Appendix G

QHEI Scoring Sheets

OhioEPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 61.25

River Code: _____ **RM:** 45.5 **Stream:** Mahoning R.
Date: 10/1/03 **Location:** Warren Ft Huntsburg Rd 51-000703
Scorers Full Name: Jamie Hotsa **Affiliation:** EE

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

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]	10	
☐☐-BOULDER [9]			☐☐-SAND [6]		
☒☐-COBBLE [8]		90	☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]	10		☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☒-SILT [2]	50	10	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]

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)): Substrate 12 Max 20

COMMENTS: Difficult to determine substrate

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]
- ___ SHALLOWS (IN SLOW WATER) [1]
- X 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]

COMMENTS: See above

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 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 6.25 Max 10

COMMENTS: [illegible]

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 10 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: Deep areas in the [illegible] No riffle ☐- NO RIFFLE [Metric=0]

Riffle/Run 0 Max 8

Gradient 3 Max 10

6] GRADIENT (ft/mi): .89 DRAINAGE AREA (sq.mi.) : 575 mi² (2) %POOL: 33 %GLIDE: 33 %RIFFLE: [illegible] %RUN: 33

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

Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 56

River Code: _____ **RM:** 7.73 **Stream:** [illegible]
Date: 10/7/03 **Location:** Site 2 - [illegible] US Leatherwood Dam [illegible]
Scorers Full Name: Jamie [illegible] **Affiliation:** Environmental [illegible]

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

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]	5	
☐☐-BOULDER [9]			☐☐-SAND [6]		
☐☐-COBBLE [8]	20		☐☐-BEDROCK[5]		
☒☐-HARDPAN [4]	50		☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☒☐-SILT [2]	25		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: 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

✓ 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: 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: 12 (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: 5 (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]		☒-SLOW [1]	☐-VERY FAST[1]
☐- < 0.2m [POOL=0]	COMMENTS: No Riffle		

Pool/Current: 10 (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		☐-UNSTABLE (Fine Gravel,Sand) [0]	☐- MODERATE [0]
X [RIFFLE=0]			☐- EXTENSIVE [-1]

COMMENTS: No Riffle ☒- NO RIFFLE [Metric=0]

Riffle/Run: 0 (Max 8)

Gradient: 8 (Max 10)

6] GRADIENT (ft/mi): 0.89 DRAINAGE AREA (sq.mi.) : 578 %POOL: 60 %GLIDE: 20 %RIFFLE: _____ %RUN: 20

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

Ohio EPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 66.5

River Code: _____ **RM:** 33.2 **Stream:** [illegible] Rm 33.2 133.2

Date: [illegible] **Location:** [illegible] 53-100 [illegible]

Scorers Full Name: [illegible] **Affiliation:** [illegible]

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

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]	10	
☐☐-BOULDER [9]	10		☐☐-SAND [6]		
☐☐-COBBLE [8]			☐☐-BEDROCK[5]		
☒☒-HARDPAN [4]	70		☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]	10		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: [illegible] difficult to score.

Substrate: 9 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]
- 2 OVERHANGING VEGETATION [1]
- ___ SHALLOWS (IN SLOW WATER) [1]
- 2 ROOTMATS [1]
- 2 POOLS> 70 cm [2]
- 1 ROOTWADS [1]
- 1 BOULDERS [1]
- ___ OXBOWS, BACKWATERS [1]
- ___ AQUATIC MACROPHYTES [1]
- 2 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)	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: 9.5 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]		☐ -SLOW [1]	☐ -VERY FAST[1]
☐ - < 0.2m [POOL=0]			

COMMENTS: No Riffle

Pool/Current: 10 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): 1.0 DRAINAGE AREA (sq.mi.) : 610 mi²

%POOL: ____ %GLIDE: ____

%RIFFLE: ____ %RUN: ____

Gradient: 8 Max 10

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

Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 46.5

River Code: _____ **RM:** [illegible] **Stream:** [illegible] River RM-28.3
Date: 10/2/05 **Location:** Mahoning Street SR-10 [illegible]
Scorers Full Name: Jamie Kretz **Affiliation:** Environmental

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

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]		
☐☐-BOULDER [9]	5		☐☐-SAND [6]	5	
☐☐-COBBLE [8]	5		☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]	70		☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☒☐-SILT [2]	15		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: 45 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] ___ AQUATIC MACROPHYTES [1]
X SHALLOWS (IN SLOW WATER) [1] ___ BOULDERS [1] X LOGS OR WOODY DEBRIS [1]
X ROOTMATS [1] COMMENTS: Little or no forest in channel proper

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

Riparian: 7.5 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]			

COMMENTS: No riffles, [illegible]

Pool/Current: 8 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 riffles, [illegible] ☐- NO RIFFLE [Metric=0]

Riffle/Run: 0 Max 8

6] GRADIENT (ft/mi): .10 DRAINAGE AREA (sq.mi.): 658 mi² %POOL: 32 %GLIDE: 33 %RIFFLE: [illegible] %RUN: 35

Gradient: 6 Max 10

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

Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 59.5

River Code: _____ **RM:** [illegible] **Stream:** [illegible]

Date: 10-9-03 **Location:** [illegible]

Scorers Full Name: Gregory [illegible] **Affiliation:** EnviroScience Incorporated

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

TYPE	POOL	RIFFLE	TYPE	POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]		
☐☐-BOULDER [9]	5		☐☐-SAND [6]		
☐☐-COBBLE [8]	10		☐☐-BEDROCK[5]		
☒☒-HARDPAN [4]	0.5		☐☐-DETRITUS[3]		
☐☐-MUCK [2]			☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]	10				

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) **TYPE:** Score All That Occur

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

Channel: 18 — 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) 2.75
☐☐ - 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]

2.5

Riparian: 5.25 — 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]

COMMENTS: No Riffle

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 ☐ - NO RIFFLE [Metric=0]

Riffle/Run: 0 — Max 8

Gradient: 10 — Max 10

6] GRADIENT (ft/mi): 2.50 DRAINAGE AREA (sq.mi.) : 1001

%POOL: 70 %GLIDE: 15
%RIFFLE: %RUN: 15

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

Ohio EPA Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 85

River Code: _____ **RM:** 18.0 MILS **Stream:** Mahoning R. @ PA Line
Date: October 5, 2002 **Location:** Lowellville - 36 - 10092002
Scorers Full Name: Gregory Zimmerman **Affiliation:** Enviro Sciences, Inc.

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

TYPE	POOL	RIFFLE		POOL	RIFFLE
☐☐-BLDR /SLBS[10]			☐☐-GRAVEL [7]	10	25
☒☐-BOULDER [9]	10	20	☐☐-SAND [6]	5	
☐☒-COBBLE [8]	25	55	☐☐-BEDROCK[5]		
☐☐-HARDPAN [4]			☐☐-DETRITUS[3]	10	
☐☐-MUCK [2]	15		☐☐-ARTIFICIAL[0]		
☐☐-SILT [2]	25		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: River High. Tough to evaluate. Good substrate in riffles/runs - present

Substrate: 20 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 POOLS> 70 cm [2]	___ OXBOWS, BACKWATERS [1]
X OVERHANGING VEGETATION [1]	X ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
X SHALLOWS (IN SLOW WATER) [1]	X BOULDERS [1]	X LOGS OR WOODY DEBRIS [1]
X ROOTMATS [1]		

COMMENTS: extensive overhanging bank cover

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	

COMMENTS: Downstream of low-head dam

Channel: 13.5 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]			

2.25

COMMENTS: _____

Riparian: 8 7.75 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]		☒-SLOW [1]	☒-VERY FAST[1]
☐ - < 0.2m [POOL=0]			

COMMENTS: _____

Pool/Current: 12.5 12.5 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: 6.5 Max 8

Gradient: 10 Max 10

6] GRADIENT (ft/mi): 2.67 DRAINAGE AREA (sq.mi.) : 1074

%POOL: 25 %GLIDE: 5
%RIFFLE: 35 %RUN: 35

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