobble, Boulder)
☐-MOD. STABLE (e.g.,Large Gravel)
☐-UNSTABLE (Fine Gravel, Sand) [1]
☑ NO RIFFLE

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☐ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]
Metric=0]

Riffle/Run: 0 / Max 8

COMMENTS: _____

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 100 %GLIDE: ___ %RIFFLE: ___ %RUN: ___

Gradient: 10 / Max 10

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUAL Y FIELD DATA SHEET
(FRONT)

STREAM NAME Tipsaw	LOCATION Tipsaw inlet
STATION # 11 RIVERMILE _____	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN Anderson River
STORET #	AGENCY
INVESTIGATORS TSK EJB	
FORM COMPLETED BY EJB	DATE 9/6/06 TIME 11:00 (AM) PM — REA FOR SURVEY

WEATHER CONDITIONS	**Now** / **Past 24 hours** ☐ storm (heavy rain) ☐ ☐ rain (steady rain) ☐ ☐ showers (intermittent) ☐ ____%☐ %cloud cover ☐ ____% ☑ clear/sunny ☐ **Has th en a heavy rain in the last 7 days?** ☐ Yes ☑ No **Air Te ature** 21 °C **Other** _____
SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or ch a photograph)**
STREAM CHARACTERIZATION	**Stream Subsystem** ☐ Perennial ☑ Intermittent ☐ Tidal **Stream T** ☐ Coldwa ☑ Warmwater **Stream Origin** ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☑ Mixture of origins ☐ Other _____ **Catchmer ea** _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☑ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous **dominant species present** Sycamore
INSTREAM FEATURES	**Estimated Reach Length** 100 m **Estimated Stream Width** — m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** — m **Surface Velocity (at thalweg)** — m/sec **Canopy Cover** ☐ Partly open ☐ Partly shaded ☑ Shaded **High Water Mark** 1 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle _____ % ☐ Run _____ % ☑ Pool 100 % **Channelized** ☐ Yes ☑ No **Dam Present** ☑ Yes ☐ No
LARGE WOODY DEBRIS	**LWD** 5 m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☑ Attached Algae **dominant species present** _____ **Portion of the reach with aquatic vegetation** 5 %
WATER QUALITY	**Temperature** 18.9 °C Cond 253 µmhos/cm **Specific Conductance** 285 µmho/cm **Dissolved Oxygen** 1.52 **pH** 7.67 **Turbidity** 9.5 **WQ Instrument Used** _____ Sal 0.1 ppt **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☑ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other _____ **Turbidity (if not measured)** ☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")	10	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	40			
Sand	0.06-2mm (gritty)	35	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)	5			

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 57

River Code: _____ **RM:** _____ **Stream:** Celina
Date: 9/06/06 **Location:** Celina Station #12
Scorers Full Name: EJB, TSK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☒☒-GRAVEL [7]		
☐☐-BOULDER [9]			☒☒-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN — Check ONE (OR 2 & AVERAGE)
☐ -LIMESTONE [1]
☒ -TILLS [1]
☐ -WETLANDS[0]
☐ -HARDPAN [0]
☐ -SANDSTONE [0]
☐ -RIP/RAP [0]
☐ -LACUSTRINE [0]
☐ -SHALE [-1]
☐ -COAL FINES [-2]

SILT:
☐ - SILT HEAVY [-2]
☐ -SILT MODERATE [-1]
☒ -SILT NORMAL [0]
☐ -SILT FREE [1]

EMBEDDEDNESS:
☐ -EXTENSIVE [-2]
☐ -MODERATE [-1]
☒ -NORMAL [0]
☐ -NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☒ 4 or More [2]
☐ -3 or Less [0]

COMMENTS _____

Substrate: 16 Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur
___ UNDERCUT BANKS [1]
X OVERHANGING VEGETATION [1]
X SHALLOWS (IN SLOW WATER) [1]
X ROOTMATS [1]
___ POOLS> 70 cm [2]
X ROOTWADS [1]
___ BOULDERS [1]
___ OXBOWS, BACKWATERS [1]
X AQUATIC MACROPHYTES [1]
X LOGS OR WOODY DEBRIS [1]

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☐ - MODERATE 25-75% [7]
☒ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 9 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☒ - MODERATE [3]	☒ - GOOD [5]	☒ - RECOVERED [4]	☒ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 14 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH — L R (Per Bank)
☒☒ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☐☐ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) — L R.(Most Predominant Per Bank)
☒☒ FOREST, SWAMP [3]
☐☐ SHRUB OR OLD FIELD [2]
☐☐ RESIDENTIAL,PARK,NEW FIELD [1]
☐☐ -FENCED PASTURE [1]
☐☐ -CONSERVATION TILLAGE [1]
☐☐ -URBAN OR INDUSTRIAL [0]
☐☐ -OPEN PASTURE,ROWCROP [0]
☐☐ -MINING/CONSTRUCTION [0]

BANK EROSION — L R (Per Bank)
☐☐ -NONE/LITTLE [3]
☐☐ -MODERATE [2]
☐☐ -HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 7 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ - >1m [6]
☐ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2- 0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☒ -POOL WIDTH > RIFFLE WIDTH [2]
☐ -POOL WIDTH = RIFFLE WIDTH [1]
☐ -POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☐ -EDDIES[1]
☐ -FAST[1]
☐ -MODERATE [1]
☒ -SLOW [1]
☐ -TORRENTIAL[-1]
☐ -INTERSTITIAL[-1]
☐ -INTERMITTENT[-2]
☐ -VERY FAST[1]

COMMENTS: _____

Pool/Current: 3 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☐ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐ STABLE (e.g.,Cobble, Boulder) [2]
☐ MOD. STABLE (e.g.,Large Gravel) [1]
☐ UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☐ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS: _____ ☒ - NO RIFFLE [Metric=0]

Riffle/Run: 0 Max 8

Gradient: 8 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 100% %GLIDE: ____ %RIFFLE: ____ %RUN: ____

*- Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET
(FRONT)

STREAM NAME Celina	LOCATION Celina	
STATION # 12 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS TSK EJB		
FORM COMPLETED BY EJB	DATE 9/6/06 TIME 12:00 AM (PM)	REASON SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been heavy rain in the last 7 days?** ☐ Yes ☒
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	Air Temper 24 °C
	☐ showers (intermittent)	☐	
	___%☐ %cloud cover	☐ ___%	Other _____
	☑ clear/sunny	☐	

SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach photograph)**

STREAM CHARACTERIZATION	**Stream Subsystem** ☐ Perennial ☑ Intermittent ☐ Tidal **Stream Type** ☐ Coldwater ☑ Warmwater **Stream Origin** ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☑ Mixture of origins ☐ Swamp and bog ☐ Other _____ **Catchment Area** _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☑ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous **dominant species present** Sycamore
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** — m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** _____ m **Surface Velocity (at thalweg)** — m/sec **Canopy Cover** ☐ Partly open ☐ Partly shaded ☑ Shaded **High Water Mark** _____ m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle _____ % ☐ Run _____ % ☑ Pool 100 % **Channelized** ☐ Yes ☑ No **Dam Present** ☑ Yes ☐ No
LARGE WOODY DEBRIS	**LWD** .5 m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** _____ **Portion of the reach with aquatic vegetation** _____ %
WATER QUALITY	**Temperature** 23.5 °C Cond = 55 **Specific Conductance** 58 **Dissolved Oxygen** 9.03 **pH** 8.59 **Turbidity** 5.2 **WQ Instrument Used** YSI 63 YSI 50B Sal = 0.0 LaMotte 2020 **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☑ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other _____ **Turbidity (if not measured)** ☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")	5	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	25			
Sand	0.06-2mm (gritty)	40	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	20			
Clay	< 0.004 mm (slick)	10			

OhioEPA Qualitative Habitat Evaluation Index F d Sheet QHEI Score: 67

River Code: _____ **RM:** _____ **Stream:** _____

Date: 9/6/06 **Location:** Indian Station 13

Scorers Full Name: TSK, EJB **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]		
☐☐-BOULDER [9]			☐☑-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☑☐-SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN — Check ONE (OR 2 & AVERA

☐ -LIMESTONE [1] S
☑ -TILLS [1]
☐ -WETLANDS[0]
☐ -HARDPAN [0]
☐ -SANDSTONE [0] E
☐ -RIP/RAP [0] N
☐ -LACUSTRINE [0]
☐ -SHALE [-1]
☐ -COAL FINES [-2]

SUBSTRATE QUALITY — Check ONE (OR 2 & AVERAGE)

☐ - SILT HEAVY [-2]
☑ -SILT MODERATE [-1]
☐ -SILT NORMAL [0]
☐ -SILT FREE [1]
DDED ☐ -EXTENSIVE [-2]
☑ -MODERATE [-1]
☐ -NORMAL [0]
☐ -NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☑ -4 or More [2]
☐ -3 or Less [0]

COMMENTS _____

Substrate: 9 — Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructi

(Structure) TYPE: Score All That Occur

___ UNDERCUT BANKS [1]
✓ OVERHANGING VEGETATION [1]
✓ SHALLOWS (IN SLOW WATER) [1]
✓ ROOTMATS [1]
✓ POOLS> 70 cm [2]
✓ ROOTWADS [1]
___ BOULDERS [1]
___ OXBOWS, BACKWATE
___ AQUATIC MACROPHY
✓ LOGS OR WOODY DE

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☑ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 14 — Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and A

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	M
☐ - HIGH [4]	☐ - EXCELLENT [7]	☑ - NONE [6]	☐ - HIGH [3]	☐
☑ - MODERATE [3]	☑ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]	☐
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐
				☐

AGE)
CATIONS/OTHER
AGGING ☐ - IMPOUND.
LOCATION ☐ - ISLANDS
NOPY REMOVAL ☐ - LEVEED
EDGING ☐ - BANK SHAPING
E SIDE CHANNEL MODIFICATIONS

Channel: 16 — Max 20

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVE

per bank) (P) River Right Looking Downstream (

RIPARIAN WIDTH L R (Per Bank)	FLOOD PLAIN QUALITY (PAST 100 Meter L R (Most Predominant Per Bank)	L R
☑☑ - WIDE > 50m [4]	☑☑ FOREST, SWAMP [3]	☐☐ -CONSERVATIO
☐☐ - MODERATE 10-50m [3]	☐☐ SHRUB OR OLD FIELD [2]	☐☐ -URBAN OR IN
☐☐ - NARROW 5-10 m [2]	☐☐ RESIDENTIAL,PARK,NEW FIELD [1]	☐☐ -OPEN PASTUR
☐☐ - VERY NARROW <5 m[1]	☐☐ FENCED PASTURE [1]	☐☐ -MINING/CON
☐☐ - NONE [0]		

RIAN)
AGE [1]
IAL [0]
WCROP [0]
TION [0]

BANK EROSION L R (Per Bank)
☐☐ -NONE/LITTLE [3]
☑☑ -MODERATE [2]
☐☐ -HEAVY/SEVERE[1]

Riparian: 9 — Max 10

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT (C
☑ - >1m [6]	☑ -POOL WIDTH > RIFFLE WIDTH [2]	☐ -EDDIES[1]
☐ - 0.7-1m [4]	☑ -POOL WIDTH = RIFFLE WIDTH [1]	☐ -FAST[1]
☐ - 0.4-0.7m [2]	☐ -POOL WIDTH < RIFFLE W. [0]	☐ -MODERATE [1
☐ - 0.2-0.4m [1]		☑ -SLOW [1]
☐ - < 0.2m [POOL=0]		

CITY [POOLS & RIFFLES!]
All That Apply)
☐ -TORRENTIAL[-1]
☐ -INTERSTITIAL[-1]
☐ -INTERMITTENT[-2]
☐ -VERY FAST[1]

Pool/Current: 9 — Max 12

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE
☐ - Best Areas >10 cm [2]	☐ - MAX > 50 [2]	☐ STABLE (e.g.,Cobble, Boulc
☐ - Best Areas 5-10 cm[1]	☐ - MAX < 50[1]	☐ MOD. STABLE (e.g.,Large G
☐ - Best Areas < 5 cm [RIFFLE=0]		☐ UNSTABLE (Fine Gravel,San

E
RIFFLE/RUN EMBEDDEDNESS
[2] ☐ - NONE [2]
[1] ☐ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]
FLE [Metric=0]

Riffle/Run: — Max 8

COMMENTS: _____ ☐ - NO

Gradient: 10 — Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POO 100 %GLIDE: ____ %RIFF ____ %RUN: ____

*: Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUAL FIELD DAT SHEET
(FRONT)

STREAM NAME Indian	LOCATION Indian Lake
STATION # 13 RIVERMILE _____	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS TSK, EJB	
FORM COMPLETED BY EJB	DATE 9/6/06 TIME 12:30 AM (PM) RE FOR SURVEY

WEATHER CONDITIONS	**Now** ☐ storm (heavy rain) ☐ rain (steady rain) ☐ showers (intermittent) ___% ☐ %cloud cover ☑ clear/sunny **Past 24 hours** ☐ ☐ ☐ ☐ ___% ☐ **Has th en a heavy rain in t 7 days?** ☐ Yes ☑ No Air Te ature 26 °C Other_
SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (o n a photograph)**
STREAM CHARACTERIZATION	**Stream Subsystem** ☑ Perennial ☐ Intermittent ☐ Tidal **Stream T** ☐ Coldw ☑ Warmwate **Stream Origin** ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☑ Mixture of origins ☐ Other_____ **Catc me** ea_____km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☐ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☑ Trees ☐ Shrubs ☐ Grasses ☑ Herbaceous **dominant species present** Water Willow, Sycamore
INSTREAM FEATURES	**Estimated Reach Length** _____m **Estimated Stream Width** _____m **Sampling Reach Area** _____m^2 **Area in km^2 (m^2x1000)** _____km^2 **Estimated Stream Depth** _____m **Surface Velocity (at thalweg)** _____m/sec **Canopy Cover** ☐ Partly open ☐ Partly shaded ☐ Shaded **High Water Mark** _____m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle_____% ☐ Run_____% ☐ Pool_____% **Channelized** ☐ Yes ☐ No **Dam Present** ☐ Yes ☐ No
LARGE WOODY DEBRIS	**LWD** _____m^2 **Density of LWD** _____m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** _____ **Portion of the reach with aquatic vegetation** _____%
WATER QUALITY	**Temperature** 23 °C Cond 302 **Specific Conductance** 321 **Dissolved Oxygen** 10.20 **pH** 8.13 **Turbidity** 55 **WQ Instrument Used** _____ Salinity = 0.2 **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other_____ **Water Surface Oils** ☐ Slick ☑ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other_____ **Turbidity (if not measured)** ☐ Clear ☐ Slightly turbid ☑ Turbid ☐ Opaque ☐ Stained ☐ Other_____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other_____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other_____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")	5	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	10			
Sand	0.06-2mm (gritty	25	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	30			
Clay	< 0.004 mm (slick)	30			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Middle Fork Anderson	LOCATION near I-64
STATION # 14 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY MK WL DATE 9/10	LOT #
TAXONOMIST WL DATE 11/2/02	SUBSAMPLE TARGET ☒ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	II	2	A	WGL	1
Hirudinea					
Isopoda					
Amphipoda	II	3	A	WGL	1
Decapoda	II	2	A	WGL	1
Ephemeroptera					
Heptagenid	IIII IIII IIII IIII II				
	III	3	I	WGL	1
→ Stenonema	IIII IIII IIII IIII	20	I	WGL	1
→ Stenacron	II	2	I	WGL	1
Plecoptera	I	1	I	WGL	1
Trichoptera					
Hydro	IIII	4	I	WGL	1
Hemiptera					
H2O strider	II	1	A	WGL	1
↳ little	I	1	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera Corydalidae	I	1	I	WGL	1
Sialidae	I	1	I	WGL	1
Coleoptera					
Black	III	3	A	WGL	2
water penny	IIII IIII I	11	I	WGL	1
little	III	3	A	WGL	2
Diptera					
crane fly	I	1	I	WGL	1
Blood red	IIII IIII I	11	I	WGL	1
Brown	II	2	I	WGL	1
moso[illegible]	I	1	I	WGL	1
Gastropoda					
Limet	IIII	5	A	WGL	1
Limpet	I	1	A	WGL	1
Pelecypoda					
Other					
calip.	IIII IIII	10	I	WGL	1
coen.	IIII II				
dragonfly	IIII				
→ Aeshnidae	II	2	I	WGL	1
→ Gomphidae	I	1	I	WGL	1
→ Cordulegastridae	I	1	I	WGL	1
→ Argia	II	2	I	WGL	1
→ Ergallagma	IIII	5	I	WGL	1

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A =.adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 27

2 salamanders

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Middle Fork Anderson	LOCATION near I-64
STATION # 14 RIVERMILE _____	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN Anderson River
STORET #	AGENCY
INVESTIGATORS MK WL	LOT NUMBER
FORM COMPLETED BY WL	DATE 9/10 TIME 12:15 AM (PM) / REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☒ Cobble 70 % ☐ Snags ____ % ☒ Vegetated Banks 10 % ☐ Sand ____ % ☒ Submerged Macrophytes 5 % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☒ Cobble ____ ☐ Snags ____ ☒ Vegetated Banks ____ ☐ Sand ____ ☒ Submerged Macrophytes ____ ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	(0)	1	2	3	4
Filamentous Algae	0	(1)	2	3	4	Macroinvertebrates	0	1	2	(3)	4
Macrophytes	0	1	(2)	3	4	Fish	0	1	(2)	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 80.5

River Code: _____ **RM:** _____ **Stream:** Middle Fork Anderson

Date: 9/10 **Location:** Station 14

Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]	___	___	☐☐-GRAVEL [7]	___	___
☐☐-BOULDER [9]	___	___	☐☐-SAND [6]	___	___
☐☐-COBBLE [8]	___	___	☐☐-BEDROCK[5]	___	___
☐☐-HARDPAN [4]	___	___	☐☐-DETRITUS[3]	___	___
☐☐-MUCK [2]	___	___	☐☐-ARTIFICIAL[0]	___	___
☐☐-SILT [2]	___	___			

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☐-4 or More [2] ☐-3 or Less [0]

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☐-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)): SILT: ☐-SILT HEAVY [-2] ☐-SILT MODERATE [-1] ☐-SILT NORMAL [0] ☐-SILT FREE [1]; EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☐-MODERATE [-1] ☐-NORMAL [0] ☐-NONE [1]

Substrate: 18 (Max 20)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE) ☐-EXTENSIVE > 75% [11] ☒-MODERATE 25-75% [7] ☐-SPARSE 5-25% [3] ☐-NEARLY ABSENT < 5%[1]

Cover: 15 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐-HIGH [4]	☐-EXCELLENT [7]	☒-NONE [6]	☒-HIGH [3]	☐-SNAGGING	☐-IMPOUND.
☐-MODERATE [3]	☒-GOOD [5]	☐-RECOVERED [4]	☐-MODERATE [2]	☐-RELOCATION	☐-ISLANDS
☒-LOW [2]	☐-FAIR [3]	☐-RECOVERING [3]	☐-LOW [1]	☐-CANOPY REMOVAL	☐-LEVEED
☐-NONE [1]	☐-POOR [1]	☐-RECENT OR NO RECOVERY [1]		☐-DREDGING	☐-BANK SHAPING
				☐-ONE SIDE CHANNEL MODIFICATIONS	

Channel: 16 (Max 20)

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R (Per Bank)): ☐☐-WIDE > 50m [4] ☐☐-MODERATE 10-50m [3] ☐☐-NARROW 5-10 m [2] ☐☐-VERY NARROW <5 m[1] ☐☐-NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank)): ☐☐-FOREST, SWAMP [3] ☐☐-SHRUB OR OLD FIELD [2] ☐☐-RESIDENTIAL,PARK,NEW FIELD [1] ☐☐-FENCED PASTURE [1] ☐☐-CONSERVATION TILLAGE [1] ☐☐-URBAN OR INDUSTRIAL [0] ☐☐-OPEN PASTURE,ROWCROP [0] ☐☐-MINING/CONSTRUCTION [0]

BANK EROSION (L R (Per Bank)): ☐☐-NONE/LITTLE [3] ☐☐-MODERATE [2] ☐☐-HEAVY/SEVERE[1]

Riparian: 7.5 (Max 10)

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!): ☐- >1m [6] ☐- 0.7-1m [4] ☐- 0.4-0.7m [2] ☐- 0.2-0.4m [1] ☐- < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE): ☐-POOL WIDTH > RIFFLE WIDTH [2] ☐-POOL WIDTH = RIFFLE WIDTH [1] ☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply): ☒-EDDIES[1] ☒-FAST[1] ☐-MODERATE [1] ☐-SLOW [1] ☐-TORRENTIAL[-1] ☐-INTERSTITIAL[-1] ☐-INTERMITTENT[-2] ☐-VERY FAST[1]

Pool/Current: 9 (Max 12)

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH: ☐- Best Areas >10 cm [2] ☒- Best Areas 5-10 cm[1] ☐- Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH: ☐- MAX > 50 [2] ☒- MAX < 50[1]

RIFFLE/RUN SUBSTRATE: ☒-STABLE (e.g.,Cobble, Boulder) [2] ☐-MOD. STABLE (e.g.,Large Gravel) [1] ☐-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS: ☐- NONE [2] ☒- LOW [1] ☐- MODERATE [0] ☐- EXTENSIVE [-1]

Riffle/Run: 5 (Max 8)

COMMENTS: _____ ☐- NO RIFFLE [Metric=0]

Gradient: 10 (Max 10)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 60 %GLIDE: ___ %RIFFLE: 30 %RUN: 10

** Best areas must be large enough to support a population of riffle-obligate species.

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Middle Fork Andrews	LOCATION near I 64
STATION # 14 RIVERMILE _____	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN Andrews
STORET #	AGENCY
INVESTIGATORS MK, WL	
FORM COMPLETED BY WL	DATE 9/10 TIME 12:15 AM (PM) / REASON FOR SURVEY

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
____% ☐	%cloud cover	☐ ____%
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☒ No

Air Temperature 28 °C

Other _____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Origin
☐ Glacial ☐ Spring-fed
☐ Non-glacial montane ☒ Mixture of origins
☐ Swamp and bog ☐ Other _____

Stream Type
☐ Coldwater ☒ Warmwater

Catchment Area _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☐ Some potential sources ☑ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous **dominant species present** Maple
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 2 m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** _____ m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☐ Partly shaded ☑ Shaded **High Water Mark** 1.5 m **Proportion of Reach Represented by Stream Morphology Types** ☑ Riffle 30 % ☑ Run 10 % ☑ Pool 60 % **Channelized** ☐ Yes ☑ No **Dam Present** ☐ Yes ☑ No
LARGE WOODY DEBRIS	**LWD** — m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** Jusame **Portion of the reach with aquatic vegetation** 15 %
WATER QUALITY	**Temperature** 19.9 °C **Specific Conductance** 325.5 **Dissolved Oxygen** 7.07 **pH** 8.10 **Turbidity** 21 **WQ Instrument Used** _____ cond - 293.8 sal - 0.2 Flow = 0.115 ft^3/sec **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		10	Detritus	sticks, wood, coarse plant materials (CPOM)	
Boulder	> 256 mm (10")	10			
Cobble	64-256 mm (2.5"-10")	30	Muck-Mud	black, very fine organic (FPOM)	
Gravel	2-64 mm (0.1"-2.5")	25			
Sand	0.06-2mm (gritty)	5	Marl	grey, shell fragments	
Silt	0.004-0.06 mm				
Clay	< 0.004 mm (slick)	20			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Sigler Creek	LOCATION St Hwy 145 & 62
STATION # 15 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson Riv
STORET #	AGENCY
COLLECTED BY MK, TK, WL DATE 9/7	LOT #
TAXONOMIST WL DATE 11/2/05	SUBSAMPLE TARGET ☑ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR	Organisms		No.	LS	TI	TCR
Oligochaeta						Megaloptera					
						Gyrinidae	II	2	A	WGL	1
Hirudinea						Coleoptera H_2O	Penny II	2	I	WGL	1
						Helipidae	II	2	A	WGL	1
Isopoda						Dryopidae	IIII II	7	A	WGL	2
						Hydrophilidae	I	1	I	WGL	2
Amphipoda	II	2	A	WGL	1	Diptera mosquito	II	2	I	WGL	1
						brown chir	II	2	I	WGL	1
Decapoda	III	3	A	WGL	1						
Ephemeroptera											
Baetid	I	1	I	WGL	1	Gastropoda H.	bentho	1	1	A	WGL	1
Hept.	IIII III	8	I	WGL	1	M.		1	1	A	WGL	1
Caenid	I	1	I	WGL	1	rambur	I	1	1	A	WGL	1
Lepto	unknown	1	I	WGL	2	Pelecypoda	I	1	1	A	WGL	1
Plecoptera											
						Other corn	IIII IIII IIII IIII IIII IIII IIII	55	I	WGL	1
							IIII IIII IIII IIII				
						Dragonfly	IIII	4	I	WGL	1
Trichoptera											
Hemiptera											
H_2O strider	I	1	A	WGL	1						
Sm strider	II	2	A	WGL	1						

1 blueg. II
1 tadpole
1 darter

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 21

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Sugar Cr	LOCATION Hwy 145 & 62	
STATION # 15 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, TK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/7/06 TIME 13:00 AM (PM)	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☒ Cobble____% ☐ Snags____% ☐ Vegetated Banks____% ☐ Sand____% ☒ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☒ Cobble____ ☐ Snags____ ☐ Vegetated Banks____ ☐ Sand____ ☒ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA
Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	(0)	1	2	3	4
Filamentous Algae	0	1	(2)	3	4	Macroinvertebrates	0	1	(2)	3	4
Macrophytes	0	1	(2)	3	4	Fish	0	1	(2)	3	4

FIELD OBSERVATIONS OF MACROBENTHOS
Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 70

River Code: _____ **RM:** _____ **Stream:** Sugar Ck

Date: 9/7/06 **Location:** Station 15

Scorers Full Name: WL, MK, TK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☑-GRAVEL [7]		
☐☐-BOULDER [9]			☐☐-SAND [6]		
☑☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN — Check ONE (OR 2 & AVERAGE)
- ☐-LIMESTONE [1]
- ☑-TILLS [1]
- ☐-WETLANDS[0]
- ☐-HARDPAN [0]
- ☐-SANDSTONE [0]
- ☐-RIP/RAP [0]
- ☐-LACUSTRINE [0]
- ☐-SHALE [-1]
- ☐-COAL FINES [-2]

SILT:
- ☐-SILT HEAVY [-2]
- ☐-SILT MODERATE [-1]
- ☑-SILT NORMAL [0]
- ☐-SILT FREE [1]

EMBEDDEDNESS:
- ☐-EXTENSIVE [-2]
- ☐-MODERATE [-1]
- ☑-NORMAL [0]
- ☐-NONE [1]

SUBSTRATE QUALITY — Check ONE (OR 2 & AVERAGE)

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
- ☑-4 or More [2]
- ☐-3 or Less [0]

Substrate: 18 (Max 20)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)
- ___ UNDERCUT BANKS [1]
- X OVERHANGING VEGETATION [1]
- X SHALLOWS (IN SLOW WATER) [1]
- ___ ROOTMATS [1]

TYPE: Score All That Occur
- X POOLS > 70 cm [2]
- ___ ROOTWADS [1]
- X BOULDERS [1]
- ___ OXBOWS, BACKWATERS [1]
- X AQUATIC MACROPHYTES [1]
- X LOGS OR WOODY DEBRIS [1]

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
- ☐ - EXTENSIVE > 75% [11]
- ☑ - MODERATE 25-75% [7]
- ☐ - SPARSE 5-25% [3]
- ☐ - NEARLY ABSENT < 5%[1]

Cover: 14 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☑ - LOW [2]	☑ - FAIR [3]	☑ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

Channel: 10 (Max 20)

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH — L R (Per Bank)
- ☐☐ - WIDE > 50m [4]
- ☐☐ - MODERATE 10-50m [3]
- ☐☐ - NARROW 5-10 m [2]
- ☐☐ - VERY NARROW <5 m[1]
- ☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) — L R (Most Predominant Per Bank)
- ☐☐-FOREST, SWAMP [3]
- ☐☐-SHRUB OR OLD FIELD [2]
- ☐☑-RESIDENTIAL,PARK,NEW FIELD [1]
- ☐☐-FENCED PASTURE [1]
- ☐☐-CONSERVATION TILLAGE [1]
- ☐☐-URBAN OR INDUSTRIAL [0]
- ☐☐-OPEN PASTURE,ROWCROP [0]
- ☐☐-MINING/CONSTRUCTION [0]

BANK EROSION — L R (Per Bank)
- ☐☐-NONE/LITTLE [3]
- ☑☐-MODERATE [2]
- ☐☑-HEAVY/SEVERE[1]

Riparian: 4 (Max 10)

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
- ☑ - >1m [6]
- ☐ - 0.7-1m [4]
- ☐ - 0.4-0.7m [2]
- ☐ - 0.2-0.4m [1]
- ☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
- ☑-POOL WIDTH > RIFFLE WIDTH [2]
- ☐-POOL WIDTH = RIFFLE WIDTH [1]
- ☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
- ☐-EDDIES[1]
- ☐-FAST[1]
- ☑-MODERATE [1]
- ☑-SLOW [1]
- ☐-TORRENTIAL[-1]
- ☐-INTERSTITIAL[-1]
- ☐-INTERMITTENT[-2]
- ☐-VERY FAST[1]

Pool/Current: 10 (Max 12)

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
- ☐ - Best Areas >10 cm [2]
- ☑ - Best Areas 5-10 cm[1]
- ☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
- ☐ - MAX > 50 [2]
- ☑ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
- ☐-STABLE (e.g.,Cobble, Boulder) [2]
- ☑-MOD. STABLE (e.g.,Large Gravel) [1]
- ☐-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
- ☐ - NONE [2]
- ☑ - LOW [1]
- ☐ - MODERATE [0]
- ☐ - EXTENSIVE [-1]

Riffle/Run: 4 (Max 8)

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 90 %GLIDE: _____ %RIFFLE: 5 %RUN: 5

Gradient: 18 (Max 10)

** Best areas must be large enough to support a population of riffle-obligate species.*

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Sigler Creek	LOCATION St. Hwy 145 & 62	
STATION # 15 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson Riv.	
STORET #	AGENCY	
INVESTIGATORS MK, TK, WL		
FORM COMPLETED BY WL	DATE 9/7 TIME 13:00 AM (PM)	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☒ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature**____ °C
	☐ showers (intermittent)	☐	
	20% ☒ %cloud cover	☐ ___ %	**Other**_____
	☐ clear/sunny	☐	

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☒ Mixture of origins
☐ Other_____

Catchment Area_____ km^2

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☐ Forest ☑ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☐ Some potential sources ☑ Obvious sources **Local Watershed Erosion** ☐ None ☐ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☑ Trees ☐ Shrubs ☑ Grasses ☑ Herbaceous **dominant species present** Acenes, Amotin
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** _____ m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** 1 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☑ Partly open ☐ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☑ Riffle 5 % ☑ Run 5 % ☑ Pool 90 % **Channelized** ☑ Yes ☐ No **Dam Present** ☐ Yes ☑ No
LARGE WOODY DEBRIS	**LWD** .5 m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** Susame **Portion of the reach with aquatic vegetation** 5 %
WATER QUALITY	**Temperature** 21 °C **Specific Conductance** 361.8 **Dissolved Oxygen** 7.25 **pH** 7.96 **Turbidity** 5.3 Flow = 0.193 ft^3/sec **WQ Instrument Used** _____ Salinity = 0.2 Conductivity = 331.2 **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☑ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	15			
Cobble	64-256 mm (2.5"-10")	40	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	30			
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	5			
Clay	< 0.004 mm (slick)	—			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Anderson River	LOCATION CR 201A
STATION # 16 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY WL MK DATE 9/6	LOT #
TAXONOMIST WL DATE 11/6/06	SUBSAMPLE TARGET ☒ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR	Organisms		No.	LS	TI	TCR
Oligochaeta	IIII	4	A	WL	1	Megaloptera	Sialidae II	2	I	WL	1
Hirudinea						Coleoptera	HH HH II - Dry [illegible]	12	A	WL	2
						Hydrophilidae	II	2	A	WL	2
Isopoda											
						[illegible] larvae	III	3	I	WL	2
Amphipoda						Diptera					
						blood [illegible]	II	2	I	WL	1
Decapoda	HH III	8	A	WL	1	mosquito	II	2	I	WL	1
						[illegible] chir	II	2	I	WL	1
Ephemeroptera						Tabanidae	II	2	I	WL	1
Hept.	II	2	A	WL	1	Gastropoda L.	Lof II	2	A	WL	1
						Rem [illegible]	II	2	A	WL	1
						P hart	II	1	A	WL	1
						Pelecypoda	HH HH HH HH HH HH	43	A	WL	1
Plecoptera							HH HH III				
						Other					
						Oragon fly	IIII	4	I	WL	1
						colen	III				
Trichoptera						↳ Argia	II	2	I	WL	1
						↳ Enallagma	II	2	I	WL	1
Hemiptera											
H2O strider	III	3	A	WL	1						

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 19

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Anderson River	LOCATION CR 201A	
STATION # 16 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/6 TIME 13:00 AM (PM)	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☑ Cobble 10 % ☑ Snags 5 % ☑ Vegetated Banks 10 % ☐ Sand ____ % ☑ Submerged Macrophytes 5 % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☑ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☑ Cobble ____ ☑ Snags ____ ☑ Vegetated Banks ____ ☐ Sand ____ ☑ Submerged Macrophytes ____ ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 67.5

River Code: _____ **RM:** _____ **Stream:** Anderson River
Date: 9/6/06 **Location:** Station #16
Scorers Full Name: WL, MK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☒-GRAVEL [7]	50	50
☐☐-BOULDER [9]			☐☐-SAND [6]		
☒☐-COBBLE [8]	30	30	☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN Check ONE (OR 2 & AVERAGE)
☐ -LIMESTONE [1]
☒-TILLS [1]
☐ -WETLANDS[0]
☐ -HARDPAN [0]
☐ -SANDSTONE [0]
☐ -RIP/RAP [0]
☐ -LACUSTRINE [0]
☐ -SHALE [-1]
☐ -COAL FINES [-2]

SILT:
☐ - SILT HEAVY [-2]
☐ -SILT MODERATE [-1]
☒-SILT NORMAL [0]
☐ -SILT FREE [1]

EMBEDDEDNESS:
☐ -EXTENSIVE [-2]
☐ -MODERATE [-1]
☒-NORMAL [0]
☐ -NONE [1]

SUBSTRATE QUALITY Check ONE (OR 2 & AVERAGE)

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☒-4 or More [2]
☐-3 or Less [0]

COMMENTS _____

Substrate: 18 Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur
X UNDERCUT BANKS [1]
X OVERHANGING VEGETATION [1]
X SHALLOWS (IN SLOW WATER) [1]
___ ROOTMATS [1]
X POOLS> 70 cm [2]
X ROOTWADS [1]
X BOULDERS [1]
___ OXBOWS, BACKWATERS [1]
X AQUATIC MACROPHYTES [1]
X LOGS OR WOODY DEBRIS [1]

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☒ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

COMMENTS: _____

Cover: 16 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☒ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☒ - LOW [2]	☒ - FAIR [3]	☒ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 10 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH L R (Per Bank)
☐☐ - WIDE > 50m [4]
☒☐ - MODERATE 10-50m [3]
☒☐ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) L R (Most Predominant Per Bank)
☐☐-FOREST, SWAMP [3]
☐☒-SHRUB OR OLD FIELD [2]
☒☐-RESIDENTIAL,PARK,NEW FIELD [1]
☐☐-FENCED PASTURE [1]
☐☐-CONSERVATION TILLAGE [1]
☐☐-URBAN OR INDUSTRIAL [0]
☐☐-OPEN PASTURE,ROWCROP [0]
☐☐-MINING/CONSTRUCTION [0]

BANK EROSION L R (Per Bank)
☐☐-NONE/LITTLE [3]
☐☒-MODERATE [2]
☒☐-HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 5.5 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☒ - >1m [6]
☐ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☒-POOL WIDTH > RIFFLE WIDTH [2]
☐-POOL WIDTH = RIFFLE WIDTH [1]
☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☐-EDDIES[1]
☐-FAST[1]
☒-MODERATE [1]
☐-SLOW [1]
☐-TORRENTIAL[-1]
☐-INTERSTITIAL[-1]
☐-INTERMITTENT[-2]
☐-VERY FAST[1]

COMMENTS: _____

Pool/Current: 9 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☒ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☒ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐-STABLE (e.g.,Cobble, Boulder) [2]
☒-MOD. STABLE (e.g.,Large Gravel) [1]
☐-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☒ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 3 Max 8

Gradient: 6 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 80 %GLIDE: _____ %RIFFLE: 10 %RUN: 10

*- Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Anderson River	LOCATION CR 201A
STATION # 16 RIVERMILE _____	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN Anderson
STORET #	AGENCY
INVESTIGATORS MK, WR	
FORM COMPLETED BY WR	DATE 9/6 TIME 15:00 AM (PM) — REASON FOR SURVEY

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
15 %	%cloud cover	☐ ___ %
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature ____ °C

Other _____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin
☐ Glacial ☐ Spring-fed
☐ Non-glacial montane ☑ Mixture of origins
☐ Swamp and bog ☐ Other _____

Stream Type
☐ Coldwater ☐ Warmwater

Catchment Area _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☐ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☒ Agricultural ☐ Other _____ ☒ Residential **Local Watershed NPS Pollution** ☒ No evidence ☐ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☒ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☐ Trees ☐ Shrubs ☐ Grasses ☒ Herbaceous **dominant species present** Giant Ragweed
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** _____ m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** 1 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☒ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☒ Riffle 10 % ☒ Run 10 % ☒ Pool 80 % **Channelized** ☐ Yes ☒ No **Dam Present** ☒ Yes ☐ No
LARGE WOODY DEBRIS	**LWD** 2 m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** Juncus Americanus **Portion of the reach with aquatic vegetation** 5 %
WATER QUALITY 9/7/06 16:30	**Temperature** 21.3 °C **Specific Conductance** 233.9 **Dissolved Oxygen** 8.85 **pH** 8.14 Sol. = 0.1 **Turbidity** 15 **WQ Instrument Used** _____ Cond = 219.6 Flow = 0.95 ft³/sec **Water Odors** ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☒ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☒ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☒ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☒ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	> 256 mm (10")	5			
Cobble	64-256 mm (2.5"-10")	30	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	50			
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	—			
Clay	< 0.004 mm (slick)	5			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Anderson River	LOCATION –
STATION # 17 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY MK, WL DATE 9/6	LOT #
TAXONOMIST WL DATE 11/6/06	SUBSAMPLE TARGET ☑ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	1	1	A	WGL	1
Hirudinea					
Isopoda					
Amphipoda	HH 1	6	A	WGL	1
Decapoda	III	3	A	WGL	1
Ephemeroptera					
Caenid	HH	5	I	WGL	1
Hep L.	HH	5	I	WGL	1
Baetid	III	3	I	WGL	1
Plecoptera					
Trichoptera					
Hydro	1	1	I	WGL	1
Hemiptera					
H2O Strider	IIII	4	A	WGL	1
water scorpion	I	1	A	WGL	1

Organisms		No.	LS	TI	TCR	
Megaloptera						
Sialidae	HH 1	6	I	WGL	1	
Coleoptera						
Haliplidae	1	1	A	WGL	1	
Dryopidae	HHIII	8	A	WGL	2	
Hydro ph. loinkel	1	1	I	WGL	2	
Diptera						
blood red	HH 1	6	I	WGL	1	
Fly larvae	1	1	I	WGL	1	
brown chir.	1	1	I	WGL	1	
Gastropoda						
lt hed	1	1	A	WGL	1	
L hed	II	2	A	WGL	1	
Pelecypoda						
Other						
Dragon Fly	III	3	I	WGL	1	- Aeshnidae
Gom.	HH HH HH HH HH III					
Dragon Fly #2	III	3	I	WGL	1	- Gomphidae
hydrocarina	III	3	A	WGL	1	
caddip	1	1	I	WGL	1	
Dragon Fly #3	1	1	I	WGL	1	- Macromiidae
→ Argia	HH 1	6	I	WGL	1	
→ Ergallagma	HH HH HH HH HH II	27	I	WGL	1	

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 25

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Anderson River	LOCATION –	
STATION # 17 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/6 TIME 16:20 AM (PM)	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☐ Cobble____% ☐ Snags____% ☑ Vegetated Banks 10 % ☐ Sand____% ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☑ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☐ Cobble____ ☐ Snags____ ☑ Vegetated Banks____ ☐ Sand____ ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	(0)	1	2	3	4
Filamentous Algae	(0)	1	2	3	4	Macroinvertebrates	0	1	(2)	3	4
Macrophytes	0	(1)	2	3	4	Fish	(0)	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 63

River Code: _____ **RM:** _____ **Stream:** Anderson River
Date: 9/7/06 **Location:** Station #19
Scorers Full Name: MK & WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]		
☐☐-BOULDER [9]			☐☐-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☒-HARDPAN [4]	60		☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☒☐-SILT [2]	20		NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☒-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)): SILT: ☐- SILT HEAVY [-2] ☐-SILT MODERATE [-1] ☒-SILT NORMAL [0] ☐-SILT FREE [1]; EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☒-MODERATE [-1] ☐-NORMAL [0] ☐-NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☒-4 or More [2] ☐-3 or Less [0]

COMMENTS _____

Substrate: 8 (Max 20)

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure): X UNDERCUT BANKS [1]; X OVERHANGING VEGETATION [1]; X SHALLOWS (IN SLOW WATER) [1]; X ROOTMATS [1]

TYPE: Score All That Occur: X POOLS> 70 cm [2]; ___ ROOTWADS [1]; ___ BOULDERS [1]; ___ OXBOWS, BACKWATERS [1]; ___ AQUATIC MACROPHYTES [1]; ___ LOGS OR WOODY DEBRIS [1]

AMOUNT: (Check ONLY One or check 2 and AVERAGE): ☒ - EXTENSIVE > 75% [11] ☒ - MODERATE 25-75% [7] ☐ - SPARSE 5-25% [3] ☐ - NEARLY ABSENT < 5%[1]

COMMENTS: _____

Cover: 15 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☒ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☒ - LOW [2]	☒ - FAIR [3]	☒ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 16 (Max 20)

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH L R (Per Bank)	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) L R (Most Predominant Per Bank)	L R	BANK EROSION L R (Per Bank)
☐☐ - WIDE > 50m [4]	☐☐-FOREST, SWAMP [3]	☐☐-CONSERVATION TILLAGE [1]	☐☐-NONE/LITTLE [3]
☐☐ - MODERATE 10-50m [3]	☐☐-SHRUB OR OLD FIELD [2]	☐☐-URBAN OR INDUSTRIAL [0]	☒☒-MODERATE [2]
☐☐ - NARROW 5-10 m [2]	☐☐-RESIDENTIAL,PARK,NEW FIELD [1]	☒☒-OPEN PASTURE,ROWCROP [0]	☐☐-HEAVY/SEVERE[1]
☒☒ - VERY NARROW <5 m[1]	☐☐-FENCED PASTURE [1]	☐☐-MINING/CONSTRUCTION [0]	
☐☐ - NONE [0]			

COMMENTS: _____

Riparian: 3 (Max 10)

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)	
☒ - >1m [6]	☐-POOL WIDTH > RIFFLE WIDTH [2]	☐-EDDIES[1]	☐-TORRENTIAL[-1]
☐ - 0.7-1m [4]	☐-POOL WIDTH = RIFFLE WIDTH [1]	☐-FAST[1]	☐-INTERSTITIAL[-1]
☐ - 0.4-0.7m [2]	☒-POOL WIDTH < RIFFLE W. [0]	☐-MODERATE [1]	☐-INTERMITTENT[-2]
☐ - 0.2-0.4m [1]	no riffle	☒-SLOW [1]	☐-VERY FAST[1]
☐ - < 0.2m [POOL=0]			

COMMENTS: _____

Pool/Current: 7 (Max 12)

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
☐ - Best Areas >10 cm [2]	☐ - MAX > 50 [2]	☐-STABLE (e.g.,Cobble, Boulder) [2]	☐ - NONE [2]
☐ - Best Areas 5-10 cm[1]	☐ - MAX < 50[1]	☐-MOD. STABLE (e.g.,Large Gravel) [1]	☐ - LOW [1]
☐ - Best Areas < 5 cm [RIFFLE=0]		☐-UNSTABLE (Fine Gravel,Sand) [0]	☐ - MODERATE [0]
			☐ - EXTENSIVE [-1]

COMMENTS: no riffle ☒- NO RIFFLE [Metric=0]

Riffle/Run: 0 (Max 8)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 90 %GLIDE: — %RIFFLE: — %RUN: —

Gradient: 10 (Max 10)

*- Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Anderson River	LOCATION 145	
STATION # 17 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson River Basin	
STORET #	AGENCY	
INVESTIGATORS WL MK		
FORM COMPLETED BY WL	DATE 9/6/06 TIME 13:00 AM (PM)	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☑ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 24 °C
	☐ showers (intermittent)	☐	
	20 % ☑ %cloud cover	☐ ___ %	**Other**
	☐ clear/sunny	☐	

SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**

STREAM CHARACTERIZATION	**Stream Subsystem** ☐ Perennial ☑ Intermittent ☐ Tidal	**Stream Type** ☐ Coldwater ☑ Warmwater
	Stream Origin ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☑ Mixture of origins ☐ Other	**Catchment Area** ___ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☐ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☒ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☐ Some potential sources ☒ Obvious sources **Local Watershed Erosion** ☐ None ☒ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☐ Trees ☐ Shrubs ☒ Grasses ☒ Herbaceous **dominant species present** Giant Ragweed
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** _____ m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** _____ m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☒ Partly open ☐ Partly shaded ☐ Shaded **High Water Mark** 2.5 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle _____ % ☐ Run _____ % ☒ Pool 100 % **Channelized** ☒ Yes ☐ No **Dam Present** ☐ Yes ☒ No
LARGE WOODY DEBRIS	**LWD** .5 m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** RCG, water willow. **Portion of the reach with aquatic vegetation** 5 %
WATER QUALITY 9/7 D. 16:00	**Temperature** 25.6° C **Specific Conductance** 237.6 **Dissolved Oxygen** 8.25 **pH** 7.90 **Turbidity** 31 **WQ Instrument Used** _____ Conductivity 240.3 Flow = 1.464 ft³/sec S21= 0.1 **Water Odors** ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☒ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☐ Slightly turbid ☒ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☒ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	5			
Cobble	64-256 mm (2.5"-10")	—	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	—			
Sand	0.06-2mm (gritty)	5	Marl	grey, shell fragments	10
Silt	0.004-0.06 mm	30			
Clay	< 0.004 mm (slick)	60			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Mitchell Creek	LOCATION near Mitchell Rd
STATION # 18 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY WL, MK DATE 9/6	LOT #
TAXONOMIST WL DATE 11/7/06	SUBSAMPLE TARGET ☒ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	I	1	A	WL	1
Hirudinea					
Isopoda	I	1	A	WL	1
Amphipoda					
Decapoda Crayfish	IIII	5	A	WL	1
Ephemeroptera					
Caenidae	II	2	I	WL	1
Beetle	I	1	I	WL	1
Hept.	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ I	31	I	WL	1
Plecoptera	II	2	I	WL	1
Trichoptera					
Hydro	II	2	I	WL	1
Rhyacophilidae	III	3	I	WL	2
Hemiptera					
H2O strider	I	1	A	WL	1
Little strider	III	3	A	WL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Sialidae	I	1	I	WL	1
Coleoptera					
Noteridae	IIII	5	A	WL	2
Ortopodae	IIII	6	A	WL	2
Water penny	~~IIII~~ ~~IIII~~ II	12	I	WL	1
Diptera					
Blood Red	II	2	I	WL	1
Chir	I	1	I	WL	1
Mosquito	IIII	4	I	WL	1
Gastropoda					
Pelecypoda					
Other					
Aeshnidae	II	2	I	WL	1
Gomphidae	I	1	I	WL	2
Calip	~~IIII~~ ~~IIII~~ II	12	I	WL	1
Argia	II	2	I	WL	1

Taxonomic certainty rating (TCR): 1-5; 1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult. TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 22

Johnny Darter III

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Mitchell CL	LOCATION near Mitchell Rd	
STATION # 18 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson R.	
STORET #	AGENCY	
INVESTIGATORS WL MK		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/6 TIME 8:45 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☒ Cobble 80 % ☒ Snags 5 % ☐ Vegetated Banks ____ % ☐ Sand ____ % ☒ Submerged Macrophytes 2 % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☒ Cobble 10 ☒ Snags 10 ☐ Vegetated Banks ____ ☐ Sand ____ ☒ Submerged Macrophytes 10 ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	(0)	1	2	3	4	Slimes	(0)	1	2	3	4
Filamentous Algae	0	(1)	2	3	4	Macroinvertebrates	0	1	(2)	3	4
Macrophytes	0	(1)	2	3	4	Fish	0	1	(2)	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabanidae	0	1	2	3	4						
						Culicidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 76

River Code: _____ **RM:** _____ **Stream:** Mitchell Ck
Date: 9/6 **Location:** Station 18
Scorers Full Name: WL MK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☒-GRAVEL [7]	50	50
☐☐-BOULDER [9]			☐☐-SAND [6]		
☒☐-COBBLE [8]	20	20	☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN Check ONE (OR 2 & AVERAGE)
☐ -LIMESTONE [1] SILT:
☒ -TILLS [1]
☐ -WETLANDS[0]
☐ -HARDPAN [0]
☐ -SANDSTONE [0] EMBEDDEDNESS:
☐ -RIP/RAP [0]
☐ -LACUSTRINE [0]
☐ -SHALE [-1]
☐ -COAL FINES [-2]

SUBSTRATE QUALITY Check ONE (OR 2 & AVERAGE)
☐ - SILT HEAVY [-2]
☐ -SILT MODERATE [-1]
☒ -SILT NORMAL [0]
☐ -SILT FREE [1]
☐ -EXTENSIVE [-2]
☐ -MODERATE [-1]
☒ -NORMAL [0]
☐ -NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☒ -4 or More [2]
☐ -3 or Less [0]

Substrate: 18 (Max 20)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☒ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 15 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☒ - MODERATE [3]	☒ - GOOD [5]	☒ - RECOVERED [4]	☒ - MODERATE [2]	☐ - RELOCATION	☒ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

Channel: 14 (Max 20)

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION(check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R (Per Bank))
☒☒ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☐☐ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank))
☒☒ FOREST, SWAMP [3]
☐☐ SHRUB OR OLD FIELD [2]
☐☐ RESIDENTIAL,PARK,NEW FIELD [1]
☐☐ FENCED PASTURE [1]
☐☐ CONSERVATION TILLAGE [1]
☐☐ URBAN OR INDUSTRIAL [0]
☐☐ OPEN PASTURE,ROWCROP [0]
☐☐ MINING/CONSTRUCTION [0]

BANK EROSION (L R (Per Bank))
☐☐ -NONE/LITTLE [3]
☒☒ -MODERATE [2]
☐☐ -HEAVY/SEVERE[1]

Riparian: 9 (Max 10)

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ - >1m [6]
☒ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2- 0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☒ -POOL WIDTH > RIFFLE WIDTH [2]
☐ -POOL WIDTH = RIFFLE WIDTH [1]
☐ -POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☒ -EDDIES[1]
☐ -FAST[1]
☒ -MODERATE [1]
☒ -SLOW [1]
☐ -TORRENTIAL[-1]
☐ -INTERSTITIAL[-1]
☐ -INTERMITTENT[-2]
☐ -VERY FAST[1]

Pool/Current: 9 (Max 12)

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☒ - Best Areas 5-10 cm[1]
☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☒ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☒ -STABLE (e.g.,Cobble, Boulder) [2]
☐ -MOD. STABLE (e.g.,Large Gravel) [1]
☐ -UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☒ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

Riffle/Run: 5 (Max 8)

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Gradient: 6 (Max 10)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____

%POOL: 50 %GLIDE: _____
%RIFFLE: 20 %RUN: 30

*: Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Mitchell Ck	LOCATION near Mitchell Rd	
STATION # 18 RIVERMILE ____	STREAM CLASS	
LAT ____ LONG ____	RIVER BASIN Andrews River	
STORET #	AGENCY	
INVESTIGATORS WL NK		
FORM COMPLETED BY WL	DATE 9/6 TIME 8:45 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☑ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** ___ °C
	☐ showers (intermittent)	☐	
	___% ☐ %cloud cover	☐ ___%	**Other** ____
	☑ clear/sunny	☐	
SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**		
STREAM CHARACTERIZATION	**Stream Subsystem** ☑ Perennial ☐ Intermittent ☐ Tidal	**Stream Type** ☐ Coldwater ☑ Warmwater	
	Stream Origin ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☑ Mixture of origins ☐ Swamp and bog ☐ Other ____	**Catchment Area** ____ km²	

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☑ No evidence ☐ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous **dominant species present** Sycamore
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** _____ m **Sampling Reach Area** _____ m² **Area in km² (m²x1000)** _____ km² **Estimated Stream Depth** 1.0 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☐ Partly shaded ☑ Shaded **High Water Mark** 25 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle 20 % ☐ Run 30 % ☐ Pool 50 % **Channelized** ☐ Yes ☑ No **Dam Present** ☐ Yes ☑ No
LARGE WOODY DEBRIS	**LWD** 2 m² **Density of LWD** _____ m²/km² (LWD/ reach area)
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** sedge **Portion of the reach with aquatic vegetation** 2 %
WATER QUALITY taken 9/7 @ 15:15	**Temperature** 21.4 °C **Specific Conductance** 310.8 **Dissolved Oxygen** 9.71 **pH** 8.19 **Turbidity** 40 Flow = 1.074 ft³/sec **WQ Instrument Used** _____ Salinity = 0.2 Cond. = 294.6 **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☐ Slightly turbid ☑ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	> 256 mm (10")	15			
Cobble	64-256 mm (2.5"-10")	20	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	35			
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)	10			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Hurricane Ck	LOCATION CR 2160 N
STATION # 19 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson
STORET #	AGENCY
COLLECTED BY MK, WL DATE 9/10	LOT #
TAXONOMIST WL DATE 11/13/06	SUBSAMPLE TARGET ☑ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	卌 II	7	A	WGL	1
Hirudinea					
Isopoda					
Amphipoda					
Decapoda Crayfish	I	1	A	WGL	1
Ephemeroptera					
Ceni.d	IIII	4	I	WGL	1
Baet.d	卌 II	7	I	WGL	1
Hept	卌 III	9	I	WGL	1
Plecoptera					
Trichoptera					
Hydro	卌 III	8	I	WGL	1
Phil.o	I	1	I	WGL	1
Hemiptera					
Gerridae	IIII	4	A	WGL	1
H.o Measured	II	2	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Coleoptera					
Noteridae	卌 III	8	A	WGL	2
Elmidae	卌	5	A	WGL	2
Hydrophilidae	I	1	I	WGL	2
Diptera red	卌 III	8	I	WGL	1
Chironomid	卌 卌 II	12	I	WGL	1
mosquito	II	2	I	WGL	1
Tabanidae	IIII	4	I	WGL	1
Gastropoda					
L. Hal	I	1	A	WGL	1
Pelecypoda					
Other planaria	I	1	A	WGL	1
Aeshnidae	II	2	I	WGL	1
Calip	IIII I	6	I	WGL	1
Argia	卌	5	I	WGL	1
Enallagma	II	2	I	WGL	1

- Olveg. II
- Ishang Dater
- Dantes sp.

Taxonomic certainty rating (TCR) 1-5; 1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing girls). LS= life stage: I = immature; P = pupa; A = adult. TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 22

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Hurricane CK	LOCATION CR 2160 N	
STATION # 19 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson	
STORET #	AGENCY	
INVESTIGATORS MK, WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/10 TIME 9:45 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☒ Cobble____% ☒ Snags____% ☒ Vegetated Banks____% ☐ Sand____% ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	Gear used ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☒ Cobble 10 ☒ Snags 10 ☒ Vegetated Banks 10 ☐ Sand____ ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culicidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index F d Sheet QHEI Score: 62.5

River Code: _____ **RM:** _____ **Stream:** Hurricane Ck
Date: 9/10 **Location:** Station 19
Scorers Full Name: MK, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☑☑-GRAVEL [7]		
☐☐-BOULDER [9]			☑☑-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]					

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☑-4 or More [2]
☐-3 or Less [0]

SUBSTRATE ORIGIN
Check ONE (OR 2 & AVER
☐ -LIMESTONE [1]
☑ -TILLS [1]
☐ -WETLANDS[0]
☐ -HARDPAN [0]
☐ -SANDSTONE [0]
☐ -RIP/RAP [0]
☐ -LACUSTRINE [0]
☐ -SHALE [-1]
☐ -COAL FINES [-2]

SUBSTRATE QUALITY
Check ONE (OR 2 & AVERAGE)
☐ - SILT HEAVY [-2]
☐ -SILT MODERATE [-1]
☑ -SILT NORMAL [0]
☐ -SILT FREE [1]
☐ -EXTENSIVE [-2]
☑ -MODERATE [-1]
☐ -NORMAL [0]
☐ -NONE [1]

Substrate: 15 Max 20

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instruct
(Structure) TYPE: Score All That Occur

☒ UNDERCUT BANKS [1]
☒ OVERHANGING VEGETATION [1]
☒ SHALLOWS (IN SLOW WATER) [1]
☒ ROOTMATS [1]
☒ POOLS> 70 cm [2]
___ ROOTWADS [1]
___ BOULDERS [1]
___ OXBOWS, BACKWAT
☒ AQUATIC MACROPHY
☒ LOGS OR WOODY DE

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☑ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 15 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☑ - MODERATE [2]
☑ - LOW [2]	☑ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]	

ICATIONS/OTHER
AGGING ☐ - IMPOUND.
LOCATION ☐ - ISLANDS
NOPY REMOVAL ☐ - LEVEED
EDGING ☐ - BANK SHAPING
E SIDE CHANNEL MODIFICATIONS

Channel: 10 Max 20

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVE

RIPARIAN WIDTH L R (Per Bank)	FLOOD PLAIN QUALITY (PAST 100 Meter L R (Most Predominant Per Bank)	L R
☐☐ - WIDE > 50m [4]	☐☐ FOREST, SWAMP [3]	☐☐ CONSERVATIO
☐☐ - MODERATE 10-50m [3]	☐☐ SHRUB OR OLD FIELD [2]	☐☐ -URBAN OR IN
☑☑ - NARROW 5-10 m [2]	☐☐ RESIDENTIAL, PARK, NEW FIELD [1]	☑☑ -OPEN PASTU
☐☐ - VERY NARROW <5 m[1]	☐☐ FENCED PASTURE [1]	☐☐ -MINING/CON
☐☐ - NONE [0]		

E per bank) River Right Looking Downstream
RIAN)
LAGE [1]
RIAL [0]
WCROP [0]
CTION [0]

BANK EROSION L R (Per Bank)
☐☐ -NONE/LITTLE [3]
☑☑ -MODERATE [2]
☐☐ -HEAVY/SEVERE[1]

Riparian: 4 Max 10

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT (C
☑ - >1m [6]	☑ -POOL WIDTH > RIFFLE WIDTH [2]	☐ -EDDIES[1]
☐ - 0.7-1m [4]	☐ -POOL WIDTH = RIFFLE WIDTH [1]	☐ -FAST[1]
☐ - 0.4-0.7m [2]	☐ -POOL WIDTH < RIFFLE W. [0]	☑ -MODERATE
☐ - 0.2-0.4m [1]		☑ -SLOW [1]
☐ - < 0.2m [POOL=0]		

OCITY [POOLS & RIFFLES!]
All That Apply)
☐ -TORRENTIAL[-1]
☐ -INTERSTITIAL[-1]
☐ -INTERMITTENT[-2]
☐ -VERY FAST[1]

Pool/Current: 10 Max 12

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE
☐ - Best Areas >10 cm [2]	☐ - MAX > 50 [2]	☐ STABLE (e.g., Cobble, Boul
☑ - Best Areas 5-10 cm[1]	☑ - MAX < 50[1]	☑ MOD. STABLE (e.g., Large C
☐ - Best Areas < 5 cm [RIFFLE=0]		☑ UNSTABLE (Fine Gravel, Sa

E
RIFFLE/RUN EMBEDDEDNESS
[2] ☐ - NONE [2]
[1] ☐ - LOW [1]
☑ - MODERATE [0]
☐ - EXTENSIVE [-1]
FLE [Metric=0]

Riffle/Run: 2.6 Max 8

COMMENTS: _____ ☐ - NO

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____

%POO 75 %GLIDE: _____
%RIFF 10 %RUN: 15

Gradient: 6 Max 10

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA S ET
(FRONT)

STREAM NAME Hurricane Ck	LOCATION CR 2160 N	
STATION # 19 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK, WL		
FORM COMPLETED BY WK	DATE 9/10 TIME 9:45 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☑	%cloud cover	☑ 50 %
☐	clear/sunny	☐

Has there been a heavy rain in the las ys? ☐ Yes ☑ No

Air Temperature 20 °C

Other

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☑ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☑ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☑ Mixture of origins
☐ Other

Catchment Area km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☐ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☑ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☐ Some potential sources ☑ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☐ Trees ☐ Shrubs ☐ Grasses ☑ Herbaceous **dominant species present** pokp? Ambtrs
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 4 m **Sampling Reach Area** _____ m² **Area in km² (m²x1000)** _____ km² **Estimated Stream Depth** >1 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☑ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle 10 % ☐ Run 15 % ☐ Pool 75 % **Channelized** ☑ Yes ☐ No **Dam Present** ☐ Yes ☑ No
LARGE WOODY DEBRIS	**LWD** 1 m² **Density of LWD** _____ m²/km² (LWD/ reach area)
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☑ Attached Algae **dominant species present** _____ **Portion of the reach with aquatic vegetation** 5 %
WATER QUALITY	**Temperature** 21.1 °C **Specific Conductance** 228.5 **Dissolved Oxygen** 6.71 **pH** 8.28 Flow = 0.509 ft³/sec **Turbidity** 14 **WQ Instrument Used** _____ Cond - 211.9 Sal - 0.1 **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☑ Globs ☐ Flecks ☐ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☑ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	15
Boulder	> 256 mm (10")	5			
Cobble	64-256 mm (2.5"-10")	15	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	30			
Sand	0.06-2mm (gritty)	35	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)	10			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of

STREAM NAME Ferdinand Run	LOCATION CR 1360
STATION # 20 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Andersen
STORET #	AGENCY
COLLECTED BY MK; WL DATE 9/10	LOT #
TAXONOMIST WL DATE 11/16/06	SUBSAMPLE TARGET ☐ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	1	1	A	WGL	1
Hirudinea					
Isopoda					
Amphipoda	1	1	A	WGL	1
Decapoda crayfish	1	1	A	WGL	1
Ephemeroptera					
Caenid	III	3	I	WGL	1
Baetid	IIII III IIII I	16	I	WGL	1
Heptag.	IIII	5	I	WGL	1
Leptophlebiid	II	2	I	WGL	2
Plecoptera					
Hydro	IIII IIII	10	I	WGL	2
philopt	IIII IIII IIII IIII II	22	I	WGL	2
Trichoptera					
Hemiptera					
Diving Bug	1	1	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Sialide	1	1	I	WGL	1
Coleoptera					
Gyrinidae	1	1	A	WGL	1
Psephenidae	IIII 1	6	A	WGL	2
Elmidae	1	1	A	WGL	2
Diptera red	1	1	I	WGL	1
Chironomid	1	1	I	WGL	1
Mosquito	1	1	I	WGL	1
Black Fly	II	2	I	WGL	1
Tanyscaid	II	2	I	WGL	1
Gastropoda					
Pelecypoda					
Other					
Planaria	IIII II	7	A	WGL	1
Aeshnidae	II	2	I	WGL	1
Calop	IIIIIIII	9	I	WGL	1
Argia	1	1	I	WGL	1
Enallagma	II	2	I	WGL	1

Taxonomic certainty rating (TCR): 1=most certain, 5=least certain. If rating is 4-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult. TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 24

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Ferdinand Run	LOCATION CR 1360	
STATION # 80 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson	
STORET #	AGENCY	
INVESTIGATORS ML WL		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/10 TIME 8:30 AM PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☑ Cobble 80 % ☐ Snags____% ☑ Vegetated Banks 20 % ☐ Sand____% ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☑ Cobble 10 ☐ Snags____ ☑ Vegetated Banks 1 ✓ ☐ Sand____ ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Fi[illegible] Sheet QHEI Score: 64

River Code: _____ **RM:** _____ **Stream:** Ferdinand Run

Date: 9/10/06 **Location:** Station #20

Scorers Full Name: M/S, WL **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]	___	___	☒☒-GRAVEL [7]	___	___
☐☐-BOULDER [9]	___	___	☐☐-SAND [6]	___	___
☐☐-COBBLE [8]	___	___	☐☐-BEDROCK[5]	___	___
☐☐-HARDPAN [4]	___	___	☐☐-DETRITUS[3]	___	___
☐☐-MUCK [2]	___	___	☐☐-ARTIFICIAL[0]	___	___
☐☐-SILT [2]	___	___	NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN Check ONE (OR 2 & AVERAG

- ☐ -LIMESTONE [1] SIL
- ☒ -TILLS [1]
- ☐ -WETLANDS[0]
- ☐ -HARDPAN [0]
- ☐ -SANDSTONE [0] EM
- ☐ -RIP/RAP [0] NE
- ☐ -LACUSTRINE [0]
- ☐ -SHALE [-1]
- ☐ -COAL FINES [-2]

SUBSTRATE QUALITY Check ONE (OR 2 & AVERAGE)

- ☐ - SILT HEAVY [-2]
- ☐ -SILT MODERATE [-1]
- ☒ -SILT NORMAL [0]
- ☐ -SILT FREE [1]

DDED

- ☐ -EXTENSIVE [-2]
- ☐ -MODERATE [-1]
- ☒ -NORMAL [0]
- ☐ -NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☒-4 or More [2]
☐-3 or Less [0]

COMMENTS _____

Substrate: 16 Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructio

(Structure) **TYPE:** Score All That Occur

- ☒ UNDERCUT BANKS [1]
- ☒ OVERHANGING VEGETATION [1]
- ☒ SHALLOWS (IN SLOW WATER) [1]
- ☒ ROOTMATS [1]
- ___ POOLS> 70 cm [2]
- ___ ROOTWADS [1]
- ___ BOULDERS [1]
- ___ OXBOWS, BACKWATER
- ☒ AQUATIC MACROPHYT
- ___ LOGS OR WOODY DEB

AMOUNT: (Check ONLY One or check 2 and AVERAGE)

- ☐ - EXTENSIVE > 75% [11]
- ☒ - MODERATE 25-75% [7]
- ☐ - SPARSE 5-25% [3]
- ☐ - NEARLY ABSENT < 5%[1]

COMMENTS: _____

Cover: 12 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and A

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MO
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐
☒ - MODERATE [3]	☒ - GOOD [5]	☐ - RECOVERED [4]	☒ - MODERATE [2]	☐
☐ - LOW [2]	☐ - FAIR [3]	☒ - RECOVERING [3]	☐ - LOW [1]	☐
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐
				☐

AGE)

CATIONS/OTHER

- AGGING
- LOCATION
- NOPY REMOVAL
- EDGING
- E SIDE CHANNEL MODIFICATIONS
- ☐ - IMPOUND.
- ☐ - ISLANDS
- ☐ - LEVEED
- ☐ - BANK SHAPING

COMMENTS: _____

Channel: 13 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVER

per bank) River Right Looking Downstream

RIPARIAN WIDTH L R (Per Bank)

- ☐☐ - WIDE > 50m [4]
- ☒☐ - MODERATE 10-50m [3]
- ☒☒ - NARROW 5-10 m [2]
- ☐☐ - VERY NARROW <5 m [1]
- ☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 meter

L R (Most Predominant Per Bank)

- ☐ ☒-FOREST, SWAMP [3]
- ☐ ☐-SHRUB OR OLD FIELD [2]
- ☐ ☐-RESIDENTIAL, PARK, NEW FIELD [1]
- ☐ ☐-FENCED PASTURE [1]

L R

- ☐ ☐-CONSERVATION
- ☐ ☐-URBAN OR IND
- ☒ ☐-OPEN PASTURE
- ☐ ☐-MINING/CONS

RIAN)

- AGE [1]
- RIAL [0]
- WCROP [0]
- CTION [0]

BANK EROSION L R (Per Bank)

- ☐ ☐-NONE/LITTLE [3]
- ☒ ☒-MODERATE [2]
- ☐ ☐-HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 6 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)

- ☐ - >1m [6]
- ☒ - 0.7-1m [4]
- ☐ - 0.4-0.7m [2]
- ☐ - 0.2 - 0.4m [1]
- ☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)

- ☒ -POOL WIDTH > RIFFLE WIDTH [2]
- ☐ -POOL WIDTH = RIFFLE WIDTH [1]
- ☐ -POOL WIDTH < RIFFLE W. [0]

CURRENT (Cr

- ☒ -EDDIES [1]
- ☐ -FAST[1]
- ☒ -MODERATE [1
- ☒ -SLOW [1]

CITY [POOLS & RIFFLES!] All That Apply)

- ☐ -TORRENTIAL[-1]
- ☐ -INTERSTITIAL[-1]
- ☐ -INTERMITTENT[-2]
- ☐ -VERY FAST[1]

COMMENTS: _____

Pool/Current: 9 Max 12

CHECK ONE OR CHECK 2 AND AVE

RIFFLE DEPTH

- ☐ - Best Areas >10 cm [2]
- ☒ - Best Areas 5-10 cm[1]
- ☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH

- ☐ - MAX > 50 [2]
- ☒ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE

- ☒ -STABLE (e.g.,Cobble, Boulde
- ☒ -MOD. STABLE (e.g.,Large G
- ☐ -UNSTABLE (Fine Gravel,San

E

RIFFLE/RUN EMBEDDEDNESS

- [2]
- [1]
- ☐ - NONE [2]
- ☒ - LOW [1]
- ☐ - MODERATE [0]
- ☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO FLE [Metric=0]

Riffle/Run: 4 Max 8

Gradient: 4 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____

%POO: 50 %GLIDE: ~

%RIFF: 15 %RUN: 25

* Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Ferdinand Run	LOCATION CR 1360	
STATION # 20 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson	
STORET #	AGENCY	
INVESTIGATORS MK, WL		
FORM COMPLETED BY WL	DATE 9/10 TIME 8:30 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☑
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 10 °C
	☐ showers (intermittent)	☐	
	100 % ☑ %cloud cover	☑ 15 %	**Other**
	☐ clear/sunny	☐	

SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach photograph)**

STREAM CHARACTERIZATION	**Stream Subsystem** ☑ Perennial ☐ Intermittent ☐ Tidal	**Stream Type** ☐ Coldwater ☑ Warmwater
	Stream Origin ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☑ Mixture of origins ☐ Other	**Catchment Area** km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☑ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☐ No evidence ☐ Some potential sources ☑ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☐ Trees ☐ Shrubs ☑ Grasses ☐ Herbaceous **dominant species present** [redacted] Reed Canary Grass
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 2 m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** _____ m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☑ Partly open ☐ Partly shaded ☐ Shaded **High Water Mark** 2 m **Proportion of Reach Represented by Stream Morphology Types** ☑ Riffle 15 % ☑ Run 25 % ☑ Pool 50 % **Channelized** ☑ Yes ☐ No **Dam Present** ☐ Yes ☑ No
LARGE WOODY DEBRIS	**LWD** — m^2 **Density of LWD** _____ m^2/km^2 (LWD/ reach area)
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** [redacted] Reed Canary Grass **Portion of the reach with aquatic vegetation** _____ %
WATER QUALITY	**Temperature** 18.9 °C **Specific Conductance** 233.9 **Dissolved Oxygen** 9.13 **pH** 8.56 Flow = 0.6645 ft³/sec **Turbidity** 7.29 **WQ Instrument Used** _____ Cond - 206.3 Sal. - 0.1 **Water Odors** ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☑ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	10			
Cobble	64-256 mm (2.5"-10")	20	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	40			
Sand	0.06-2mm (gritty)	30	Marl	grey, shell fragment	—
Silt	0.004-0.06 mm	5			
Clay	< 0.004 mm (slick)	5			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Ferdinand Run	LOCATION R462
STATION # 22 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY MK, WL DATE 9/5/06	LOT #
TAXONOMIST WL DATE 11/13/06	SUBSAMPLE TARGET ☑ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR	Organisms		No.	LS	TI	TCR
Oligochaeta	I	1	A	WL	1	Megaloptera					
Hirudinea	I	1	A	WL	1	Coleoptera					
						Gyrinidae	IIII	4	A	WL	1
Isopoda						Dryopidae	~~IIII~~	5	A	WL	1
Amphipoda						Diptera					
						Red chir	~~IIII~~ ~~IIII~~ ~~IIII~~ III	18	I	WL	1
Decapoda Crayfish	III	3	A	WL	1	chiron	IIII	4	I	WL	1
						Mosquito	II	2	I	WL	1
Ephemeroptera						Tabanidae	III	3	I	WL	1
Brel. d	~~IIII~~ ~~IIII~~	10	I	WL	1	Gastropoda					
Hept. stenacron	~~IIII~~	5	I	WL	1	Ramhorn	I	1	A	WL	1
Cystoronia	~~IIII~~	5	I	WL	1						
Canad	IIII	4	I	WL	1	Pelecypoda	~~IIII~~ II	7	A	WL	1
Plecoptera											
						Other	Aeshnidae ~~IIII~~	5	I	WL	1
						Gomphidae	I	1	I	WL	1
						Calip	IIII	4	I	WL	1
Trichoptera						Argia	~~IIII~~ II	7	I	WL	1
Hydro	III	3	I	WL	1	Ergallagma	III	3	I	WL	1
Hemiptera											
Gerridae	IIII	4	A	WL	1						

Taxonomic certainty rating (TCR) 1-5; 1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 22

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Fordin's Run	LOCATION Highway 62	
STATION # 21 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Arkansas	
STORET #	AGENCY	
INVESTIGATORS WL MK		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/5/06 TIME 14:30 AM (PM)	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☒ Cobble 5 % ☐ Snags ____ % ☒ Vegetated Banks 5 % ☒ Sand 80 % ☐ Submerged Macrophytes ____ % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☒ Cobble 10 ☐ Snags ____ ☒ Vegetated Banks 10 ☒ Sand 10 ☐ Submerged Macrophytes ____ ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culicidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 39

River Code: _____ **RM:** _____ **Stream:** Ferdinand Run
Date: 9/5/06 **Location:** Station #21
Scorers Full Name: WL, MK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]	___	___	☐☐-GRAVEL [7]	___	___
☐☐-BOULDER [9]	___	___	☐☐-SAND [6]	___	___
☐☐-COBBLE [8]	___	___	☐☐-BEDROCK[5]	___	___
☐☐-HARDPAN [4]	___	___	☐☐-DETRITUS[3]	___	___
☐☐-MUCK [2]	___	___	☐☐-ARTIFICIAL[0]	___	___
☑☐-SILT [2]	___	___	NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☑-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SILT: ☐- SILT HEAVY [-2] ☑-SILT MODERATE [-1] ☐-SILT NORMAL [0] ☐-SILT FREE [1]

EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☐-MODERATE [-1] ☑-NORMAL [0] ☐-NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☑-4 or More [2] ☐-3 or Less [0]

COMMENTS _____

Substrate: 10 (Max 20)

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☐ - MODERATE 25-75% [7]
☑ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 8 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☐ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☑ - LOW [2]	☐ - FAIR [3]	☑ - RECOVERING [3]	☑ - LOW [1]	☑ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☑ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 7 (Max 20)

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R (Per Bank)):
☐☐- WIDE > 50m [4]
☐☐- MODERATE 10-50m [3]
☐☐- NARROW 5-10 m [2]
☑☑- VERY NARROW <5 m[1]
☐☐- NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank)):
☐☐-FOREST, SWAMP [3]
☐☐-SHRUB OR OLD FIELD [2]
☐☐-RESIDENTIAL,PARK,NEW FIELD [1]
☐☐-FENCED PASTURE [1]
☐☐-CONSERVATION TILLAGE [1]
☐☐-URBAN OR INDUSTRIAL [0]
☑☑-OPEN PASTURE,ROWCROP [0]
☐☐-MINING/CONSTRUCTION [0]

BANK EROSION (L R (Per Bank)):
☐☐-NONE/LITTLE [3]
☑☑-MODERATE [2]
☐☐-HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 3 (Max 10)

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ - >1m [6]
☐ - 0.7-1m [4]
☑ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☐-POOL WIDTH > RIFFLE WIDTH [2]
☑-POOL WIDTH = RIFFLE WIDTH [1]
☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☑-EDDIES[1]
☑-FAST[1]
☑-MODERATE [1]
☑-SLOW [1]
☐-TORRENTIAL[-1]
☐-INTERSTITIAL[-1]
☐-INTERMITTENT[-2]
☐-VERY FAST[1]

COMMENTS: _____

Pool/Current: 6 (Max 12)

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☑ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☑ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐-STABLE (e.g.,Cobble, Boulder) [2]
☐-MOD. STABLE (e.g.,Large Gravel) [1]
☑-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☐ - LOW [1]
☑ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 1 (Max 8)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 80 %GLIDE: ___ %RIFFLE: 10 %RUN: 10

Gradient: 4 (Max 10)

*- Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Ferdinand Riv.	LOCATION Highway 62
STATION # 21 RIVERMILE _____	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN Anderson
STORET #	AGENCY
INVESTIGATORS WL MK	
FORM COMPLETED BY MK + WL	DATE 9/5/06 TIME 14:30 AM (PM) — REASON FOR SURVEY

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	%cloud cover	☐ ___%
☑	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 26 °C

Other _____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☐ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☑ Warmwater

Stream Origin
☐ Glacial ☐ Spring-fed
☐ Non-glacial montane ☑ Mixture of origins
☐ Swamp and bog ☐ Other _____

Catchment Area _____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☑ Agricultural ☐ Other _____
☐ Residential

Local Watershed NPS Pollution
☐ No evidence ☐ Some potential sources
☑ Obvious sources

Local Watershed Erosion
☐ None ☑ Moderate ☑ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☐ Trees ☐ Shrubs ☑ Grasses ☑ Herbaceous

dominant species present PC6, Ambtri, Pollap

INSTREAM FEATURES

Estimated Reach Length 40 m
Estimated Stream Width 4 m
Sampling Reach Area _____ m²
Area in km² (m²x1000) _____ km²
Estimated Stream Depth .5 m
Surface Velocity (at thalweg) — m/sec

Canopy Cover
☑ Partly open ☐ Partly shaded ☐ Shaded

High Water Mark 2 m

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle 10 % ☐ Run 10 %
☐ Pool 80 %

Channelized ☑ Yes ☐ No

Dam Present ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD 0.5 m²
Density of LWD — m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

dominant species present PC6

Portion of the reach with aquatic vegetation 2 %

WATER QUALITY

Temperature 24.5 °C Outside=26°
Specific Conductance 227.6
Dissolved Oxygen 13.69
pH 9.21 Flow=2.542 ft³/sec
Turbidity 13 Salinity=0.1
WQ Instrument Used _____
Conductivity = 225.4

Water Odors
☑ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☑ None ☐ Other _____

Turbidity (if not measured)
☐ Clear ☑ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other _____

Oils
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☑ Relict shells ☐ Other _____

Looking at stones which are not deeply embedded, are the undersides black in color?
☑ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	2			
Cobble	64-256 mm (2.5"-10")	5	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	10			
Sand	0.06-2mm (gritty)	60	Marl	grey, shell fragments	5
Silt	0.004-0.06 mm	13			
Clay	< 0.004 mm (slick)	10			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ___ of ___

STREAM NAME Blackhawk Creek	LOCATION Hw 62
STATION # 22 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson
STORET #	AGENCY
COLLECTED BY EJB & TSK DATE 9/5/06	LOT #
TAXONOMIST WGL DATE 11/16/06	SUBSAMPLE TARGET ☒ 100 ☐ 200 ☐ 300 ☐ Other ___

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR	Organisms		No.	LS	TI	TCR
Oligochaeta						Megaloptera					
Hirudinea						Coleoptera	1 - Dryopidae	1	A	WGL	2
Isopoda											
Amphipoda						Diptera Invertes	Ben Chird - 1	1	I	WGL	2
							Bill Rd - 1	1	I	WGL	2
Decapoda	1	1	A	WGL	2		Calli - 1	1	I	WGL	2
						Ceratop -	Larvae - III	3	I	WGL	2
Ephemeroptera	Hept - ~~IIII IIII IIII III~~	18	I	WGL	2						
	Baetid - ~~IIII IIII IIII IIII IIII IIII~~					Gastropoda					
	↳	35	I	WGL	2						
						Pelecypoda					
Plecoptera											
						Other	~~Amphipoda - 1~~				
							Arcazop Long - III	3	A	WGL	2
							Cyeng - III	3	A	WGL	2
Trichoptera	Hydro - ~~IIII IIII IIII IIII~~	22	I	WGL	2						
	Unknown - ~~IIII IIII I~~	11	I	WGL	2						
Hemiptera											

Taxonomic certainty rating (TCR) 1-5: 1=most certain, 5=least certain. If rating is 2-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult. TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 12

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Black Hawk Creek	LOCATION Highway 62	
STATION # 22 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS EJB + TSK		LOT NUMBER
FORM COMPLETED BY	DATE 9/5/06 TIME 1700 AM PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☐ Cobble____% ☐ Snags____% ☐ Vegetated Banks____% ☐ Sand____% ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☒ D-frame ☒ kick-net ☐ Other _____ **How were the samples collected?** ☒ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☐ Cobble____ ☐ Snags____ ☐ Vegetated Banks____ ☐ Sand____ ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 56.5

River Code: _____ **RM:** _____ **Stream:** Blackhoof

Date: 9/5/06 **Location:** Hwy 62

Scorers Full Name: EDB TSK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]	X	X
☐☐-BOULDER [9]			☐☐-SAND [6]	X	X
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]					

NOTE: Ignore Sludge Originating From Point Sources

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☐-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE)):
SILT: ☐- SILT HEAVY [-2] ☐-SILT MODERATE [-1] ☒-SILT NORMAL [0] ☐-SILT FREE [1]
EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☐-MODERATE [-1] ☒-NORMAL [0] ☐-NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☒-4 or More [2] ☐-3 or Less [0]

Substrate: 16 (Max 20)

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☒ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

Cover: 12 (Max 20)

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☒ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☒ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☐ - LOW [2]	☒ - FAIR [3]	☒ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

Channel: 11 (Max 20)

COMMENTS: _____

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH (L R (Per Bank)):
☐☐ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☐☐ - NARROW 5-10m [2]
☒☐ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) (L R (Most Predominant Per Bank)):
☐☐-FOREST, SWAMP [3]
☐☐-SHRUB OR OLD FIELD [2]
☐☐-RESIDENTIAL,PARK,NEW FIELD [1]
☐☐-FENCED PASTURE [1]
☐☐-CONSERVATION TILLAGE [1]
☐☐-URBAN OR INDUSTRIAL [0]
☒☒-OPEN PASTURE,ROWCROP [0]
☐☐-MINING/CONSTRUCTION [0]

BANK EROSION (L R (Per Bank)):
☐☐-NONE/LITTLE [3]
☒☒-MODERATE [2]
☐☐-HEAVY/SEVERE[1]

Riparian: 3.5 (Max 10)

COMMENTS: _____

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ - >1m [6]
☐ - 0.7-1m [4]
☒ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☒-POOL WIDTH > RIFFLE WIDTH [2]
☐-POOL WIDTH = RIFFLE WIDTH [1]
☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☒-EDDIES[1]
☐-FAST[1]
☒-MODERATE [1]
☒-SLOW [1]
☐-TORRENTIAL[-1]
☐-INTERSTITIAL[-1]
☐-INTERMITTENT[-2]
☐-VERY FAST[1]

Pool/Current: 7 (Max 12)

COMMENTS: _____

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☐ - Best Areas 5-10 cm[1]
☒ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☒ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☐-STABLE (e.g.,Cobble, Boulder) [2]
☒-MOD. STABLE (e.g.,Large Gravel) [1]
☐-UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☐ - NONE [2]
☒ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 3 (Max 8)

Gradient: 4 (Max 10)

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 20 %GLIDE: _____ %RIFFLE: 10 %RUN: 70

*- Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Blackhawk	LOCATION Hwy 62	
STATION # 22 RIVERMILE_____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS EDB, TSK		
FORM COMPLETED BY EDB	DATE 9/5/06 TIME 1900 AM (PM)	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☑ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 27 °C
	☐ showers (intermittent)	☐	
	25 % ☑ %cloud cover	☐ ___ %	**Other**_____
	☐ clear/sunny	☐	
SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**		
STREAM CHARACTERIZATION	**Stream Subsystem** ☑ Perennial ☐ Intermittent ☐ Tidal		**Stream Type** ☐ Coldwater ☑ Warmwater
	Stream Origin ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☑ Mixture of origins ☐ Swamp and bog ☐ Other_____		**Catchment Area**_____ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
- ☐ Forest
- ☐ Field/Pasture
- ☑ Agricultural
- ☐ Residential
- ☐ Commercial
- ☐ Industrial
- ☐ Other _____

Local Watershed NPS Pollution
- ☐ No evidence
- ☐ Some potential sources
- ☑ Obvious sources

Local Watershed Erosion
- ☐ None
- ☑ Moderate
- ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
- ☐ Trees
- ☐ Shrubs
- ☑ Grasses
- ☑ Herbaceous

dominant species present Giant Reed

INSTREAM FEATURES

Estimated Reach Length 30 m

Estimated Stream Width 3 m

Sampling Reach Area 90 m²

Area in km² (m²x1000) _____ km²

Estimated Stream Depth .3 m

Surface Velocity (at thalweg) _____ m/sec

Canopy Cover
- ☑ Partly open
- ☐ Partly shaded
- ☐ Shaded

High Water Mark 3.5 m

Proportion of Reach Represented by Stream Morphology Types
- ☑ Riffle 10 %
- ☑ Run >80 %
- ☑ Pool 10 %

Channelized ☑ Yes ☐ No

Dam Present ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD 2 m²

Density of LWD _____ m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
- ☑ Rooted emergent
- ☐ Rooted submergent
- ☐ Rooted floating
- ☐ Free floating
- ☐ Floating Algae
- ☐ Attached Algae

dominant species present _____

Portion of the reach with aquatic vegetation 5 %

WATER QUALITY

Temperature 21.2 °C

Specific Conductance 422

Dissolved Oxygen 12.24

pH 8.50 Flow = 0.87 ft³/sec

Turbidity 4.9 Sal. = 0.2

WQ Instrument Used _____

Conductivity = 991.5

Water Odors
- ☑ Normal/None
- ☐ Petroleum
- ☐ Fishy
- ☐ Sewage
- ☐ Chemical
- ☐ Other _____

Water Surface Oils
- ☐ Slick
- ☐ Sheen
- ☐ Globs
- ☐ Flecks
- ☑ None
- ☐ Other _____

Turbidity (if not measured)
- ☑ Clear
- ☐ Slightly turbid
- ☐ Turbid
- ☐ Opaque
- ☐ Stained
- ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
- ☑ Normal
- ☐ Chemical
- ☐ Other _____
- ☐ Sewage
- ☐ Anaerobic
- ☐ Petroleum
- ☐ None

Oils
- ☑ Absent
- ☐ Slight
- ☐ Moderate
- ☐ Profuse

Deposits
- ☐ Sludge
- ☐ Sawdust
- ☐ Paper fiber
- ☐ Sand
- ☐ Relict shells
- ☐ Other _____

Looking at stones which are not deeply embedded, are the undersides black in color?
- ☐ Yes
- ☑ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock			Detritus	sticks, wood, coarse plant materials (CPOM)	10
Boulder	> 256 mm (10")				
Cobble	64-256 mm (2.5"-10")	5	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	30			
Sand	0.06-2mm (gritty)	50	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	10			
Clay	< 0.004 mm (slick)	5			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Anderson River	LOCATION Highway 62
STATION # 23 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY WL MK DATE 9/5	LOT #
TAXONOMIST WL DATE 11/16	SUBSAMPLE TARGET ☐ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR	Organisms		No.	LS	TI	TCR
Oligochaeta	II	2	A	WL	2	Megaloptera					
						Sialidae	II	2	I	WL	2
Hirudinea	I	2	A	WL	2	Coleoptera					
Isopoda	IIII I	6	A	WL	2						
Amphipoda						Diptera Red	IIII IIII IIII IIII	20	I	WL	2
						Chiron	IIII IIII IIII	15	I	WL	2
Decapoda crayfish	II	2	A	WL	2	Mosquito	I	2	I	WL	2
Ephemeroptera											
Baetid	III	3	I	WL	2	Gastropoda					
Heptag	IIII I	6	I	WL	2						
Canid	IIII IIII	9	I	WL	2						
						Pelecypoda					
Plecoptera						Clam	I	2	A	WL	2
						Other					
						Arrion	IIII II	7	I	WL	2
						Ergillagrione	IIII II	7	I	WL	2
Trichoptera						Aeshnidae	I	2	I	WL	2
Hydro	I	2	I	WL	2	Gomphidae	I	2	I	WL	2
						Progomphus	IIII II	7	I	WL	2
						Hydracarina	I	2	A	WL	2
Hemiptera											
Gerridae	IIII II	7	A	WL	2						

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 20

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Anderson River	LOCATION Hobart, GZ	
STATION # 23 RIVERMILE ____	STREAM CLASS	
LAT ____ LONG ____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS WL MK		LOT NUMBER
FORM COMPLETED BY WL	DATE 9/5 TIME 18:00 AM (PM)	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☐ Cobble____% ☑ Snags 15 % ☐ Vegetated Banks____% ☑ Sand 50 % ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☑ D-frame ☐ kick-net ☐ Other ____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☐ Cobble____ ☑ Snags____ ☐ Vegetated Banks____ ☑ Sand____ ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 44

River Code: _____ **RM:** _____ **Stream:** Anderson River

Date: 9/5/06 **Location:** Station #23

Scorers Full Name: WL MK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]		
☐☐-BOULDER [9]			☐☐-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☑☐-DETRITUS[3]	5	
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☑-SILT [2]	70				

NOTE: Ignore Sludge Originating From Point Sources

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☑-4 or More [2]
☐-3 or Less [0]

SUBSTRATE ORIGIN Check ONE (OR 2 & AVERAGE)
☐-LIMESTONE [1]
☑-TILLS [1]
☐-WETLANDS[0]
☐-HARDPAN [0]
☐-SANDSTONE [0]
☐-RIP/RAP [0]
☐-LACUSTRINE [0]
☐-SHALE [-1]
☐-COAL FINES [-2]

SUBSTRATE QUALITY Check ONE (OR 2 & AVERAGE)
SILT:
☑- SILT HEAVY [-2]
☐-SILT MODERATE [-1]
☐-SILT NORMAL [0]
☐-SILT FREE [1]
EMBEDDEDNESS:
☑-EXTENSIVE [-2]
☐-MODERATE [-1]
☐-NORMAL [0]
☐-NONE [1]

Substrate: 4 Max 20

COMMENTS: _____

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure)
☑ UNDERCUT BANKS [1]
☑ OVERHANGING VEGETATION [1]
☑ SHALLOWS (IN SLOW WATER) [1]
___ ROOTMATS [1]

TYPE: Score All That Occur
☑ POOLS > 70 cm [2]
☑ ROOTWADS [1]
___ BOULDERS [1]
___ OXBOWS, BACKWATERS [1]
___ AQUATIC MACROPHYTES [1]
☑ LOGS OR WOODY DEBRIS [1]

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☑ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

COMMENTS: _____

Cover: 14 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☐ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☑ - LOW [2]	☐ - FAIR [3]	☑ - RECOVERING [3]	☑ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☑ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 7 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH L R (Per Bank)	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) L R (Most Predominant Per Bank)	L R	BANK EROSION L R (Per Bank)
☐☐ - WIDE > 50m [4]	☑☑-FOREST, SWAMP [3]	☐☐-CONSERVATION TILLAGE [1]	☐☐-NONE/LITTLE [3]
☐☐ - MODERATE 10-50m [3]	☐☐-SHRUB OR OLD FIELD [2]	☐☐-URBAN OR INDUSTRIAL [0]	☐☑-MODERATE [2]
☐☐ - NARROW 5-10 m [2]	☐☐-RESIDENTIAL,PARK,NEW FIELD [1]	☐☐-OPEN PASTURE,ROWCROP [0]	☑☐-HEAVY/SEVERE[1]
☐☐ - VERY NARROW <5 m[1]	☐☐-FENCED PASTURE [1]	☐☐-MINING/CONSTRUCTION [0]	
☐☐ - NONE [0]			

COMMENTS: _____

Riparian: 7 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☑ - >1m [6]
☐ - 0.7-1m [4]
☐ - 0.4-0.7m [2]
☐ - 0.2-0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☐-POOL WIDTH > RIFFLE WIDTH [2]
☐-POOL WIDTH = RIFFLE WIDTH [1]
☑-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☐-EDDIES[1]
☐-FAST[1]
☐-MODERATE [1]
☑-SLOW [1]
☐-TORRENTIAL[-1]
☐-INTERSTITIAL[-1]
☐-INTERMITTENT[-2]
☐-VERY FAST[1]

COMMENTS: _____

Pool/Current: 7 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
☐ - Best Areas >10 cm [2]	☐ - MAX > 50 [2]	☐-STABLE (e.g.,Cobble, Boulder) [2]	☐ - NONE [2]
☐ - Best Areas 5-10 cm[1]	☐ - MAX < 50[1]	☐-MOD. STABLE (e.g.,Large Gravel) [1]	☐ - LOW [1]
☑ - Best Areas < 5 cm [RIFFLE=0]		☑-UNSTABLE (Fine Gravel,Sand) [0]	☑ - MODERATE [0]
			☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 1 Max 8

Gradient: 4 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 100 %GLIDE: ____ %RIFFLE: ____ %RUN: ____

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Anderson River	LOCATION Highway 62	
STATION # 23 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS WL MK		
FORM COMPLETED BY WL	DATE 9/5 TIME 18:00 AM (PM)	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☐ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 25 °C
	☐ showers (intermittent)	☐	
	25 %☐ %cloud cover	☐ ___ %	**Other**
	☐ clear/sunny	☐	
SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**		
STREAM CHARACTERIZATION	**Stream Subsystem** ☒ Perennial ☐ Intermittent ☐ Tidal		**Stream Type** ☐ Coldwater ☒ Warmwater
	Stream Origin ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☒ Mixture of origins ☐ Other		**Catchment Area** ___ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☑ No evidence ☐ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☑ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☑ Trees ☐ Shrubs ☑ Grasses ☑ Herbaceous **dominant species present** Phoaxo, Acneo, Maple (Sugar?), Amlati
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** (33.5) m **Sampling Reach Area** _____ m^2 **Area in km^2 (m^2x1000)** _____ km^2 **Estimated Stream Depth** 1.5 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☑ Partly shaded ☐ Shaded **High Water Mark** 2.5 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle _____ % ☐ Run _____ % ☑ Pool 100 % **Channelized** ☑ Yes ☐ No **Dam Present** ☐ Yes ☑ No
LARGE WOODY DEBRIS	**LWD** 3 m^2 **Density of LWD** _____ m^2/km^2 **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** _____ **Portion of the reach with aquatic vegetation** — %
WATER QUALITY	**Temperature** 21 °C outside 25 **Specific Conductance** 239.5 **Dissolved Oxygen** 7.56 **pH** 8.88 Sal. - 0.1 **Turbidity** 19 **WQ Instrument Used** _____ Cond - 213.9 Flow = 4.992 ft³/sec **Water Odors** ☐ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☑ Other Sulfa **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other _____ **Turbidity (if not measured)** ☐ Clear ☑ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☐ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☑ Anaerobic ☐ None ☐ Other _____ **Oils** ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other Silt **Looking at stones which are not deeply embedded, are the undersides black in color?** – No stones ☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	20
Boulder	> 256 mm (10")	—			
Cobble	64-256 mm (2.5"-10")	—	Muck-Mud	black, very fine organic (FPOM)	5
Gravel	2-64 mm (0.1"-2.5")	5			
Sand	0.06-2mm (gritty)	15	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	40			
Clay	< 0.004 mm (slick)	40			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Sugarning Creek	LOCATION CR 1300 E
STATION # 24 RIVERMILE ____	STREAM CLASS
LAT ____ LONG ____	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY WL, MK, TK DATE 9/7	LOT #
TAXONOMIST WL DATE 11/27	SUBSAMPLE TARGET ☒ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta	1	1	A	WGL	1
Hirudinea					
Isopoda	1	1	A	WGL	1
Amphipoda					
Decapoda					
Ephemeroptera					
Caenid	卌 卌 卌 1	16	I	WGL	1
Baetid	1111	4	I	WGL	1
Heptag	卌 卌 111	13	I	WGL	1
Plecoptera					
Trichoptera					
Hydro	卌 111	8	I	WGL	1
Hemiptera					
Gerridae	1	1	A	WGL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Coleoptera	Noteridae 1	1	A	WGL	1
Dryopidae	"	2	A	WGL	2
Elm. dae	"	2	I	WGL	2
Hydrophilidae	1	1	I	WGL	1
Diptera					
red	卌 卌 卌 "	17	I	WGL	1
chiron	"	2	I	WGL	1
Mosquito	1	1	I	WGL	1
tabanidae	卌 111	8	I	WGL	2
Gastropoda					
Pelecypoda					
Other					
Gomphidae	"	2	I	WGL	1
Progomphus	1	1	I	WGL	1
Gilip	卌 "	7	I	WGL	1
Argia	卌 111	8	I	WGL	1
Enallagma	1111	4	I	WGL	1

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 20

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Summers Creek	LOCATION CR Boo F	
STATION # 24 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson Bin.	
STORET #	AGENCY	
INVESTIGATORS WL, MK, TK		LOT NUMBER
FORM COMPLETED BY WC	DATE 9/7 TIME 1100 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☑ Cobble 5 % ☐ Snags ____ % ☐ Vegetated Banks ____ % ☑ Sand 80 % ☐ Submerged Macrophytes ____ % ☐ Other ( ) ____ %
SAMPLE COLLECTION	**Gear used** ☑ D-frame ☐ kick-net ☐ Other ____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☑ Cobble 10 ☐ Snags ____ ☐ Vegetated Banks ____ ☑ Sand 0 ☐ Submerged Macrophytes ____ ☐ Other ( ) ____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 69

River Code: _____ **RM:** _____ **Stream:** Swinging Creek
Date: 9/7/06 **Location:** Station #24
Scorers Full Name: WL, mk, Tim **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☒☐-GRAVEL [7]	10	10
☐☐-BOULDER [9]			☐☒-SAND [6]	80	80
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN (Check ONE (OR 2 & AVERAGE)): ☐-LIMESTONE [1] ☒-TILLS [1] ☐-WETLANDS[0] ☐-HARDPAN [0] ☐-SANDSTONE [0] ☐-RIP/RAP [0] ☐-LACUSTRINE [0] ☐-SHALE [-1] ☐-COAL FINES [-2]

SILT: ☐-SILT HEAVY [-2] ☒-SILT MODERATE [-1] ☐-SILT NORMAL [0] ☐-SILT FREE [1]

EMBEDDEDNESS: ☐-EXTENSIVE [-2] ☒-MODERATE [-1] ☐-NORMAL [0] ☐-NONE [1]

SUBSTRATE QUALITY (Check ONE (OR 2 & AVERAGE))

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >) ☒-4 or More [2] ☐-3 or Less [0]

COMMENTS _____

Substrate: 14 Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur

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

COMMENTS: _____

AMOUNT: (Check ONLY One or check 2 and AVERAGE) ☐ - EXTENSIVE > 75% [11] ☒ - MODERATE 25-75% [7] ☐ - SPARSE 5-25% [3] ☐ - NEARLY ABSENT < 5%[1]

Cover: 12 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☐ - NONE [6]	☐ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☐ - MODERATE [3]	☐ - GOOD [5]	☐ - RECOVERED [4]	☒ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☒ - LOW [2]	☒ - FAIR [3]	☒ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 10 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH L R (Per Bank)	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) L R (Most Predominant Per Bank)	L R	BANK EROSION L R (Per Bank)
☐☐ - WIDE > 50m [4]	☐☒-FOREST, SWAMP [3]	☐☐-CONSERVATION TILLAGE [1]	☐☒-NONE/LITTLE [3]
☐☐ - MODERATE 10-50m [3]	☐☐-SHRUB OR OLD FIELD [2]	☐☐-URBAN OR INDUSTRIAL [0]	☒☐-MODERATE [2]
☐☐ - NARROW 5-10 m [2]	☐☐-RESIDENTIAL, PARK, NEW FIELD [1]	☒☐-OPEN PASTURE, ROWCROP [0]	☐☐-HEAVY/SEVERE[1]
☒☐ - VERY NARROW <5 m[1]	☐☐-FENCED PASTURE [1]	☐☐-MINING/CONSTRUCTION [0]	
☐☐ - NONE [0]			

COMMENTS: _____

Riparian: 8 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!): ☐ - >1m [6] ☐ - 0.7-1m [4] ☐ - 0.4-0.7m [2] ☒ - 0.2-0.4m [1] ☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE): ☒-POOL WIDTH > RIFFLE WIDTH [2] ☐-POOL WIDTH = RIFFLE WIDTH [1] ☐-POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply): ☒-EDDIES[1] ☐-FAST[1] ☒-MODERATE [1] ☒-SLOW [1] ☐-TORRENTIAL[-1] ☐-INTERSTITIAL[-1] ☐-INTERMITTENT[-2] ☐-VERY FAST[1]

COMMENTS: _____

Pool/Current: 6 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
☐ - Best Areas >10 cm [2]	☐ - MAX > 50 [2]	☐-STABLE (e.g.,Cobble, Boulder) [2]	☐ - NONE [2]
☐ - Best Areas 5-10 cm[1]	☒ - MAX < 50[1]	☒-MOD. STABLE (e.g.,Large Gravel) [1]	☒ - LOW [1]
☒ - Best Areas < 5 cm [RIFFLE=0]		☐-UNSTABLE (Fine Gravel,Sand) [0]	☐ - MODERATE [0]
			☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 3 Max 8

Gradient: 6 Max 10

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 40 %GLIDE: – %RIFFLE: 10 %RUN: 50

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Swingley Creek	LOCATION CR 1300E	
STATION # 24 RIVERMILE	STREAM CLASS	
LAT LONG	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS WL, MK, Tim		
FORM COMPLETED BY WL	DATE 9/7/06 TIME 11:00 AM PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☑ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature** 23 °C
	☐ showers (intermittent)	☐	
	40 % ☑ %cloud cover	☐ ___ %	**Other**
	☐ clear/sunny	☐	

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

STREAM CHARACTERIZATION

Stream Subsystem
☑ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☑ Warmwater

Stream Origin
☐ Glacial ☐ Spring-fed
☐ Non-glacial montane ☑ Mixture of origins
☐ Swamp and bog ☐ Other ___

Catchment Area ___ km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIE DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☑ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☑ Agricultural ☐ Other _____ ☐ Residential **Local Watersh** ☐ No evidence ☑ Obvious sour **'S Pollution** me potential sources **Local Watersh** ☐ None ☑ M **osion** e ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species pres** ☑ Trees ☐ Shrubs ☐ Grasses ☑ Herbaceous **dominant species present** Amb [illegible]
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 3 m **Sampling Reach Area** _____ m² **Area in km² (m²x1000)** _____ km² **Estimated Stream Depth** .3 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☑ Partly open rtly shaded ☐ Shaded **High Water M** 2 m **Proportion of Morphology T** represented by Stream ☑ Riffle 10 ☑ Run 50 % ☑ Pool 40 **Channelized** ☑ es ☐ No **Dam Present** es ☑ No
LARGE WOODY DEBRIS	**LWD** 1.5 m² **Density of LWD** _____ m²/km² (LWD/ reach area)
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species pre** ☐ Rooted emergent ☐ Rooted submergent ☐ Roo ting ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** _____ **Portion of the reach with aquatic vegetation** _____ %
WATER QUALITY	**Temperature** 18.5 °C (water temp) **Specific Conductance** 403.3 **Dissolved Oxygen** 10.51 **pH** 8.55 **Turbidity** 9.1 **WQ Instrument Used** _____ Salinity 0.2 Cond. 353.9 Flow = 0.313 FT/sec **Water Odors** ☑ Normal/Nor ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surfac** ☑ Slick ☐ ☐ None ☐ ☐ Globs ☐ Flecks → Small amount of oil **Turbidity (if asured)** ☑ Clear ☐ ☐ Opaque ☐ urbid ☐ Turbid ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☐ Absent ☑ Slight ☐ Moderate ☐ Profuse **Depos** ☐ Sludge ☐ ☑ Relic shell ☐ Paper fiber ☑ Sand ☐ Other _____ **Looking at s embedded, a** hich are not deeply ndersides black in color? ☐ Yes ☑

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBS (does not necess		COMPONENTS dd up to 100%)
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteri	% Composition in Sampling Area
Bedrock		—	Detritus	sticks, wood, coar materials (CPOM	10
Boulder	> 256 mm (10")	—			
Cobble	64-256 mm (2.5"-10")	5	Muck-Mud	black, very fine or (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	10			
Sand	0.06-2mm (gritty)	80	Marl	grey, shell fragmen	—
Silt	0.004-0.06 mm	5			
Clay	< 0.004 mm (slick)	—			

BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEET (FRONT)

page ____ of ____

STREAM NAME Anderson River	LOCATION
STATION # 25 RIVERMILE ______	STREAM CLASS
LAT ______ LONG ______	RIVER BASIN Anderson River
STORET #	AGENCY
COLLECTED BY WL MK DATE 9/6/06	LOT #
TAXONOMIST WL DATE 11/27/06	SUBSAMPLE TARGET ☐ 100 ☐ 200 ☐ 300 ☐ Other ____

Enter Family and/or Genus and Species name on blank line.

Organisms		No.	LS	TI	TCR
Oligochaeta					
Hirudinea					
Isopoda	III	3	A	WCL	1
Amphipoda	I	1	A	WCL	1
Decapoda	~~IIII~~ II	7	A	WCL	1
Crayfish					
Ephemeroptera					
Heptageniidae	~~IIII~~ IIII	9	I	WCL	1
Plecoptera	I	1	I	WCL	1
Trichoptera					
Hydro	~~IIII~~	5	I	WCL	1
Philopot	I	1	I	WCL	2
Rhyaco	IIII	4	I	WCL	2
Hemiptera H2O strider	III	3	A	WCL	1
l. H2O strider	III	3	A	WCL	1
backswimmer	I	1	A	WCL	1

Organisms		No.	LS	TI	TCR
Megaloptera					
Corydalidae	II	2	A	WCL	1
Coleoptera Dryopidae	IIII	4	A	WCL	2
Elmidae	I	1	A	WCL	2
H2O penny	~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ IIII	29	I	WCL	1
Hydrophilidae	I	1	A	WCL	2
Diptera					
Ceratopogonidae	II	2	I	WCL	1
Red chiron	II	2	I	WCL	2
mosquito	III	3	I	WCL	2
Tabanidae	~~IIII~~ I	6	I	WCL	2
Gastropoda					
Pelecypoda					
Other					
Horsehair worm	I	1	A	WCL	1
Aeshnidae	I	1	I	WCL	1
Gomphidae	III	3	I	WCL	1
Corduliidae	III	3	I	WCL	1
Calop	III	3	I	WCL	1
Argia	I	1	I	WCL	1

Taxonomic certainty rating (TCR) 1-5:1=most certain, 5=least certain. If rating is 3-5, give reason (e.g., missing gills). LS= life stage: I = immature; P = pupa; A = adult TI = Taxonomists initials

Total No. Organisms 100 **Total No. Taxa** 26

BENTHIC MACROINVERTEBRATE FIELD DATA SHEET

STREAM NAME Anderson River	LOCATION	
STATION # 28 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS WL MK		LOT NUMBER
FORM COMPLETED BY WL	DATE 7/6/06 TIME 10:30 (AM) PM	REASON FOR SURVEY

HABITAT TYPES	**Indicate the percentage of each habitat type present** ☑ Cobble 80 % ☑ Snags 10 % ☐ Vegetated Banks____% ☐ Sand____% ☐ Submerged Macrophytes____% ☐ Other ( )____%
SAMPLE COLLECTION	**Gear used** ☑ D-frame ☐ kick-net ☐ Other _____ **How were the samples collected?** ☑ wading ☐ from bank ☐ from boat **Indicate the number of jabs/kicks taken in each habitat type.** ☑ Cobble 10 ☑ Snags 10 ☐ Vegetated Banks____ ☐ Sand____ ☐ Submerged Macrophytes____ ☐ Other ( )____
GENERAL COMMENTS	

QUALITATIVE LISTING OF AQUATIC BIOTA

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare, 2 = Common, 3= Abundant, 4 = Dominant

Periphyton	0	1	2	3	4	Slimes	0	1	2	3	4
Filamentous Algae	0	1	2	3	4	Macroinvertebrates	0	1	2	3	4
Macrophytes	0	1	2	3	4	Fish	0	1	2	3	4

FIELD OBSERVATIONS OF MACROBENTHOS

Indicate estimated abundance: 0 = Absent/Not Observed, 1 = Rare (1-3 organisms), 2 = Common (3-9 organisms), 3= Abundant (>10 organisms), 4 = Dominant (>50 organisms)

Porifera	0	1	2	3	4	Anisoptera	0	1	2	3	4	Chironomidae	0	1	2	3	4
Hydrozoa	0	1	2	3	4	Zygoptera	0	1	2	3	4	Ephemeroptera	0	1	2	3	4
Platyhelminthes	0	1	2	3	4	Hemiptera	0	1	2	3	4	Trichoptera	0	1	2	3	4
Turbellaria	0	1	2	3	4	Coleoptera	0	1	2	3	4	Other	0	1	2	3	4
Hirudinea	0	1	2	3	4	Lepidoptera	0	1	2	3	4						
Oligochaeta	0	1	2	3	4	Sialidae	0	1	2	3	4						
Isopoda	0	1	2	3	4	Corydalidae	0	1	2	3	4						
Amphipoda	0	1	2	3	4	Tipulidae	0	1	2	3	4						
Decapoda	0	1	2	3	4	Empididae	0	1	2	3	4						
Gastropoda	0	1	2	3	4	Simuliidae	0	1	2	3	4						
Bivalvia	0	1	2	3	4	Tabinidae	0	1	2	3	4						
						Culcidae	0	1	2	3	4						

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 81.5

River Code: _____ **RM:** _____ **Stream:** Anderson River
Date: 7/6/06 **Location:** Station #25
Scorers Full Name: WL & MK **Affiliation:** _____

1] SUBSTRATE (Check ONLY Two SubstrateTYPE BOXES; Estimate % present

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☑-GRAVEL [7]	30	30
☐☐-BOULDER [9]			☐☐-SAND [6]		
☑☐-COBBLE [8]	50	50	☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]			NOTE: Ignore Sludge Originating From Point Sources		

SUBSTRATE ORIGIN — Check ONE (OR 2 & AVERAGE)
☐ -LIMESTONE [1]
☑ -TILLS [1]
☐ -WETLANDS[0]
☐ -HARDPAN [0]
☐ -SANDSTONE [0]
☐ -RIP/RAP [0]
☐ -LACUSTRINE [0]
☐ -SHALE [-1]
☐ -COAL FINES [-2]

SILT:
☐ - SILT HEAVY [-2]
☐ -SILT MODERATE [-1]
☑ -SILT NORMAL [0]
☐ -SILT FREE [1]

EMBEDDEDNESS:
☐ -EXTENSIVE [-2]
☐ -MODERATE [-1]
☐ -NORMAL [0]
☑ -NONE [1]

NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)
☑ 4 or More [2]
☐ 3 or Less [0]

COMMENTS _____

Substrate: 19 Max 20

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions)

(Structure) TYPE: Score All That Occur
X UNDERCUT BANKS [1]
X OVERHANGING VEGETATION [1]
X SHALLOWS (IN SLOW WATER) [1]
___ ROOTMATS [1]
___ POOLS> 70 cm [2]
X ROOTWADS [1]
X BOULDERS [1]
___ OXBOWS, BACKWATERS [1]
___ AQUATIC MACROPHYTES [1]
X LOGS OR WOODY DEBRIS [1]

AMOUNT: (Check ONLY One or check 2 and AVERAGE)
☐ - EXTENSIVE > 75% [11]
☑ - MODERATE 25-75% [7]
☐ - SPARSE 5-25% [3]
☐ - NEARLY ABSENT < 5%[1]

COMMENTS: _____

Cover: 13 Max 20

3] CHANNEL MORPHOLOGY: (Check ONLY One PER Category OR check 2 and AVERAGE)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	
☐ - HIGH [4]	☐ - EXCELLENT [7]	☑ - NONE [6]	☑ - HIGH [3]	☐ - SNAGGING	☐ - IMPOUND.
☑ - MODERATE [3]	☑ - GOOD [5]	☐ - RECOVERED [4]	☐ - MODERATE [2]	☐ - RELOCATION	☐ - ISLANDS
☐ - LOW [2]	☐ - FAIR [3]	☐ - RECOVERING [3]	☐ - LOW [1]	☐ - CANOPY REMOVAL	☐ - LEVEED
☐ - NONE [1]	☐ - POOR [1]	☐ - RECENT OR NO RECOVERY [1]		☐ - DREDGING	☐ - BANK SHAPING
				☐ - ONE SIDE CHANNEL MODIFICATIONS	

COMMENTS: _____

Channel: 17 Max 20

4]. RIPARIAN ZONE AND BANK EROSION (check ONE box per bank or check 2 and AVERAGE per bank) River Right Looking Downstream

RIPARIAN WIDTH — L R (Per Bank)
☑☑ - WIDE > 50m [4]
☐☐ - MODERATE 10-50m [3]
☐☐ - NARROW 5-10 m [2]
☐☐ - VERY NARROW <5 m[1]
☐☐ - NONE [0]

FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) — L R (Most Predominant Per Bank)
☑☑ -FOREST, SWAMP [3]
☐☐ -SHRUB OR OLD FIELD [2]
☐☐ -RESIDENTIAL,PARK,NEW FIELD [1]
☐☐ -FENCED PASTURE [1]
☐☐ -CONSERVATION TILLAGE [1]
☐☐ -URBAN OR INDUSTRIAL [0]
☐☐ -OPEN PASTURE,ROWCROP [0]
☐☐ -MINING/CONSTRUCTION [0]

BANK EROSION — L R (Per Bank)
☐☑ -NONE/LITTLE [3]
☑☐ -MODERATE [2]
☐☐ -HEAVY/SEVERE[1]

COMMENTS: _____

Riparian: 9.5 Max 10

5.]POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)
☐ - >1m [6]
☐ - 0.7-1m [4]
☑ - 0.4-0.7m [2]
☐ - 0.2- 0.4m [1]
☐ - < 0.2m [POOL=0]

MORPHOLOGY (Check 1 or 2 & AVERAGE)
☑ -POOL WIDTH > RIFFLE WIDTH [2]
☐ -POOL WIDTH = RIFFLE WIDTH [1]
☐ -POOL WIDTH < RIFFLE W. [0]

CURRENT VELOCITY [POOLS & RIFFLES!] (Check All That Apply)
☑ -EDDIES[1]
☐ -FAST[1]
☑ -MODERATE [1]
☑ -SLOW [1]
☐ -TORRENTIAL[-1]
☐ -INTERSTITIAL[-1]
☐ -INTERMITTENT[-2]
☐ -VERY FAST[1]

COMMENTS: _____

Pool/Current: 7 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH
☐ - Best Areas >10 cm [2]
☑ - Best Areas 5-10 cm[1]
☐ - Best Areas < 5 cm [RIFFLE=0]

RUN DEPTH
☐ - MAX > 50 [2]
☑ - MAX < 50[1]

RIFFLE/RUN SUBSTRATE
☑ -STABLE (e.g.,Cobble, Boulder) [2]
☐ -MOD. STABLE (e.g.,Large Gravel) [1]
☐ -UNSTABLE (Fine Gravel,Sand) [0]

RIFFLE/RUN EMBEDDEDNESS
☑ - NONE [2]
☐ - LOW [1]
☐ - MODERATE [0]
☐ - EXTENSIVE [-1]

COMMENTS: _____ ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 6 Max 8

6] GRADIENT (ft/mi): _____ DRAINAGE AREA (sq.mi.) : _____ %POOL: 70 %GLIDE: _____ %RIFFLE: 10 %RUN: 20

Gradient: 10 Max 10

** Best areas must be large enough to support a population of riffle-obligate species

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Anderson River	LOCATION	
STATION # 25 RIVERMILE _____	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN Anderson River	
STORET #	AGENCY	
INVESTIGATORS MK WL		
FORM COMPLETED BY WL	DATE 9/6/06 TIME 10:30 (AM) PM	REASON FOR SURVEY

WEATHER CONDITIONS	**Now**	**Past 24 hours**	**Has there been a heavy rain in the last 7 days?** ☐ Yes ☑ No
	☐ storm (heavy rain)	☐	
	☐ rain (steady rain)	☐	**Air Temperature**_____°C
	☐ showers (intermittent)	☐	
	___%☐ %cloud cover	☐___%	**Other**_____
	☑ clear/sunny	☐	

SITE LOCATION/MAP	**Draw a map of the site and indicate the areas sampled (or attach a photograph)**

STREAM CHARACTERIZATION	**Stream Subsystem** ☑ Perennial ☐ Intermittent ☐ Tidal	**Stream Type** ☐ Coldwater ☑ Warmwater
	Stream Origin ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☑ Mixture of origins ☐ Other_____	**Catchment Area**_____km²

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES	**Predominant Surrounding Landuse** ☒ Forest ☐ Commercial ☐ Field/Pasture ☐ Industrial ☐ Agricultural ☐ Other _____ ☐ Residential **Local Watershed NPS Pollution** ☒ No evidence ☐ Some potential sources ☐ Obvious sources **Local Watershed Erosion** ☐ None ☒ Moderate ☐ Heavy
RIPARIAN VEGETATION (18 meter buffer)	**Indicate the dominant type and record the dominant species present** ☒ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous **dominant species present** Sycamore
INSTREAM FEATURES	**Estimated Reach Length** _____ m **Estimated Stream Width** 5 m **Sampling Reach Area** _____ m² **Area in km² (m²x1000)** _____ km² **Estimated Stream Depth** .5 m **Surface Velocity (at thalweg)** _____ m/sec **Canopy Cover** ☐ Partly open ☐ Partly shaded ☒ Shaded **High Water Mark** 1.5 m **Proportion of Reach Represented by Stream Morphology Types** ☐ Riffle 10 % ☐ Run 20 % ☐ Pool 70 % **Channelized** ☐ Yes ☒ No **Dam Present** ☐ Yes ☒ No
LARGE WOODY DEBRIS	**LWD** 1 m² **Density of LWD** _____ m²/km² **(LWD/ reach area)**
AQUATIC VEGETATION	**Indicate the dominant type and record the dominant species present** ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae **dominant species present** _____ **Portion of the reach with aquatic vegetation** — %
WATER QUALITY 9/7 15:40	**Temperature** 19.1 °C outside 23.0 **Specific Conductance** 227.4 **Dissolved Oxygen** 8.53 **pH** 8.14 **Turbidity** 0.6 Flow = 0.224 ft³/sec **WQ Instrument Used** _____ Salinity = 0.1 Cond. = 202.7 **Water Odors** ☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other _____ **Water Surface Oils** ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☒ None ☐ Other _____ **Turbidity (if not measured)** ☒ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other _____
SEDIMENT/ SUBSTRATE	**Odors** ☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other _____ **Oils** ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse **Deposits** ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other _____ **Looking at stones which are not deeply embedded, are the undersides black in color?** ☐ Yes ☒ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			**ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)**		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		—	Detritus	sticks, wood, coarse plant materials (CPOM)	5
Boulder	> 256 mm (10")	10			
Cobble	64-256 mm (2.5"-10")	50	Muck-Mud	black, very fine organic (FPOM)	—
Gravel	2-64 mm (0.1"-2.5")	30			
Sand	0.06-2mm (gritty)	—	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	5			
Clay	< 0.004 mm (slick)	5			