

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT  
FRENCH CREEK WATERSHED SURVEY***

**FIELD NOTES AND PHOTOS**

Stream Name and River Mile: French Creek 11.8  
Stream Segment Location: At Mildred Street  
QHEI Score: Not Applicable

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FIELD NOTES: 12 SEP 2002

No QHEI data was taken at this portion of French Creek located upstream (south) of Mildred Street due to access issues. The creek is 15' +/- wide and approximately 20 cm deep at the bridge with a substrate of silt, sand, gravel, boulders, and cobbles. The 10-15' buffers appeared to be dominated by boxelder and raspberry bushes.

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PHOTOS:



1) French Creek 11.8 – Facing upstream from bridge

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT  
FRENCH CREEK WATERSHED SURVEY***

**FIELD NOTES AND PHOTOS**

Stream Name and River Mile: French Creek 12.4  
Stream Segment Location: At Center Ridge Road  
QHEI Score: 45.5

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FIELD NOTES: 12 SEP 2002

This portion of French Creek is located upstream (south) of Center Ridge Road. The 15' banks provide a 10-25' buffer to the commercial/industrial/municipal development. The vegetated buffer contains: boxelder, sugar maple, tartarian honeysuckle, chokecherry, multiflora rose, mulberry, English ivy, green ash, American basswood, catalpa, spotted touch-me-not and riverbank grape. The buffers are 25' +/- on the east bank and 10' +/- wide on the west bank. The substrate in the 6-12' wide, 5-25 cm. deep channel is comprised of silt and sand substrates, with a mix of boulders, cobbles, and gravel. Frogs and minnows were noted. A series of culverts and PVC drain pipes discharge storm water from the properties on either side. Most notable is a rust-colored seepage coming from the west bank. It appears that this may be a source of contamination. This discharge has created rust-colored sediment in the streambed.

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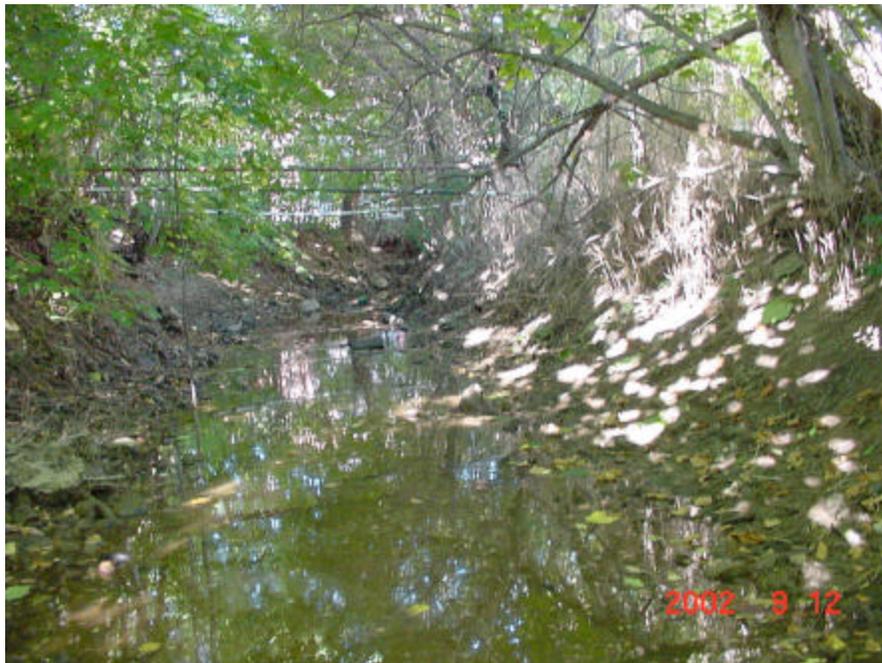
PHOTOS:



1) French Creek 12.4 – Facing upstream from bridge



2) French Creek 12.4 – Contamination seep on west bank



3) French Creek 12.4 – Facing downstream



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

- Major Suspected Sources of Impacts (Check All That Apply):
- None
  - Industrial
  - WWTP
  - Ag
  - Livestock
  - Silviculture
  - Construction
  - Urban Runoff
  - CSOs
  - Suburban Impacts
  - Mining
  - Channelization
  - Riparian Removal
  - Landfills
  - Natural
  - Dams
  - Other Flow Alteration
  - Other: \_\_\_\_\_

Subjective Rating (1-10)

Aesthetic Rating (1-10)

Gradient:

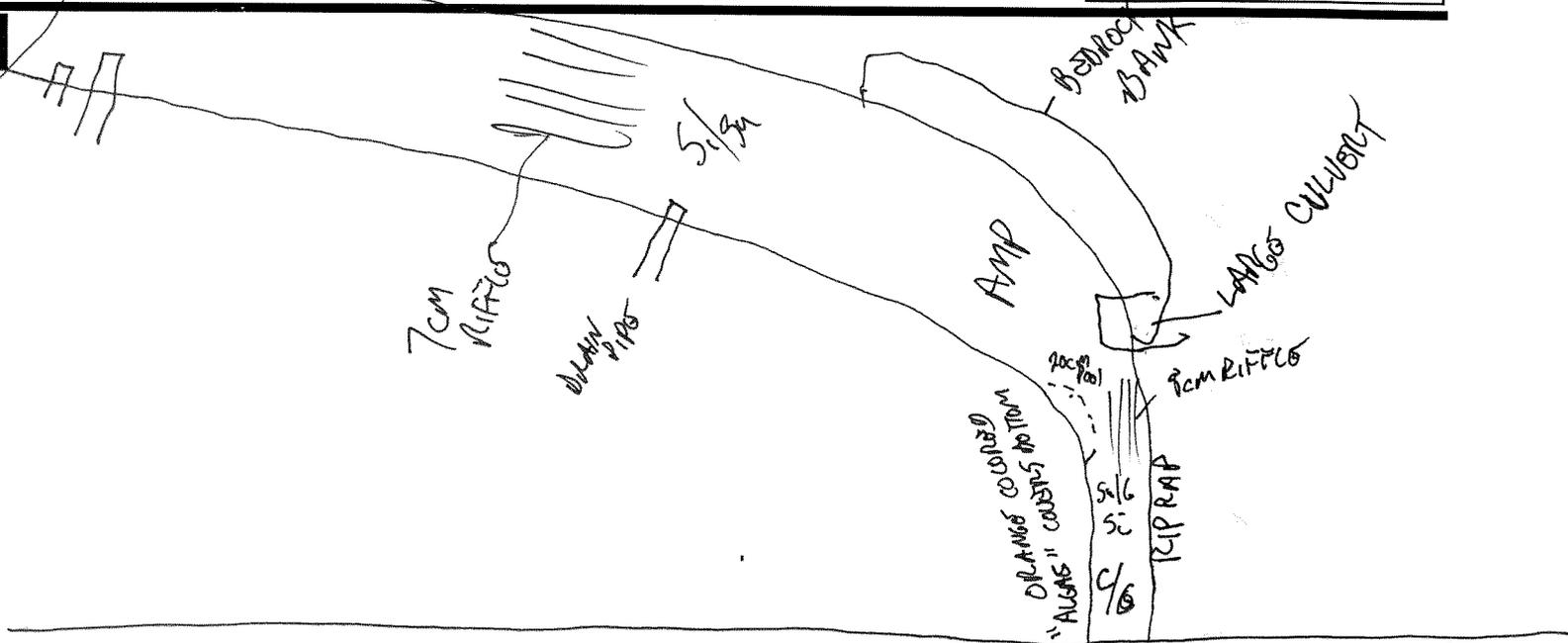
- Low,  - Moderate,  - High

Gear:	Distance:	Water Clarity:	Water Stage:	Canopy -% Open
First Sampling Pass				

Stream Measurements:											
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Depth	Mean W/D Ratio	Bankfull Max Depth	Floodprone Area	Entrench. Width	Entrench. Ratio		

**Stream Drawing:**

POSSIBLE SOURCE OF ORANGE "ALGAE"



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No **CENTER RIDGE ROAD**
- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
  - Is there water upstream? How Far: \_\_\_\_\_
  - Is There Water Close Downstream? How Far: \_\_\_\_\_
  - Is Dry Channel Mostly Natural?

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT  
FRENCH CREEK WATERSHED SURVEY***

**FIELD NOTES AND PHOTOS**

Stream Name and River Mile: French Creek 12.7  
Stream Segment Location: At Root Road  
QHEI Score: 45

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FIELD NOTES: 12 SEP 2002

This portion of French Creek is located upstream (east) of Root Road. Two branches converge at the eastern extent of the sample area. This 10' wide, 15 cm. deep portion of creek has a 10' buffer on both banks, with commercial development to the north and residential development to the south. The substrate is dominated by gravel, sand and silt with lesser amounts of boulders and cobbles. Water milfoil and duckweed were present in portions of the channel. The vegetative buffers contained crab apple, silver maple, boxelder, silky dogwood, weeping willow, gray-stemmed dogwood, green ash and chokecherry. Minnows were noted in the pools. A PVC drain discharges from the residential area to the south.

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PHOTOS:



1) French Creek 12.7 – Facing upstream from bridge



2) French Creek 12.7 – Facing downstream from end



3) French Creek 12.7 – Facing east along north branch



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: **45**

River Code: RM: 12.7 Stream: FRENCH CREEK  
Date: 9/12/02 Location: AT ROOT ROAD  
Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

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

TYPE	POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY
<input type="checkbox"/> -BLDR /SLBS[10] _____	<input type="checkbox"/> -GRAVEL [7] <u>15</u> <u>35</u>	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> -BOULDER [9] <u>5</u>	<input checked="" type="checkbox"/> -SAND [6] <u>40</u> <u>30</u>	<input type="checkbox"/> -LIMESTONE [1]	SILT:	<input type="checkbox"/> -SILT HEAVY [-2]
<input type="checkbox"/> -COBBLE [8] <u>5</u> <u>10</u>	<input type="checkbox"/> -BEDROCK[5] _____	<input checked="" type="checkbox"/> -TILLS [1]		<input checked="" type="checkbox"/> -SILT MODERATE [-1]
<input type="checkbox"/> -HARDPAN [4] _____	<input type="checkbox"/> -DETritus[3] _____	<input type="checkbox"/> -WETLANDS[0]		<input type="checkbox"/> -SILT NORMAL [0]
<input type="checkbox"/> -MUCK [2] _____	<input type="checkbox"/> -ARTIFICIAL[0] _____	<input type="checkbox"/> -HARDPAN [0]		<input type="checkbox"/> -SILT FREE [1]
<input checked="" type="checkbox"/> -SILT [2] <u>40</u> <u>30</u>	NOTE: Ignore Sludge Originating From Point Sources	<input type="checkbox"/> -SANDSTONE [0] EMBEDDED		<input type="checkbox"/> -EXTENSIVE [-2]
		<input type="checkbox"/> -RIP/RAP [0] NESS:		<input checked="" type="checkbox"/> -MODERATE [-1]
		<input checked="" type="checkbox"/> -LACUSTRINE [0]		<input type="checkbox"/> -NORMAL [0]
		<input type="checkbox"/> -SHALE [-1]		<input type="checkbox"/> -NONE [1]
		<input type="checkbox"/> -COAL FINES [-2]		

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

2] INSTREAM COVER (Give each cover type a score of 0 to 3; see back for instructions) AMOUNT: (Check ONLY One or check 2 and AVERAGE)

(Structure)	TYPE: Score All That Occur		Cover
<u>2</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<u>0</u> OXBOWS, BACKWATERS [1]	<input type="checkbox"/> - EXTENSIVE > 75% [11] <input type="checkbox"/> - MODERATE 25-75% [7] <input type="checkbox"/> - SPARSE 5-25% [3] <input type="checkbox"/> - NEARLY ABSENT < 5%[1]
<u>2</u> OVERHANGING VEGETATION [1]	<u>0</u> ROOTWADS [1]	<u>2</u> AQUATIC MACROPHYTES [1]	
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>1</u> BOULDERS [1]	<u>2</u> LOGS OR WOODY DEBRIS [1]	
<u>2</u> ROOTMATS [1]	COMMENTS:		

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

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

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

COMMENTS:

5.] POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT VELOCITY (Check All That Apply)	Pool/Current
<input type="checkbox"/> - >1m [6]	<input checked="" type="checkbox"/> - POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> - EDDIES [1] <input type="checkbox"/> - TORRENTIAL [-1]	<input type="checkbox"/> - INTERSTITIAL [-1] <input type="checkbox"/> - INTERMITTENT [-2] <input checked="" type="checkbox"/> - SLOW [1] <input type="checkbox"/> - VERY FAST [1]
<input type="checkbox"/> - 0.7-1m [4]	<input type="checkbox"/> - POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> - FAST [1]	
<input type="checkbox"/> - 0.4-0.7m [2]	<input type="checkbox"/> - POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> - MODERATE [1]	
<input checked="" type="checkbox"/> - 0.2-0.4m [1]			
<input type="checkbox"/> - < 0.2m [POOL=0]	COMMENTS:		

CHECK ONE OR CHECK 2 AND AVERAGE

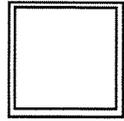
RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS	Riffle/Run
<input type="checkbox"/> - Best Areas >10 cm [2]	<input checked="" type="checkbox"/> - MAX > 50 [2]	<input type="checkbox"/> - STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> - NONE [2]	<input type="checkbox"/> - LOW [1] <input checked="" type="checkbox"/> - MODERATE [0] <input type="checkbox"/> - EXTENSIVE [-1]
<input checked="" type="checkbox"/> - Best Areas 5-10 cm [1]	<input checked="" type="checkbox"/> - MAX < 50 [1]	<input type="checkbox"/> - MOD. STABLE (e.g., Large Gravel) [1]		
<input type="checkbox"/> - Best Areas < 5 cm [RIFFLE=0]		<input checked="" type="checkbox"/> - UNSTABLE (Fine Gravel, Sand) [0]		
COMMENTS:		<input type="checkbox"/> - NO RIFFLE [Metric=0]		Max 8 Gradient Max 10

6] GRADIENT (ft/mi): 6.3 DRAINAGE AREA (sq.mi.): 8.9  
% POOL: 25 % GLIDE: 45  
% RIFFLE: 10 % RUN: 20

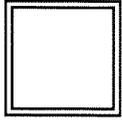
Is Sampling Reach Representative of the Stream (Y/N)\_\_\_ If Not, Explain:

Major Suspected Sources of Impacts (Check All That Apply):

- None
- Industrial
- WWTP
- Ag
- Livestock
- Silviculture
- Construction
- Urban Runoff
- CSOs
- Suburban Impacts
- Mining
- Channelization
- Riparian Removal
- Landfills
- Natural
- Dams
- Other Flow Alteration
- Other: \_\_\_\_\_



Subjective Rating (1-10)



Aesthetic Rating (1-10)

Gradient:

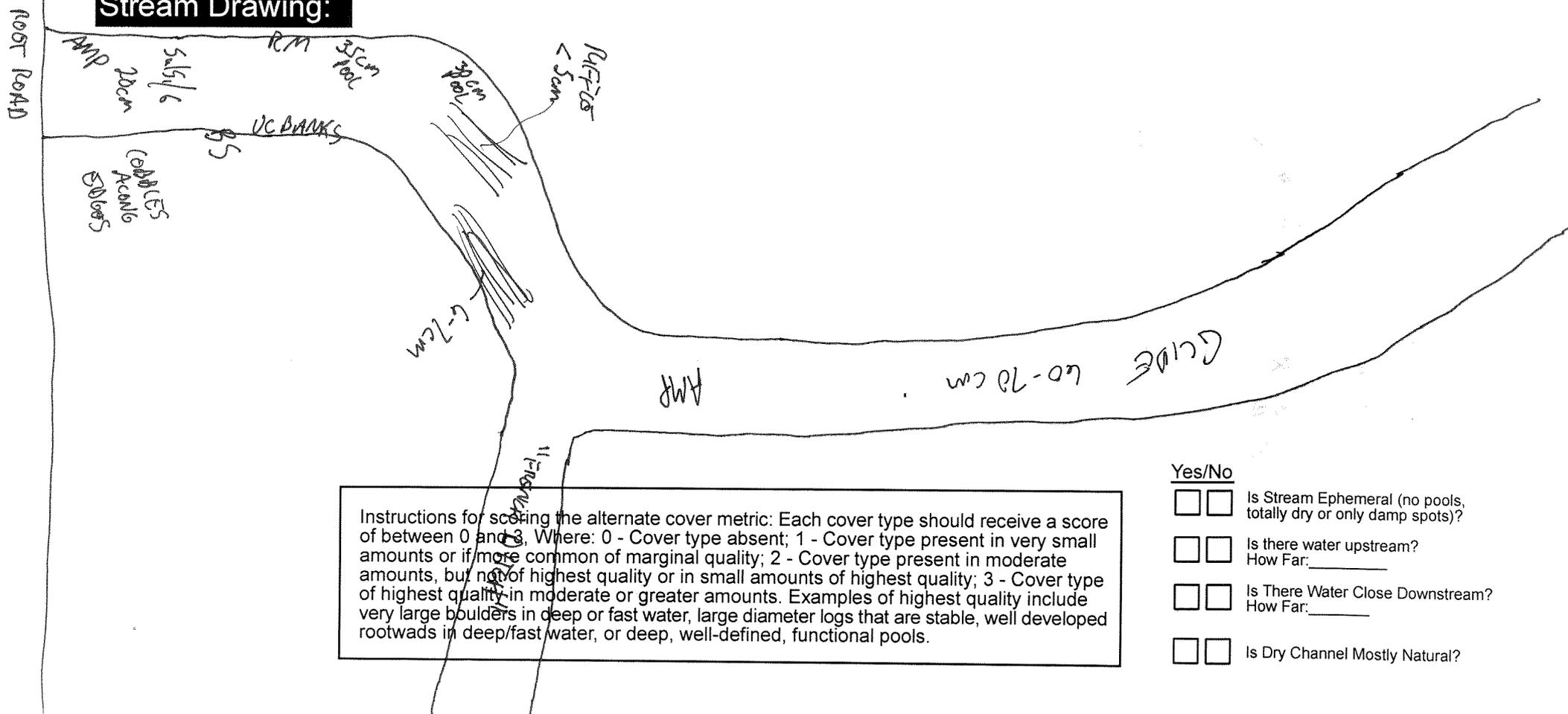
- Low,  - Moderate,  - High

Gear: \_\_\_\_\_ Distance: \_\_\_\_\_ Water Clarity: \_\_\_\_\_ Water Stage: \_\_\_\_\_ Canopy -% Open \_\_\_\_\_

First Sampling Pass \_\_\_\_\_

Stream Measurements:									
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Mean Depth	W/D Ratio	Bankfull Max Depth	Floodprone Area	Entrench. Width	Entrench. Ratio

**Stream Drawing:**



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

Yes/No

- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
- Is there water upstream? How Far: \_\_\_\_\_
- Is There Water Close Downstream? How Far: \_\_\_\_\_
- Is Dry Channel Mostly Natural?

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT  
FRENCH CREEK WATERSHED SURVEY***

**FIELD NOTES AND PHOTOS**

Stream Name and River Mile: French Creek 14.1  
Stream Segment Location: Lear-Nagle Road  
QHEI Score: 34

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FIELD NOTES: 12 SEP 2002

This stretch of French Creek is located downstream (east) of Lear-Nagle Road. The 4-8' wide, 5-20 cm. deep channel contained minnows near the bridge (plunge pool). Emergent vegetation includes: spotted touch-me-not, reed canary grass, rice cutgrass and soft-stemmed bulrush were growing within the channel. The substrate is dominated by gravel, sand, cobbles, hardpan and silt. The 25' +/- wide north buffer is mostly herbaceous and has species including staghorn sumac, reed canary grass, canada goldenrod, Queen Anne's lace, teasel, multiflora rose, green briar and blackberry. The shrub/sapling covered south bank is a 25-50' buffer dominated by multiflora rose, boxelder, staghorn sumac, silky dogwood, blackcherry, eastern cottonwood, pin oak and tartarian honeysuckle.

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PHOTOS:



1) French Creek 14.1 – Facing downstream from bridge



2) French Creek 14.1 – Facing upstream



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: **34**

River Code: RM: 14.1 Stream: FRENCH CREEK  
 Date: 9/12/02 Location: AT CORNER ANGLE ROAD  
 Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

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

TYPE	POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY
<input type="checkbox"/> BLDR /SLBS [10] _____	<input checked="" type="checkbox"/> GRAVEL [7] _____ <u>25</u>	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> BOULDER [9] _____	<input checked="" type="checkbox"/> SAND [6] _____ <u>30</u>	<input type="checkbox"/> LIMESTONE [1] _____	SILT:	<input type="checkbox"/> SILT HEAVY [-2]
<input type="checkbox"/> COBBLE [8] _____ <u>10</u>	<input type="checkbox"/> BEDROCK [5] _____	<input checked="" type="checkbox"/> TILLS [1] _____		<input checked="" type="checkbox"/> SILT MODERATE [-1]
<input type="checkbox"/> HARDPAN [4] _____ <u>15</u>	<input type="checkbox"/> DETRITUS [3] _____	<input type="checkbox"/> WETLANDS [0] _____		<input type="checkbox"/> SILT NORMAL [0]
<input type="checkbox"/> MUCK [2] _____	<input type="checkbox"/> ARTIFICIAL [0] _____	<input checked="" type="checkbox"/> HARDPAN [0] _____		<input type="checkbox"/> SILT FREE [1]
<input type="checkbox"/> SILT [2] _____ <u>20</u>	NOTE: Ignore Sludge Originating From Point Sources	<input type="checkbox"/> SANDSTONE [0] _____	EMBEDDED	<input type="checkbox"/> EXTENSIVE [-2]
-----		<input type="checkbox"/> RIP/RAP [0] _____	NESS:	<input checked="" type="checkbox"/> MODERATE [-1]
NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)		<input type="checkbox"/> LACUSTRINE [0] _____		<input type="checkbox"/> NORMAL [0]
<input type="checkbox"/> 4 or More [2]		<input type="checkbox"/> SHALE [-1] _____		<input type="checkbox"/> NONE [1]
<input checked="" type="checkbox"/> 3 or Less [0]		<input type="checkbox"/> COAL FINES [-2] _____		

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

(Structure)	TYPE: Score All That Occur	AMOUNT: (Check ONLY One or check 2 and AVERAGE)	Cover
<u>0</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<input type="checkbox"/> EXTENSIVE > 75% [11]	<b>7</b> Max 20
<u>3</u> OVERHANGING VEGETATION [1]	<u>0</u> ROOTWADS [1]	<input type="checkbox"/> MODERATE 25-75% [7]	
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>0</u> BOULDERS [1]	<input type="checkbox"/> SPARSE 5-25% [3]	
<u>0</u> ROOTMATS [1]	COMMENTS: _____	<input type="checkbox"/> NEARLY ABSENT < 5% [1]	

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER	Channel
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]	<input type="checkbox"/> SNAGGING	<b>6</b> Max 20
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]	<input checked="" type="checkbox"/> RELOCATION	
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]	<input checked="" type="checkbox"/> CANOPY REMOVAL	
<input checked="" type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]		<input type="checkbox"/> DREDGING	
				<input type="checkbox"/> BANK SHAPING	
				<input type="checkbox"/> ONE SIDE CHANNEL MODIFICATIONS	

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	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)	BANK EROSION	Riparian
L R (Per Bank)	L R (Most Predominant Per Bank)	L R (Per Bank)	<b>3 1/2</b> Max 10
<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> NONE/LITTLE [3]	
<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input checked="" type="checkbox"/> MODERATE [2]	
<input checked="" type="checkbox"/> NARROW 5-10 m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> HEAVY/SEVERE [1]	
<input checked="" type="checkbox"/> VERY NARROW < 5 m [1]	<input type="checkbox"/> FENCED PASTURE [1]		
<input type="checkbox"/> NONE [0]			

COMMENTS: \_\_\_\_\_

5) POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH (Check 1 ONLY!)	MORPHOLOGY (Check 1 or 2 & AVERAGE)	CURRENT VELOCITY (Check All That Apply)	Pool/Current
<input type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> EDDIES [1]	<b>0</b> Max 12
<input type="checkbox"/> 0.7-1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> 0.4-0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> 0.2-0.4m [1]		<input type="checkbox"/> INTERMITTENT [-2]	
<input checked="" type="checkbox"/> < 0.2m [POOL=0]	COMMENTS: _____	<input type="checkbox"/> SLOW [1]	
		<input type="checkbox"/> TORRENTIAL [-1]	

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS	Riffle/Run
<input type="checkbox"/> Best Areas > 10 cm [2]	<input type="checkbox"/> MAX > 50 [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]	<b>0</b> Max 8
<input type="checkbox"/> Best Areas 5-10 cm [1]	<input type="checkbox"/> MAX < 50 [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]	
<input checked="" type="checkbox"/> Best Areas < 5 cm [RIFFLE=0]		<input type="checkbox"/> UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]	
			<input type="checkbox"/> EXTENSIVE [-1]	

COMMENTS: \_\_\_\_\_  NO RIFFLE [Metric=0]

6) GRADIENT (ft/mi): 6.1 DRAINAGE AREA (sq. mi.): 2.2

% POOL: <u>20</u>	% GLIDE: <u>60</u>
% RIFFLE: <u>10</u>	% RUN: <u>10</u>

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

- Major Suspected Sources of Impacts (Check All That Apply):
- None
  - Industrial
  - WWTP
  - Ag
  - Livestock
  - Silviculture
  - Construction
  - Urban Runoff
  - CSOs
  - Suburban Impacts
  - Mining
  - Channelization
  - Riparian Removal
  - Landfills
  - Natural
  - Dams
  - Other Flow Alteration
  - Other: \_\_\_\_\_

Subjective Rating (1-10)

Aesthetic Rating (1-10)

Gradient:

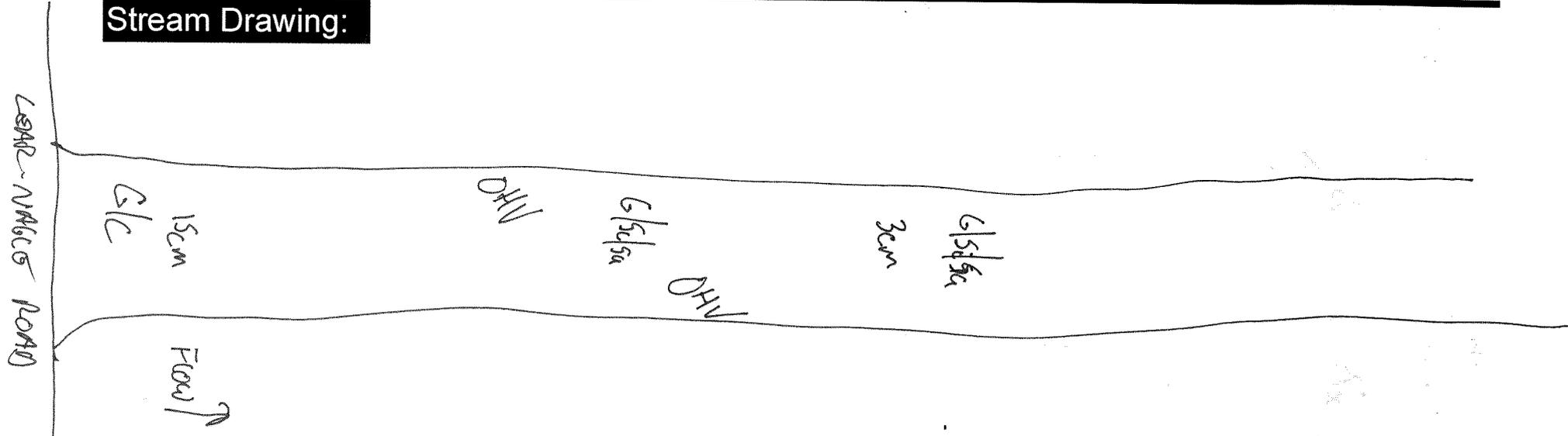
- Low,  - Moderate,  - High

Gear: \_\_\_\_\_ Distance: \_\_\_\_\_ Water Clarity: \_\_\_\_\_ Water Stage: \_\_\_\_\_ Canopy -% Open \_\_\_\_\_

First Sampling Pass \_\_\_\_\_

Stream Measurements:									
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Depth	Mean W/D Ratio	Bankfull Max Depth	Floodprone Area	Entrench. Width	Entrench. Ratio

**Stream Drawing:**



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No
- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
  - Is there water upstream? How Far: \_\_\_\_\_
  - Is There Water Close Downstream? How Far: \_\_\_\_\_
  - Is Dry Channel Mostly Natural?

**QUARRY DITCH NOTES**

***U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT  
FRENCH CREEK WATERSHED SURVEY***

**FIELD NOTES AND PHOTOS**

Stream Name and River Mile: Quarry Ditch 0.0  
Stream Segment Location: At Mouth of Ditch (French Creek RM 0.38)  
QHEI Score: 50 HHEI Score: 62

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**FIELD NOTES:**

This tributary enters French Creek from the south approximately 1500' east of the convergence of French Creek with the Black River. The tributary is impounded by an un-culverted roadway used for off-road vehicles, approximately 400 feet from French Creek. Other degradation includes the placement of soil, fill and construction and demolition material (rebar, etc.) along the banks. The fringe of the 2-4' wide channel contains purple loosestrife and reed canary grass. The forested buffer is fairly narrow with old field beyond the woody vegetation. The water depth is generally 6" in the deeper pools. The tributary appears to be intermittent. There is some potential for restoration (removal of dam, C&D material).

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**PHOTOS:**



1) Quarry Ditch – Looking downstream from road impoundment.



Qualitative Habitat Evaluation Index Field Sheet

QHEI Score: 50

River Code: RM: 0.0 Stream: QUARRY DITCH (UN-NAMED TRIBUTARY TO FRENCH CREEK AT RM 0.38)
Date: 8/20/02 Location: AT MOUTH - FRENCH CREEK R.M.O. 38
Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

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

TYPE POOL RIFFLE POOL RIFFLE SUBSTRATE ORIGIN SUBSTRATE QUALITY
BLDR/SLBS, BOULDER, COBBLE, HARDPAN, MUCK, SILT, GRAVEL, SAND, BEDROCK, DETRITUS, ARTIFICIAL, LIMESTONE, TILLS, WETLANDS, HARDPAN, SANDSTONE, RIP/RAP, LACUSTRINE, SHALE, COAL FINES
Check ONE (OR 2 & AVERAGE) Check ONE (OR 2 & AVERAGE)

Substrate 8 Max 20

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

TYPE: Score All That Occur AMOUNT: (Check ONLY One or check 2 and AVERAGE)
UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS
EXTENSIVE, MODERATE, SPARSE, NEARLY ABSENT

Cover 12 Max 20

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

SINUOSITY DEVELOPMENT CHANNELIZATION STABILITY MODIFICATIONS/OTHER
HIGH, MODERATE, LOW, NONE, EXCELLENT, GOOD, FAIR, POOR, NONE, RECENT OR NO RECOVERY, HIGH, MODERATE, LOW, SNAGGING, RELOCATION, CANOPY REMOVAL, DREDGING, IMPOUND, ISLANDS, LEVEED, BANK SHAPING, ONE SIDE CHANNEL MODIFICATIONS

Channel 9 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 FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN) BANK EROSION
WIDE, MODERATE, NARROW, VERY NARROW, NONE, FOREST, SHRUB, RESIDENTIAL, FENCED PASTURE, CONSERVATION, URBAN, OPEN PASTURE, MINING, NONE/LITTLE, MODERATE, HEAVY/SEVERE

Riparian 5 Max 10

COMMENTS:

5.] POOL/GLIDE AND RIFFLE/RUN QUALITY

MAX. DEPTH MORPHOLOGY CURRENT VELOCITY (POOLS & RIFFLES!)
>1m, 0.7-1m, 0.4-0.7m, 0.2-0.4m, <0.2m, POOL WIDTH > RIFFLE WIDTH, POOL WIDTH = RIFFLE WIDTH, POOL WIDTH < RIFFLE W., EDDIES, FAST, MODERATE, SLOW, TORRENTIAL, INTERSTITIAL, INTERMITTENT, VERY FAST

Pool/Current 3 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH RUN DEPTH RIFFLE/RUN SUBSTRATE RIFFLE/RUN EMBEDDEDNESS
Best Areas >10 cm, Best Areas 5-10 cm, Best Areas < 5 cm, MAX > 50, MAX < 50, STABLE, MOD. STABLE, UNSTABLE, NONE, LOW, MODERATE, EXTENSIVE

Riffle/Run 3 Max 8

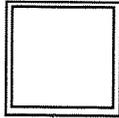
COMMENTS:

Gradient 10 Max 10

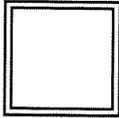
6] GRADIENT (ft/mi): 20 DRAINAGE AREA (sq.mi.): 0.2 %POOL: 20 %GLIDE: - %RIFFLE: 50 %RUN: 30

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

- Major Suspected Sources of Impacts (Check All That Apply):
- None
  - Industrial
  - WWTP
  - Ag
  - Livestock
  - Silviculture
  - Construction
  - Urban Runoff
  - CSOs
  - Suburban Impacts
  - Mining
  - Channelization
  - Riparian Removal
  - Landfills
  - Natural Dams
  - Other Flow Alteration
  - Other: \_\_\_\_\_



Subjective Rating (1-10)



Aesthetic Rating (1-10)

Gradient:

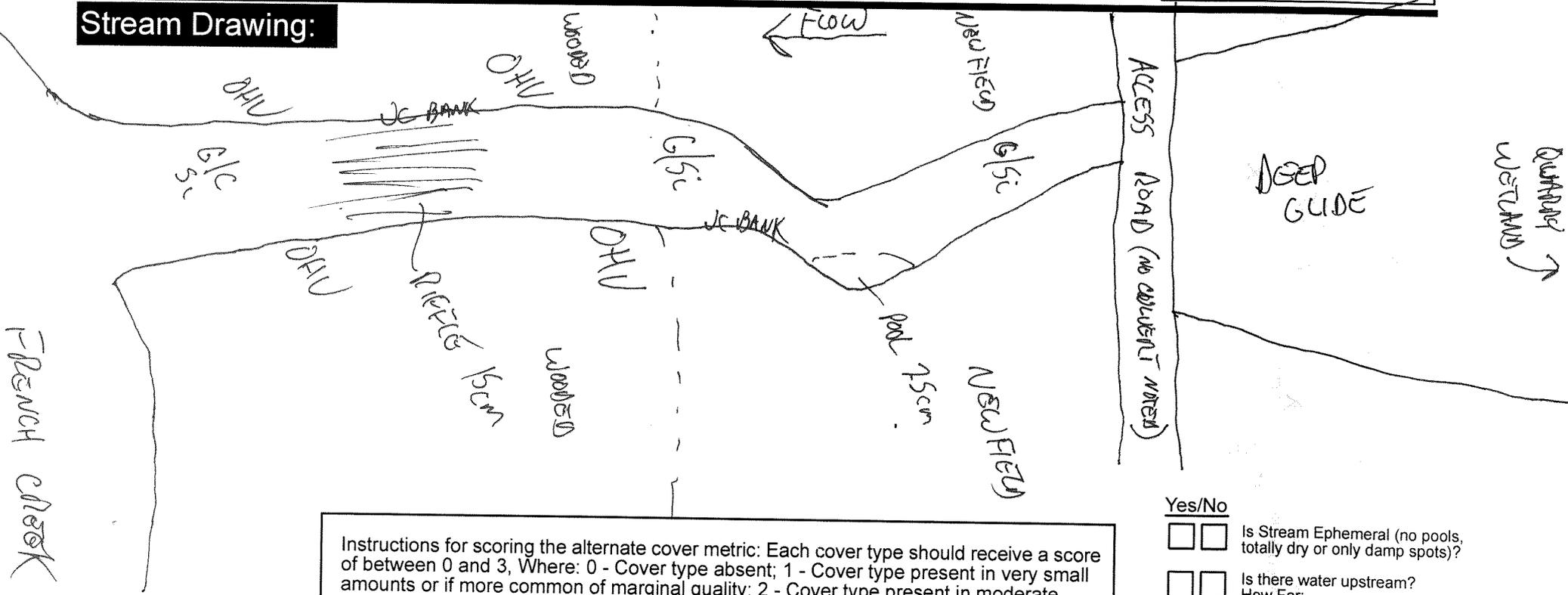
- Low,  - Moderate,  - High

Gear: \_\_\_\_\_ Distance: \_\_\_\_\_ Water Clarity: \_\_\_\_\_ Water Stage: \_\_\_\_\_ Canopy -% Open \_\_\_\_\_

First Sampling Pass \_\_\_\_\_

Stream Measurements:									
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Mean Depth	W/D Ratio	Bankfull Max Depth	Floodprone Area	Entrench. Width	Entrench. Ratio

**Stream Drawing:**



Instructions for scoring the alternate cover metric: Each cover type should receive a score of between 0 and 3, Where: 0 - Cover type absent; 1 - Cover type present in very small amounts or if more common of marginal quality; 2 - Cover type present in moderate amounts, but not of highest quality or in small amounts of highest quality; 3 - Cover type of highest quality in moderate or greater amounts. Examples of highest quality include very large boulders in deep or fast water, large diameter logs that are stable, well developed rootwads in deep/fast water, or deep, well-defined, functional pools.

- Yes/No
- Is Stream Ephemeral (no pools, totally dry or only damp spots)?
  - Is there water upstream? How Far: \_\_\_\_\_
  - Is There Water Close Downstream? How Far: \_\_\_\_\_
  - Is Dry Channel Mostly Natural?



# Primary Headwater Habitat Evaluation Form

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

62

SITE NAME/LOCATION UNNAMED DITCH AT FRENCH CREEK R.M.O. 39 ("QUARRY" DITCH)  
 SITE NUMBER \_\_\_\_\_ RIVER BASIN BLACK RIVER DRAINAGE AREA (mi<sup>2</sup>) 0.2  
 LENGTH OF STREAM REACH (ft) 200 LAT. \_\_\_\_\_ LONG. \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE 0.0  
 DATE 8/20/02 SCORER JAY MILLER COMMENTS \_\_\_\_\_

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

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

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

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>20</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACKWOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>5</u>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<u>5</u>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>65</u>	<input type="checkbox"/> MUCK [0 pts]	<u>5</u>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5

(A) 12

(B) 5

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

17

A + B

Pool Depth Max = 30

30

Bankfull Width Max=30

15

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

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

COMMENTS \_\_\_\_\_

MAXIMUM POOL DEPTH (centimeters): 26

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

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

COMMENTS \_\_\_\_\_

AVERAGE BANKFULL WIDTH (meters): 1.06

This information must also be completed

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

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

COMMENTS \_\_\_\_\_

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

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):  
 None  1.0  2.0  3.0  
 0.5  1.5  2.5  >3

**STREAM GRADIENT ESTIMATE**

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

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

QHEI PERFORMED? -  Yes  No QHEI Score 50 (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

WWH Name: FRENCH CREEK Distance from Evaluated Stream AT MOUTH  
 CWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
 EWH Name: \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

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

USGS Quadrangle Name: AVON, OH NRCS Soil Map Page: 7 NRCS Soil Map Stream Order \_\_\_\_\_  
County: LORAIN Township / City: SHEFFIELD

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: 8/19/02 Quantity: \_\_\_\_\_

Photograph Information: \_\_\_\_\_

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

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

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

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

Additional comments/description of pollution impacts: ACCESS ROAD DAMS CROSS FROM A POND/WETLAND  
AREA CREATED BY PAST QUARRY MINING ACTIVITIES - NO CULVERT NOTED

**BIOTIC EVALUATION**

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

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

Comments Regarding Biology: \_\_\_\_\_

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

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

FLOW → SEE QHEI FORM