

**SUBJECT: U.S. Army Corps of Engineers, Buffalo District - Survey of French Creek
Final Report - July 2004**

JUNGLUTH DITCH NOTES

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

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Jungbluth Ditch 0.0
Stream Segment Location: Mouth of Ditch (French Creek RM 0.54)
QHEI Score: 58.5 HHEI Score: NA

FIELD NOTES: 20 AUG 2002

Jungbluth Ditch (a.k.a. Sugar Creek) enters French Creek immediately east of East River Road. The upland forested buffer on the west bank is narrow (20') before encountering a gravel trail that parallels East River Road. The road is immediately adjacent to the trail. The east bank has a wide (>100m) forested buffer with dominant tree species including black walnut, white ash, sugar maple, sycamore, American hornbeam and eastern cottonwood. Macroinvertebrates were noted in the creek channel that was dominated by shale gravel with silt, sand and cobbles and concrete slabs.

PHOTOS:

No photo's available.



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: **58.5**

River Code: RM: 0.0 Stream: JUNG BLUTH DITCH
 Date: 8-20-02 Location: MOUTH - AT FRENCH CREEK RM 0.54
 Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

1] SUBSTRATE (Check ONLY Two Substrate TYPE 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>60</u> <u>65</u>	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> -BOULDER [9] <u>10</u> <u>10</u>	<input checked="" type="checkbox"/> -SAND [6] <u>15</u> <u>15</u>	<input type="checkbox"/> -LIMESTONE [1]	SILT:	<input type="checkbox"/> -SILT HEAVY [-2]
<input type="checkbox"/> -COBBLE [8]	<input type="checkbox"/> -BEDROCK [5]	<input checked="" type="checkbox"/> -TILLS [1]		<input type="checkbox"/> -SILT MODERATE [-1]
<input type="checkbox"/> -HARDPAN [4]	<input type="checkbox"/> -DETritus [3]	<input type="checkbox"/> -WETLANDS [0]		<input checked="" 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 type="checkbox"/> -SILT [2] <u>15</u> <u>10</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 type="checkbox"/> -MODERATE [-1]
		<input type="checkbox"/> -LACUSTRINE [0]		<input checked="" type="checkbox"/> -NORMAL [0]
		<input type="checkbox"/> -SHALE [-1]		<input type="checkbox"/> -NONE [1]
		<input type="checkbox"/> -COAL FINES [-2]		

Substrate
14
Max 20

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

COMMENTS:

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

<u>1</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<u>0</u> OXBOWS, BACKWATERS [1]
<u>3</u> OVERHANGING VEGETATION [1]	<u>1</u> ROOTWADS [1]	<u>0</u> AQUATIC MACROPHYTES [1]
<u>1</u> SHALLOWS (IN SLOW WATER) [1]	<u>2</u> BOULDERS [1]	<u>2</u> LOGS OR WOODY DEBRIS [1]
<u>2</u> ROOTMATS [1]	COMMENTS:	

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

<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]

Cover
12
Max 20

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	MODIFICATIONS/OTHER
<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"/> - MODERATE [3]	<input type="checkbox"/> - GOOD [5]	<input type="checkbox"/> - RECOVERED [4]	<input checked="" type="checkbox"/> - MODERATE [2]	<input checked="" type="checkbox"/> - RELOCATION
<input checked="" type="checkbox"/> - LOW [2]	<input checked="" type="checkbox"/> - FAIR [3]	<input checked="" type="checkbox"/> - RECOVERING [3]	<input type="checkbox"/> - LOW [1]	<input type="checkbox"/> - CANOPY REMOVAL
<input type="checkbox"/> - NONE [1]	<input type="checkbox"/> - POOR [1]	<input type="checkbox"/> - RECENT OR NO RECOVERY [1]		<input type="checkbox"/> - LEVEED
				<input type="checkbox"/> - DREDGING
				<input checked="" type="checkbox"/> - 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		FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)		BANK EROSION	
L	R (Per Bank)	L	R (Most Predominant Per Bank)	L	R (Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/>	<input checked="" type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/>	<input checked="" type="checkbox"/> CONSERVATION TILLAGE [1]
<input type="checkbox"/>	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/>	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> URBAN OR INDUSTRIAL [0]
<input type="checkbox"/>	<input type="checkbox"/> NARROW 5-10 m [2]	<input type="checkbox"/>	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/>	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> VERY NARROW <5 m [1]	<input type="checkbox"/>	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/>	<input type="checkbox"/> MINING/CONSTRUCTION [0]
<input type="checkbox"/>	<input type="checkbox"/> NONE [0]				

Riparian
6 1/2
Max 10

COMMENTS:

5.] POOL/GLIDE AND RIFFLE/RUN QUALITY

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

Pool/Current
3
Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input checked="" 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]
<input type="checkbox"/> - Best Areas 5-10 cm [1]	<input checked="" type="checkbox"/> - MAX < 50 [1]	<input checked="" type="checkbox"/> - MOD. STABLE (e.g., Large Gravel) [1]	<input checked="" type="checkbox"/> - LOW [1]
<input 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]
		<input type="checkbox"/> - NO RIFFLE [Metric=0]	

Riffle/Run
5
Max 8
Gradient
8
Max 10

6] GRADIENT (ft/mi): 30.8 DRAINAGE AREA (sq.mi.): 6.5
 %POOL: 20 %GLIDE: -
 %RIFFLE: 50 %RUN: 30

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

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)

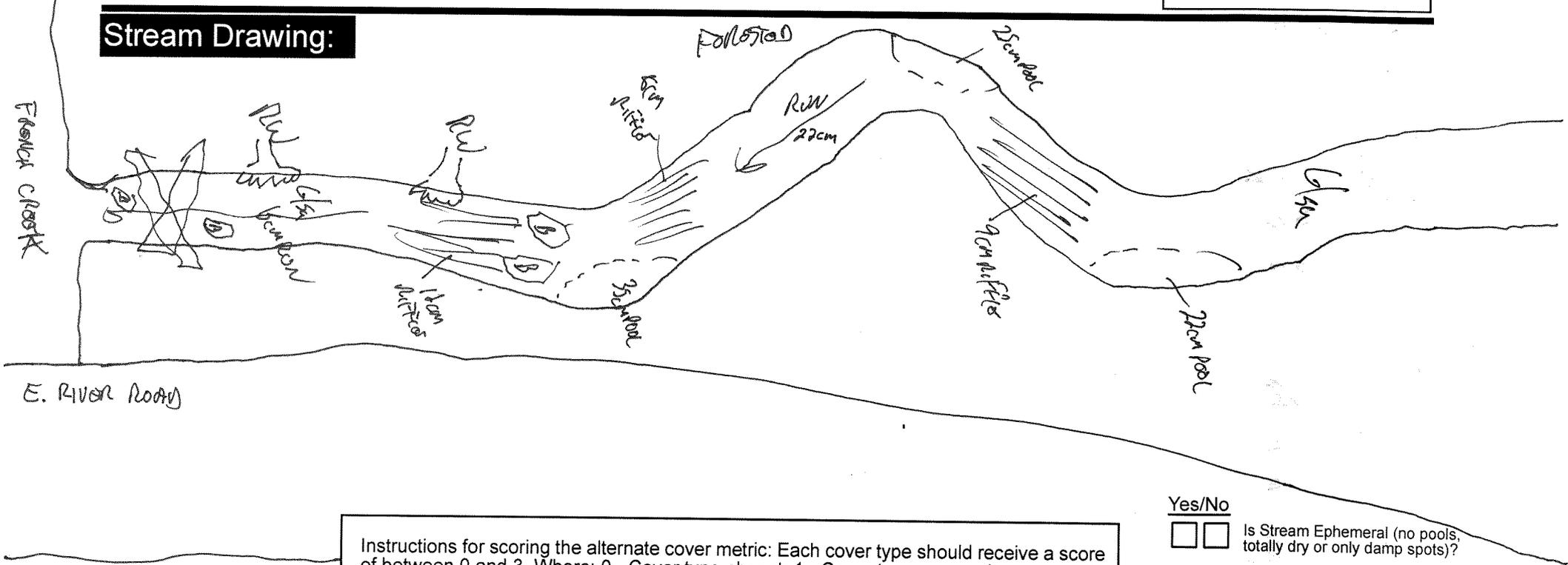
Gradient: - Low, - Moderate, - High

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?

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

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Jungbluth Ditch 1.0
Stream Segment Location: Upstream of Park Road Bridge
QHEI Score: 65 HHEI Score: NA

FIELD NOTES: 20 AUG 2002

This portion of Jungbluth Ditch is located on the east side of the French Creek Reservation Park Road Bridge. Minnows and macroinvertebrates were noted in this stretch. Loose, sandy substrate was noted immediately east of the bridge. The overall substrate is dominated by sand and detritus, with gravel, cobbles, boulders, and silt. The wide forested riparian buffers on both sides of the creek are dominated by sugar maple and shagbark hickory. A roadside ditch follows southward along Park Road and enters the creek near the bridge. The sinuous creek has 4-8' banks on either side.

PHOTOS:



1) Jungbluth Ditch 1.0 – Facing upstream from bridge



2) Jungbluth Ditch 1.0 – Facing downstream towards bridge



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: **65**

River Code: _____ RM: 1.0 Stream: JUNGBUTH DITCH
 Date: 8-20-02 Location: AT PARK ROAD BRIDGE (FRONCH CREEK RESERVATION)
 Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

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

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

Substrate
11 1/2
Max 20

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

COMMENTS: _____

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)
<u>1</u> UNDERCUT BANKS [1]	<u>2</u> POOLS > 70 cm [2]	<input type="checkbox"/> - EXTENSIVE > 75% [11]
<u>2</u> OVERHANGING VEGETATION [1]	<u>1</u> ROOTWADS [1]	<input type="checkbox"/> - MODERATE 25-75% [7]
<u>0</u> SHALLOWS (IN SLOW WATER) [1]	<u>1</u> BOULDERS [1]	<input type="checkbox"/> - SPARSE 5-25% [3]
<u>1</u> ROOTMATS [1]	COMMENTS: _____	<input type="checkbox"/> - 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
<input type="checkbox"/> - HIGH [4]	<input type="checkbox"/> - EXCELLENT [7]	<input checked="" type="checkbox"/> - NONE [6]	<input type="checkbox"/> - HIGH [3]	<input type="checkbox"/> - SNAGGING
<input checked="" type="checkbox"/> - MODERATE [3]	<input checked="" type="checkbox"/> - GOOD [5]	<input type="checkbox"/> - RECOVERED [4]	<input type="checkbox"/> - MODERATE [2]	<input type="checkbox"/> - IMPOUND.
<input type="checkbox"/> - LOW [2]	<input type="checkbox"/> - FAIR [3]	<input type="checkbox"/> - RECOVERING [3]	<input checked="" type="checkbox"/> - LOW [1]	<input type="checkbox"/> - RELOCATION
<input type="checkbox"/> - NONE [1]	<input type="checkbox"/> - POOR [1]	<input type="checkbox"/> - RECENT OR NO RECOVERY [1]		<input type="checkbox"/> - CANOPY REMOVAL
				<input type="checkbox"/> - LEVEED
				<input type="checkbox"/> - DREDGING
				<input type="checkbox"/> - BANK SHAPING
				<input type="checkbox"/> - ONE SIDE CHANNEL MODIFICATIONS

Channel
15
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	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)	BANK EROSION
L R (Per Bank)	L R (Most Predominant Per Bank)	L R (Per Bank)
<input checked="" type="checkbox"/> - WIDE > 50m [4]	<input checked="" type="checkbox"/> - FOREST, SWAMP [3]	<input type="checkbox"/> - NONE/LITTLE [3]
<input type="checkbox"/> - MODERATE 10-50m [3]	<input checked="" type="checkbox"/> - SHRUB OR OLD FIELD [2]	<input checked="" type="checkbox"/> - MODERATE [2]
<input type="checkbox"/> - NARROW 5-10 m [2]	<input type="checkbox"/> - RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/> - HEAVY/SEVERE [1]
<input type="checkbox"/> - VERY NARROW < 5 m [1]	<input type="checkbox"/> - FENCED PASTURE [1]	<input type="checkbox"/> - MINING/CONSTRUCTION [0]
<input type="checkbox"/> - NONE [0]		

Riparian
8 1/2
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)
<input type="checkbox"/> - >1m [6]	<input type="checkbox"/> - POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> - EDDIES [1]
<input checked="" type="checkbox"/> - 0.7-1m [4]	<input type="checkbox"/> - POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> - TORRENTIAL [-1]
<input type="checkbox"/> - 0.4-0.7m [2]	<input checked="" type="checkbox"/> - POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> - FAST [1]
<input type="checkbox"/> - 0.2- 0.4m [1]		<input checked="" type="checkbox"/> - MODERATE [1]
<input type="checkbox"/> - < 0.2m [POOL=0]	COMMENTS: _____	<input checked="" type="checkbox"/> - SLOW [1]
		<input type="checkbox"/> - INTERSTITIAL [-1]
		<input type="checkbox"/> - INTERMITTENT [-2]
		<input type="checkbox"/> - VERY FAST [1]

Pool/Current
6
Max 12

CHECK ONE OR CHECK 2 AND AVERAGE

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input checked="" 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"/> - Best Areas 5-10 cm [1]	<input type="checkbox"/> - MAX < 50 [1]	<input type="checkbox"/> - MOD. STABLE (e.g., Large Gravel) [1]	<input checked="" type="checkbox"/> - LOW [1]
<input type="checkbox"/> - Best Areas < 5 cm [RIFFLE=0]		<input checked="" type="checkbox"/> - UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> - MODERATE [0]
COMMENTS: _____		<input type="checkbox"/> - NO RIFFLE [Metric=0]	<input type="checkbox"/> - EXTENSIVE [-1]

Riffle/Run
5
Max 8

Gradient
10
Max 10

6) GRADIENT (ft/mi): 22.2 DRAINAGE AREA (sq.mi.): 6.2

% POOL: 30 % GLIDE: —
 % RIFFLE: 30 % RUN: 40

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: _____

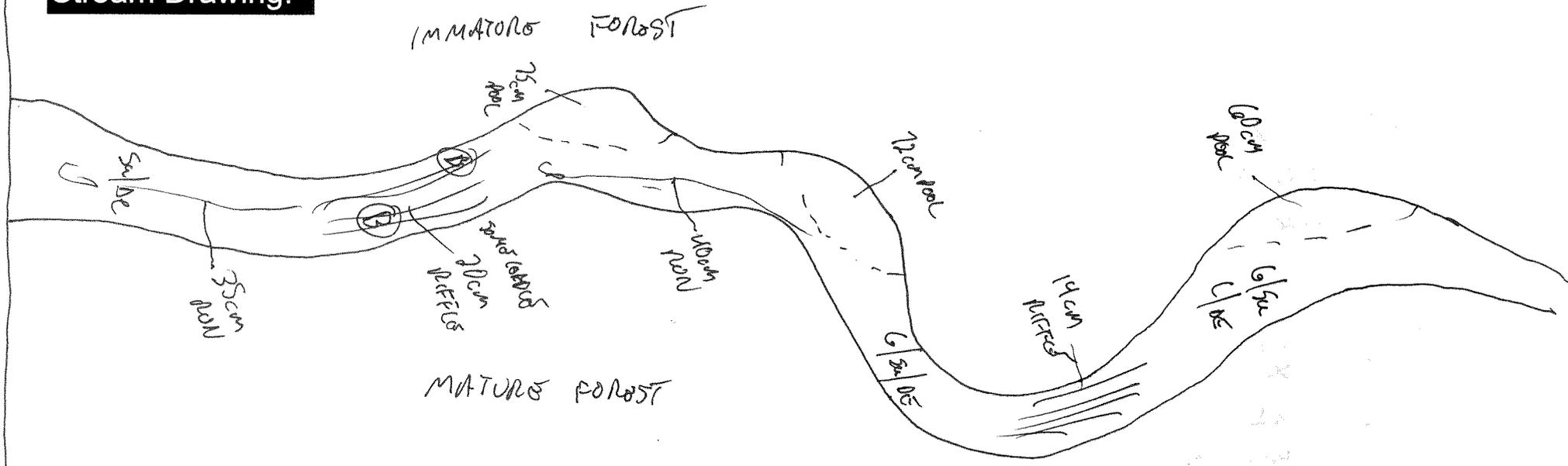
First Sampling Pass _____

Stream Measurements:

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

Stream Drawing:

PARK ROAD BRIDGE



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: Jungbluth Ditch 1.6
Stream Segment Location: At French Creek Road
QHEI Score: 35.5 HHEI Score: NA

FIELD NOTES:

This section of Jungbluth Ditch is located on the south side of French Creek Road. The ditch has been dredged and maintained with a 6' +/- mowed strip on the east side. The channel is straight and consistent in depth. The west side of the ditch has a wide shrub buffer dominated by silky dogwood, gray-stemmed dogwood, and northern arrowwood. The eastern fringe of the channel is dominated by purple loosestrife. The water depth generally ranges from 40-50 cm. This area has some potential for restoration.

PHOTOS:



1) Jungbluth Ditch 1.6 – Facing upstream from bridge



2) Jungbluth Ditch 1.6 – Facing downstream



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: **35.5**

River Code: RM: 1.6 Stream: JUNGBLUTH DITCH
 Date: 8-21-02 Location: AT FRENCH CROOK 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>20</u> <u>30</u>	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> -BOULDER [9]	<input type="checkbox"/> -SAND [6] <u>10</u> <u>20</u>	<input type="checkbox"/> -LIMESTONE [1]	SILT:	<input checked="" type="checkbox"/> - SILT HEAVY [-2]
<input type="checkbox"/> -COBBLE [8] <u>10</u> <u>30</u>	<input type="checkbox"/> -BEDROCK[5]	<input checked="" type="checkbox"/> -TILLS [1]		<input 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>60</u> <u>20</u>	NOTE: Ignore Sludge Originating From Point Sources	<input type="checkbox"/> -SANDSTONE [0] EMBEDDED		<input checked="" type="checkbox"/> -EXTENSIVE [-2]
		<input type="checkbox"/> -RIP/RAP [0] NESS:		<input type="checkbox"/> -MODERATE [-1]
		<input 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]		

Substrate

 Max 20

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

COMMENTS:

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)

<u>2</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<u>0</u> OXBOWS, BACKWATERS [1]
<u>2</u> OVERHANGING VEGETATION [1]	<u>0</u> ROOTWADS [1]	<u>1</u> AQUATIC MACROPHYTES [1]
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>0</u> BOULDERS [1]	<u>0</u> LOGS OR WOODY DEBRIS [1]
<u>0</u> ROOTMATS [1]	COMMENTS:	

<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]

Cover

 Max 20

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

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

Channel

 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	
L R (Per Bank)	L R (Most Predominant Per Bank)	L R	L R	L R (Per Bank)	
<input checked="" type="checkbox"/> - WIDE > 50m [4]	<input type="checkbox"/> - FOREST, SWAMP [3]	<input type="checkbox"/> - CONSERVATION TILLAGE [1]	<input type="checkbox"/> - URBAN OR INDUSTRIAL [0]	<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"/> - URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> - OPEN PASTURE, ROWCROP [0]	<input checked="" type="checkbox"/> - MODERATE [2]	
<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 type="checkbox"/> - MINING/CONSTRUCTION [0]	<input type="checkbox"/> - HEAVY/SEVERE [1]	
<input type="checkbox"/> - VERY NARROW < 5 m [1]	<input type="checkbox"/> - FENCED PASTURE [1]				
<input checked="" type="checkbox"/> - NONE [0]					

Riparian

 Max 10

COMMENTS:

5.) POOL/GLIDE AND RIFFLE/RUN QUALITY

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

Pool/
 Current

 Max 12

CHECK ONE OR CHECK 2 AND AVERAGE			
RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<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]
<input 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"/> - LOW [1]
<input checked="" type="checkbox"/> - Best Areas < 5 cm [RIFFLE=0]		<input checked="" type="checkbox"/> - UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> - MODERATE [0]
			<input checked="" type="checkbox"/> - EXTENSIVE [-1]
COMMENTS:		<input type="checkbox"/> - NO RIFFLE [Metric=0]	

Riffle/Run

 Max 8
 Gradient

 Max 10

6) GRADIENT (ft/mi): 9.4 DRAINAGE AREA (sq.mi.): 5.4
 %POOL: %GLIDE:
 %RIFFLE: %RUN:

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

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: _____

		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

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

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Jungbluth Ditch 3.15

Stream Segment Location: At Abbe Road

QHEI Score: 59

HHEI Score: NA

FIELD NOTES:

This site is a stretch of Jungbluth Ditch that flows adjacent to Abbe Road before flowing under a bridge and to the northwest. A 6' high retaining wall along Abbe Road forms the west bank. There is virtually no vegetated buffer between the channel and the road. The channel is 8-10' wide with pools ranging in depth from 12-55 cm. Many minnows were noted along with some macroinvertebrates. Patches of emergent vegetation including purple loosestrife and willow seedlings were noted along the channel fringes. The 50'+/- buffer along the east bank separates the creek channel from the residential subdivision to the east. The wooded buffer contains large American elm trees along with green ash, boxelders, pin oak, black willow and an understory of Canada goldenrod. Tile drains were noted discharging from the residences to the east. The substrate is dominated by gravel and cobble with occasional boulders and sand. Restoration opportunities are limited due to the location, however potential sources of contamination come from Abbe Road runoff and tile drain discharge.

PHOTOS:



1) Jungbluth Ditch 3.15 – Facing south along Abbe Road from bridge



2) Jungbluth Ditch 3.15 – Facing north



Qualitative Habitat Evaluation Index Field Sheet QHEI Score:

59

River Code: RM: 3.15 Stream: JUNGBLUTH DITCH
Date: 8-22-02 Location: AT ABBE 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>45</u> <u>40</u>	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> -BOULDER [9] <u>10</u> <u>15</u>	<input type="checkbox"/> -SAND [6]	<input type="checkbox"/> -LIMESTONE [1]	SILT:	
<input checked="" type="checkbox"/> -COBBLE [8] <u>25</u> <u>30</u>	<input type="checkbox"/> -BEDROCK[5]	<input checked="" type="checkbox"/> -TILLS [1]	<input type="checkbox"/> -SILT HEAVY [-2]	Substrate <div style="border: 1px solid black; padding: 5px; display: inline-block;">16</div> Max 20
<input type="checkbox"/> -HARDPAN [4]	<input type="checkbox"/> -DETRITUS[3]	<input type="checkbox"/> -WETLANDS[0]	<input type="checkbox"/> -SILT MODERATE [-1]	
<input type="checkbox"/> -MUCK [2]	<input type="checkbox"/> -ARTIFICIAL[0]	<input type="checkbox"/> -HARDPAN [0]	<input checked="" type="checkbox"/> -SILT NORMAL [0]	
<input type="checkbox"/> -SILT [2] <u>10</u> <u>15</u>	NOTE: Ignore Sludge Originating From Point Sources	<input type="checkbox"/> -SANDSTONE [0] EMBEDDED	<input type="checkbox"/> -SILT FREE [1]	
		<input type="checkbox"/> -RIP/RAP [0] NESS:	<input type="checkbox"/> -EXTENSIVE [-2]	
NUMBER OF SUBSTRATE TYPES: (High Quality Only, Score 5 or >)	<input checked="" type="checkbox"/> 4 or More [2]	<input type="checkbox"/> -LACUSTRINE [0]	<input checked="" type="checkbox"/> -MODERATE [-1]	
	<input checked="" type="checkbox"/> 3 or Less [0]	<input type="checkbox"/> -SHALE [-1]	<input checked="" type="checkbox"/> -NORMAL [0]	
COMMENTS:		<input type="checkbox"/> -COAL FINES [-2]	<input type="checkbox"/> -NONE [1]	

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

TYPE	AMOUNT: (Check ONLY One or check 2 and AVERAGE)	Cover
<u>0</u> UNDERCUT BANKS [1]	<input type="checkbox"/> - EXTENSIVE > 75% [11]	Cover <div style="border: 1px solid black; padding: 5px; display: inline-block;">10</div> Max 20
<u>3</u> OVERHANGING VEGETATION [1]	<input type="checkbox"/> - MODERATE 25-75% [7]	
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/> - SPARSE 5-25% [3]	
<u>2</u> ROOTMATS [1]	<input type="checkbox"/> - NEARLY ABSENT < 5%[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	Channel <div style="border: 1px solid black; padding: 5px; display: inline-block;">10</div> Max 20
<input type="checkbox"/> - MODERATE [3]	<input type="checkbox"/> - GOOD [5]	<input type="checkbox"/> - RECOVERED [4]	<input checked="" type="checkbox"/> - MODERATE [2]	<input type="checkbox"/> - IMPOUND.	
<input checked="" type="checkbox"/> - LOW [2]	<input checked="" type="checkbox"/> - FAIR [3]	<input checked="" type="checkbox"/> - RECOVERING [3]	<input type="checkbox"/> - LOW [1]	<input type="checkbox"/> - RELOCATION	
<input type="checkbox"/> - NONE [1]	<input type="checkbox"/> - POOR [1]	<input type="checkbox"/> - RECENT OR NO RECOVERY [1]		<input type="checkbox"/> - ISLANDS	
				<input type="checkbox"/> - CANOPY REMOVAL	
				<input type="checkbox"/> - LEVEED	
				<input type="checkbox"/> - DREDGING	
				<input type="checkbox"/> - BANK SHAPING	
				<input checked="" 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) ^R River Right Looking Downstream ^L

RIPARIAN WIDTH	FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)	BANK EROSION	Riparian
L R (Per Bank)	L R (Most Predominant Per Bank)	L R	L R (Per Bank)
<input type="checkbox"/> - WIDE > 50m [4]	<input type="checkbox"/> - FOREST, SWAMP [3]	<input type="checkbox"/> - CONSERVATION TILLAGE [1]	<input checked="" type="checkbox"/> - NONE/LITTLE [3]
<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"/> - MODERATE [2]
<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 type="checkbox"/> - HEAVY/SEVERE [1]
<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]	Pool/ Current <div style="border: 1px solid black; padding: 5px; display: inline-block;">5</div> Max 12
<input type="checkbox"/> - 0.7-1m [4]	<input type="checkbox"/> - POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> - FAST[1]	
<input checked="" type="checkbox"/> - 0.4-0.7m [2]	<input type="checkbox"/> - POOL WIDTH < RIFFLE W. [0]	<input type="checkbox"/> - TORRENTIAL[-1]	
<input type="checkbox"/> - 0.2- 0.4m [1]		<input type="checkbox"/> - INTERSTITIAL[-1]	
<input type="checkbox"/> - < 0.2m [POOL=0]	COMMENTS:	<input type="checkbox"/> - MODERATE [1]	
		<input checked="" type="checkbox"/> - SLOW [1]	
		<input type="checkbox"/> - INTERMITTENT[-2]	
		<input type="checkbox"/> - VERY FAST[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]	Riffle/Run <div style="border: 1px solid black; padding: 5px; display: inline-block;">4</div> Max 8
<input checked="" type="checkbox"/> - Best Areas 5-10 cm[1]	<input checked="" type="checkbox"/> - MAX < 50[1]	<input checked="" type="checkbox"/> - MOD. STABLE (e.g., Large Gravel) [1]	<input checked="" type="checkbox"/> - LOW [1]	
<input type="checkbox"/> - Best Areas < 5 cm [RIFFLE=0]		<input type="checkbox"/> - UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> - MODERATE [0]	
COMMENTS:		<input type="checkbox"/> - NO RIFFLE [Metric=0]	<input type="checkbox"/> - EXTENSIVE [-1]	Gradient <div style="border: 1px solid black; padding: 5px; display: inline-block;">10</div> Max 10

6] GRADIENT (ft/mi): 28.6 DRAINAGE AREA (sq.mi.): 4.7
%POOL: 20 %GLIDE: 40
%RIFFLE: 30 %RUN: 10

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

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

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Jungbluth Ditch 4.13
Stream Segment Location: At Case Road
QHEI Score: 46.5 HHEI Score: NA

FIELD NOTES: 22 AUG 2002

This stretch of Jungbluth Ditch is on the northeast branch that crosses Case Road north of the Camelot subdivision. The northeast bank is adjacent to a residence (lawn) and has no buffer for the first 50'. The remainder of the northeast bank as well as the southwest bank has a narrow (10-20') vegetated buffer with eastern cottonwood, black willow, red maple, green ash, multiflora rose, gray-stemmed dogwood and black cherry. There is a 6" culvert under Case Road and a 12" tile pipe discharging from the lot to the south. The channel is 2-8' wide with riprap on the northeast bank. The water depth was 10-25 cm. over a mostly hardpan and silt substrate with occasional cobbles, gravel and detritus. Rice cutgrass (emergent) and water milfoil (aquatic) were found in the channel intermittently. There are a few riffles. The ditch flows northward from Case Road through a residential area to the southeast. The ditch first flows through the Camelot subdivision where it has been rerouted and expanded into several detention/retention ponds. In addition, large areas have been underlain with culverts. This portion of the creek (subdivision) represents a significant impediment to fish/benthic habitat.

PHOTOS:



1) Jungbluth Ditch 4.13 – On the northeast branch



2) Jungbluth Ditch 4.13 – At Case road – upstream



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: 46.5

River Code: RM: 4.13 Stream: JONGBLUTH DITCH

Date: 8-22-02 Location: AT CASE 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>5</u> Check ONE (OR 2 & AVERAGE)	Check ONE (OR 2 & AVERAGE)		
<input type="checkbox"/> BOULDER [9] <u>5</u>	<input type="checkbox"/> SAND [6] _____	<input type="checkbox"/> LIMESTONE [1] _____	SILT:	<input type="checkbox"/> SILT HEAVY [-2]	Substrate
<input type="checkbox"/> COBBLE [8] <u>5</u>	<input type="checkbox"/> BEDROCK [5] _____	<input type="checkbox"/> TILLS [1] _____	<input type="checkbox"/> SILT MODERATE [-1]	<input type="checkbox"/> SILT MODERATE [-1]	
<input checked="" type="checkbox"/> HARDPAN [4] <u>60 60</u>	<input type="checkbox"/> DETRITUS [3] <u>10 5</u>	<input type="checkbox"/> WETLANDS [0] _____	<input checked="" type="checkbox"/> SILT NORMAL [0]	<input checked="" type="checkbox"/> SILT NORMAL [0]	6 Max 20
<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 FREE [1] _____	
<input checked="" type="checkbox"/> SILT [2] <u>30 20</u>	NOTE: Ignore Sludge Originating From Point Sources	<input type="checkbox"/> SANDSTONE [0] EMBEDDED	<input type="checkbox"/> EXTENSIVE [-2]	<input type="checkbox"/> EXTENSIVE [-2]	
		<input type="checkbox"/> RIP/RAP [0] NESS:	<input type="checkbox"/> MODERATE [-1]	<input type="checkbox"/> MODERATE [-1]	
		<input type="checkbox"/> LACUSTRINE [0]	<input checked="" type="checkbox"/> NORMAL [0]	<input checked="" type="checkbox"/> NORMAL [0]	
		<input type="checkbox"/> SHALE [-1]	<input type="checkbox"/> NONE [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]

COMMENTS: _____

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>2</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<input type="checkbox"/> EXTENSIVE > 75% [11]	11 Max 20
<u>2</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>1</u> BOULDERS [1]	<input type="checkbox"/> SPARSE 5-25% [3]	
<u>2</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 <input type="checkbox"/> IMPOUND.	9 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"/> ISLANDS	
<input checked="" type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input checked="" type="checkbox"/> RECOVERING [3]	<input checked="" type="checkbox"/> LOW [1]	<input type="checkbox"/> CANOPY REMOVAL <input type="checkbox"/> LEVEED	
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]		<input type="checkbox"/> DREDGING <input checked="" type="checkbox"/> BANK SHAPING	
				<input checked="" 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) ^P River Right Looking Downstream ^P

RIPARIAN WIDTH		FLOOD PLAIN QUALITY (PAST 100 Meter RIPARIAN)		BANK EROSION		Riparian
L R (Per Bank)	L R (Most Predominant Per Bank)	L R	L R	L R (Per Bank)		
<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input type="checkbox"/> NONE/LITTLE [3]		4 1/2 Max 10
<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input checked="" type="checkbox"/> MODERATE [2]		
<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 type="checkbox"/> OPEN PASTURE, ROWCROP [0]	<input type="checkbox"/> HEAVY/SEVERE [1]		
<input checked="" type="checkbox"/> VERY NARROW <5 m [1]	<input type="checkbox"/> FENCED PASTURE [1]	<input type="checkbox"/> MINING/CONSTRUCTION [0]	<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 [POOLS & RIFFLES!] (Check All That Apply)	Pool/ Current
<input type="checkbox"/> >1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> EDDIES [1] <input type="checkbox"/> TORRENTIAL [-1]	3 Max 12
<input type="checkbox"/> 0.7-1m [4]	<input checked="" type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> FAST [1] <input type="checkbox"/> INTERSTITIAL [-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"/> INTERMITTENT [-2]	
<input checked="" type="checkbox"/> 0.2- 0.4m [1]		<input checked="" type="checkbox"/> SLOW [1] <input type="checkbox"/> VERY FAST [1]	
<input type="checkbox"/> < 0.2m [POOL=0]	COMMENTS: _____		

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 type="checkbox"/> MAX > 50 [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]	3 Max 8
<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 checked="" type="checkbox"/> LOW [1]	
<input type="checkbox"/> Best Areas < 5 cm [RIFFLE=0]		<input checked="" type="checkbox"/> UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]	Gradient 10 Max 10
COMMENTS: _____		<input type="checkbox"/> NO RIFFLE [Metric=0]	<input type="checkbox"/> EXTENSIVE [-1]	

6] GRADIENT (ft/mi): 25 DRAINAGE AREA (sq.mi.): 2.8

%POOL: 20 %GLIDE: 60

%RIFFLE: 10 %RUN: 10

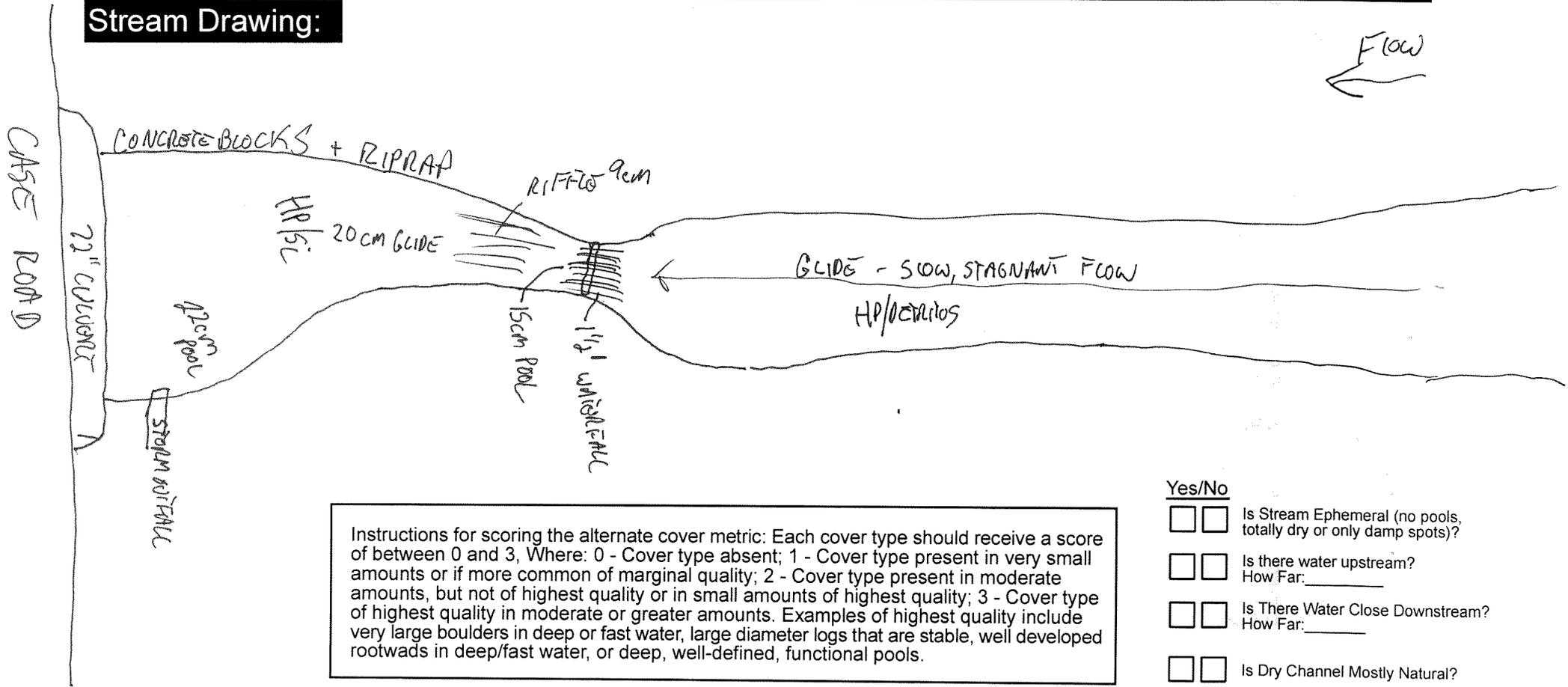
* Best areas must be large enough to support a population of riffle-obligate species

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: _____

		Gear: _____	Distance: _____	Water Clarity: _____	Water Stage: _____	Canopy -% Open _____
<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto;"></div> Subjective Rating (1-10)	<div style="border: 1px solid black; width: 40px; height: 40px; margin: 0 auto;"></div> Aesthetic Rating (1-10)	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. Ratio					
<input type="checkbox"/> - Low, <input type="checkbox"/> - Moderate, <input type="checkbox"/> - High						

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?

WALKER DITCH NOTES

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

FIELD NOTES AND PHOTOS

Stream Name and River Mile: Walker Ditch 0.0
Stream Segment Location: Mouth of Ditch (French Creek RM 1.23)
QHEI Score: 66.5 HHEI Score: NA

FIELD NOTES: 20 AUG 2002

Walker Ditch (a.k.a. Fish Creek) enters French Creek from the south and east. There is a 40' bank on the south side of this stretch and a 15-20' high bank on the north side. Both sides contain forested buffers (50' wide to south; 100' wide to north) dominated by sugar maple with occurrences of eastern cottonwood, red oak, black cherry, and American hornbeam. The substrate is dominated by gravel overlaying bedrock, with lesser amounts of boulders and sand. There appears to be less biological activity than in Jungbluth Ditch.

PHOTOS:



1) Walker Ditch 0.0 – Facing upstream (200' from mouth)



Qualitative Habitat Evaluation Index Field Sheet

QHEI Score: 66.5

River Code: RM: 0.0 Stream: WALKER DITCH

Date: 8-20-02 Location: AT MOUTH OF FRENCH CREEK CONFLUENCE

Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

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

Substrate evaluation table with columns for TYPE, POOL RIFFLE, SUBSTRATE ORIGIN, and SUBSTRATE QUALITY. Includes checkboxes for gravel, sand, limestone, silt, etc.

NUMBER OF SUBSTRATE TYPES: 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)

Instream cover evaluation table with columns for TYPE, AMOUNT, and Cover. Includes checkboxes for undercut banks, vegetation, shallows, etc.

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

Channel morphology evaluation table with columns for SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY, and MODIFICATIONS/OTHER. Includes checkboxes for high, moderate, low, etc.

COMMENTS:

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

Riparian zone and bank erosion evaluation table with columns for RIPARIAN WIDTH, FLOOD PLAIN QUALITY, and BANK EROSION. Includes checkboxes for wide, moderate, narrow, etc.

COMMENTS:

5.] POOL/GLIDE AND RIFFLE/RUN QUALITY

Pool/glide and riffle/run quality evaluation table with columns for MAX. DEPTH, MORPHOLOGY, and CURRENT VELOCITY. Includes checkboxes for pool width, eddies, etc.

CHECK ONE OR CHECK 2 AND AVERAGE

Riffle/run evaluation table with columns for RIFFLE DEPTH, RUN DEPTH, RIFFLE/RUN SUBSTRATE, and RIFFLE/RUN EMBEDDEDNESS. Includes checkboxes for best areas, stable, etc.

6] GRADIENT (ft/mi): 30.3 DRAINAGE AREA (sq.mi.): 2.9 %POOL: 20 %GLIDE: 40 %RIFFLE: 20 %RUN: 20

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

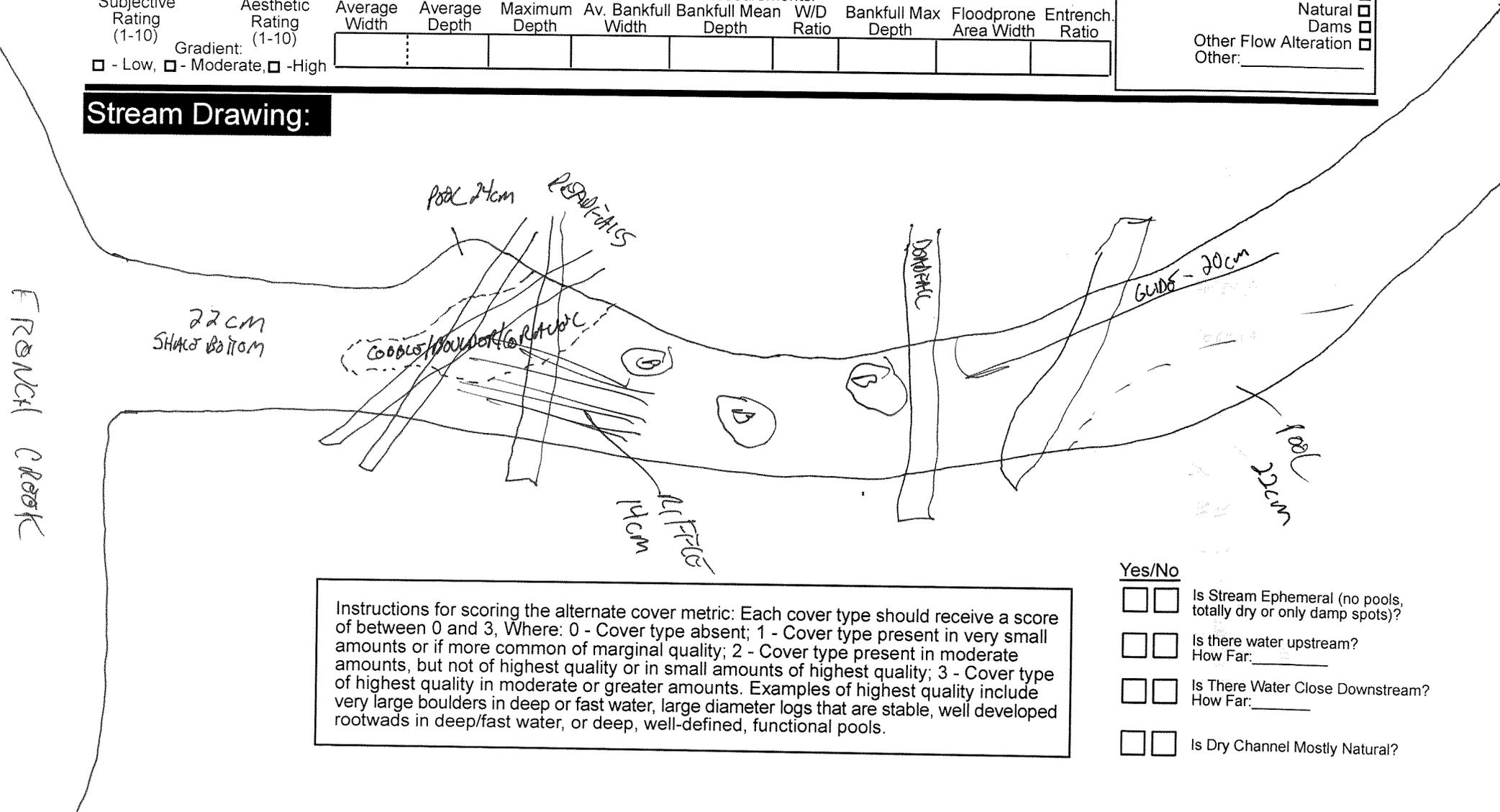
Is Sampling Reach Representative of the Stream (Y/N) ___ If Not, Explain:

- 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: _____

<input style="width: 100%; height: 50px;" type="text"/> Subjective Rating (1-10)	<input style="width: 100%; height: 50px;" type="text"/> Aesthetic Rating (1-10)	Gradient:	Gear: _____	Distance: _____	Water Clarity: _____	Water Stage: _____	Canopy -% Open _____	
First Sampling Pass _____								
Stream Measurements:								
Average Width	Average Depth	Maximum Depth	Av. Bankfull Width	Bankfull Depth	Bankfull Mean W/D Ratio	Bankfull Max Depth	Floodprone Area Width	Entrench. Ratio

- Low, - Moderate, - High

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: Walker Ditch 0.6
Stream Segment Location: At end of FCNP Hiking Trail
QHEI Score: 67 HHEI Score: NA

FIELD NOTES: 20 AUG 2002

This section of Walker Ditch is located off a trail in French Creek Reservation Park. The substrate is dominated by gravel and sand with bedrock, silt, boulders and cobbles. The banks range from 2-15' in height. The wide, mature forested upland riparian area is dominated by sugar maple with red oak, black cherry, cottonwood and beech. Frogs, macroinvertebrates and deer were noted. Glyceria was noted on the fringes of the creek channel. A red cardinal flower was noted on a gravel bar.

PHOTOS:



1) Walker Ditch 0.6 – Facing upstream from trail



2) Walker Ditch 0.6 – Facing downstream from trail



Qualitative Habitat Evaluation Index Field Sheet QHEI Score: **67**

River Code: RM: 0.6 Stream: WACKER DITCH
 Date: 8-20-02 Location: AT END OF FRENCH CREEK RESERVATION NATURE TRAIL
 Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

1) SUBSTRATE (Check ONLY Two Substrate TYPE 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>30</u> <u>30</u>	Check ONE (OR 2 & AVERAGE)	Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> BOULDER [9] <u>5</u> <u>5</u>		<input checked="" type="checkbox"/> SAND [6] <u>25</u> <u>25</u>	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> SILT HEAVY [-2]
<input type="checkbox"/> COBBLE [8] <u>10</u> <u>10</u>		<input type="checkbox"/> BEDROCK [5] <u>15</u> <u>15</u>	<input checked="" type="checkbox"/> TILLS [1]	<input type="checkbox"/> SILT MODERATE [-1]
<input type="checkbox"/> HARDPAN [4]		<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/> WETLANDS [0]	<input checked="" 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 type="checkbox"/> SILT [2] <u>15</u> <u>15</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 type="checkbox"/> MODERATE [-1]
			<input type="checkbox"/> LACUSTRINE [0]	<input checked="" type="checkbox"/> NORMAL [0]
			<input type="checkbox"/> SHALE [-1]	<input type="checkbox"/> NONE [1]
			<input type="checkbox"/> COAL FINES [-2]	

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

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	AMOUNT: (Check ONLY One or check 2 and AVERAGE)	Cover
<u>2</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<input type="checkbox"/> EXTENSIVE > 75% [11]	11 Max 20
<u>2</u> OVERHANGING VEGETATION [1]	<u>1</u> ROOTWADS [1]	<input type="checkbox"/> MODERATE 25-75% [7]	
<u>1</u> SHALLOWS (IN SLOW WATER) [1]	<u>2</u> BOULDERS [1]	<input type="checkbox"/> SPARSE 5-25% [3]	
<u>1</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 checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]	<input type="checkbox"/> SNAGGING	14 Max 20
<input checked="" type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> RELOCATION	
<input type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]	<input type="checkbox"/> CANOPY REMOVAL	
<input type="checkbox"/> NONE [1]	<input 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	L R	L R (Per Bank)		
<input checked="" type="checkbox"/> WIDE > 50m [4]	<input checked="" type="checkbox"/> FOREST, SWAMP [3]	<input type="checkbox"/> CONSERVATION TILLAGE [1]	<input type="checkbox"/> URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> NONE/LITTLE [3]		9 Max 10
<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]	<input type="checkbox"/> MINING/CONSTRUCTION [0]	<input checked="" type="checkbox"/> MODERATE [2]		
<input type="checkbox"/> NARROW 5-10 m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]			<input type="checkbox"/> HEAVY/SEVERE [1]		
<input 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]	2 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 checked="" type="checkbox"/> POOL WIDTH < RIFFLE W. [0]	<input checked="" type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> 0.2-0.4m [1]		<input checked="" type="checkbox"/> SLOW [1]	
<input checked="" type="checkbox"/> < 0.2m [POOL=0]	COMMENTS: _____	<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 checked="" 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]	5 Max 8
<input type="checkbox"/> Best Areas 5-10 cm [1]	<input checked="" type="checkbox"/> MAX < 50 [1]	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input checked="" type="checkbox"/> LOW [1]	
<input type="checkbox"/> Best Areas < 5 cm [RIFFLE=0]		<input type="checkbox"/> UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]	10 Max 10
COMMENTS: _____		<input type="checkbox"/> NO RIFFLE [Metric=0]	<input type="checkbox"/> EXTENSIVE [-1]	

6) GRADIENT (ft/mi): 18.5 DRAINAGE AREA (sq.mi.): 2.8
 %POOL: 25 %GLIDE: 10
 %RIFFLE: 35 %RUN: 30

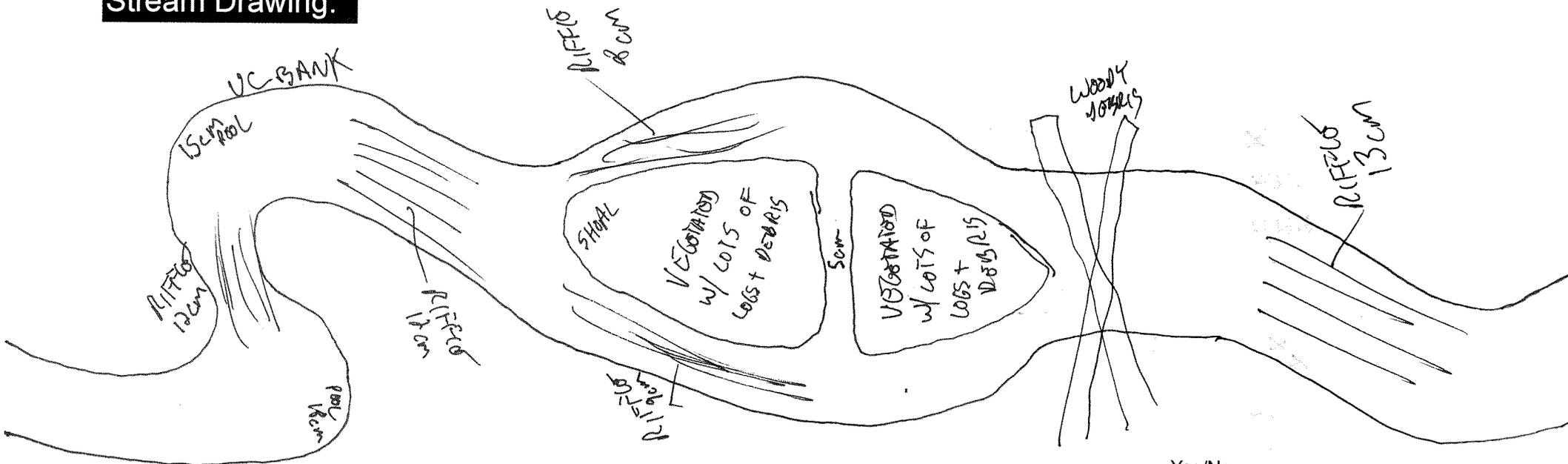
* Best areas must be large enough to support a population of riffle-obligate species

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: _____

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

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: Walker Ditch 1.7

Stream Segment Location: At Abbe Road

QHEI Score: 23

HHEI Score: NA

FIELD NOTES: 21 AUG 2002

This site is located on the west side of Abbe Road immediately north of the railroad tracks. This section of Walker Ditch has been channelized. The channel width is 12' and the water depth averages 15 cm. The channel contains emergent vegetation including duck potato, arrowhead, soft-stem bulrush, sedges and rushes. The south bank has a 15'+/- wide shrub/old field buffer between the channel and railroad tracks. A soybean field is located to the south of the railroad tracks. The north side has a shrub/old field area. Both buffers contain species including gray-stemmed dogwood and Canada goldenrod. A subclimax forest is located 30' +/- to the north of the channel on the north side. This forest contains green ash and red maple. Approximately 400' west of Abbe Road, a residential subdivision replaces the forested area on the north side. Tadpoles and macroinvertebrates were noted in the ditch. The substrate is dominated by silt and muck. Considering the location, this section of the ditch is in remarkably good shape, as there are very few occurrences of invasive species.

PHOTOS:



1) Walker Ditch 1.7 – Facing downstream from Abbe Road



2) Walker Ditch 1.7 – Facing upstream

River Code: RM: 1.7 Stream: WALKER DITCH
 Date: 8-21-02 Location: AT ABBE ROAD
 Scorers Full Name: JAY MILLER Affiliation: USACE - BUFFALO

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

TYPE	POOL RIFFLE	POOL RIFFLE	SUBSTRATE ORIGIN	SUBSTRATE QUALITY
<input type="checkbox"/> -BLDR /SLBS[10] _____	<input type="checkbox"/> -GRAVEL [7] _____	Check ONE (OR 2 & AVERAGE)		Check ONE (OR 2 & AVERAGE)
<input type="checkbox"/> -BOULDER [9] _____	<input type="checkbox"/> -SAND [6] _____	<input type="checkbox"/> -LIMESTONE [1] _____	SILT:	<input checked="" type="checkbox"/> - SILT HEAVY [-2]
<input type="checkbox"/> -COBBLE [8] _____	<input type="checkbox"/> -BEDROCK[5] _____	<input type="checkbox"/> -TILLS [1] _____		<input type="checkbox"/> -SILT MODERATE [-1]
<input type="checkbox"/> -HARDPAN [4] _____	<input type="checkbox"/> -DETRITUS[3] <u>20</u> <u>20</u>	<input checked="" type="checkbox"/> -WETLANDS[0]		<input type="checkbox"/> -SILT NORMAL [0]
<input checked="" type="checkbox"/> -MUCK [2] <u>40</u> <u>40</u>	<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>40</u>	NOTE: Ignore Sludge Originating From Point Sources	<input type="checkbox"/> -SANDSTONE [0] EMBEDDED		<input checked="" type="checkbox"/> -EXTENSIVE [-2]
-----		<input type="checkbox"/> -RIP/RAP [0] _____	NESS:	<input type="checkbox"/> -MODERATE [-1]
NUMBER OF SUBSTRATE TYPES: <input type="checkbox"/> 4 or More [2]	<input checked="" type="checkbox"/> 3 or Less [0]	<input type="checkbox"/> -LACUSTRINE [0] _____		<input type="checkbox"/> -NORMAL [0]
(High Quality Only, Score 5 or >)		<input type="checkbox"/> -SHALE [-1] _____		<input type="checkbox"/> -NONE [1]
COMMENTS: _____		<input type="checkbox"/> -COAL FINES [-2] _____		

Substrate
0
 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	AMOUNT: (Check ONLY One or check 2 and AVERAGE)	Cover
<u>0</u> UNDERCUT BANKS [1]	<u>0</u> POOLS > 70 cm [2]	<u>0</u> OXBOWS, BACKWATERS [1]	<input type="checkbox"/> - EXTENSIVE > 75% [11]
<u>2</u> OVERHANGING VEGETATION [1]	<u>0</u> ROOTWADS [1]	<u>2</u> AQUATIC MACROPHYTES [1]	<input type="checkbox"/> - MODERATE 25-75% [7]
<u>2</u> SHALLOWS (IN SLOW WATER) [1]	<u>0</u> BOULDERS [1]	<u>0</u> LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> - SPARSE 5-25% [3]
<u>0</u> ROOTMATS [1]	COMMENTS: _____		<input type="checkbox"/> - NEARLY ABSENT < 5% [1]

Cover
6
 Max 20

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.	4 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"/> - ISLANDS	
<input type="checkbox"/> - LOW [2]	<input type="checkbox"/> - FAIR [3]	<input type="checkbox"/> - RECOVERING [3]	<input checked="" type="checkbox"/> - LOW [1]	<input type="checkbox"/> - CANOPY REMOVAL <input type="checkbox"/> - LEVEED	
<input checked="" type="checkbox"/> - NONE [1]	<input checked="" type="checkbox"/> - POOR [1]	<input checked="" type="checkbox"/> - RECENT OR NO RECOVERY [1]		<input type="checkbox"/> - DREDGING <input checked="" 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	L R (Per Bank)
<input type="checkbox"/> - WIDE > 50m [4]	<input type="checkbox"/> - FOREST, SWAMP [3]	<input type="checkbox"/> - CONSERVATION TILLAGE [1]	<input checked="" type="checkbox"/> - NONE/LITTLE [3]
<input checked="" type="checkbox"/> - MODERATE 10-50m [3]	<input checked="" type="checkbox"/> - SHRUB OR OLD FIELD [2]	<input checked="" type="checkbox"/> - URBAN OR INDUSTRIAL [0]	<input type="checkbox"/> - MODERATE [2]
<input type="checkbox"/> - NARROW 5-10 m [2]	<input type="checkbox"/> - RESIDENTIAL, PARK, NEW FIELD [1]	<input checked="" type="checkbox"/> - OPEN PASTURE, ROWCROP [0]	<input type="checkbox"/> - HEAVY/SEVERE [1]
<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	MORPHOLOGY	CURRENT VELOCITY (POOLS & RIFFLES!)	Pool/Current
(Check 1 ONLY!)	(Check 1 or 2 & AVERAGE)	(Check All That Apply)	
<input type="checkbox"/> - >1m [6]	<input checked="" type="checkbox"/> - POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> - EDDIES [1] <input type="checkbox"/> - TORRENTIAL [-1]	2 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"/> - INTERSTITIAL [-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"/> - INTERMITTENT [-2]	
<input checked="" type="checkbox"/> - 0.2- 0.4m [1]		<input checked="" type="checkbox"/> - SLOW [1] <input type="checkbox"/> - VERY FAST [1]	
<input type="checkbox"/> - < 0.2m [POOL=0]	COMMENTS: <u>VEGETATED CHANNEL w/ slow and/or STAGNANT FLOW</u>		

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]	0 Max 8
<input 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"/> - LOW [1]	
<input checked="" type="checkbox"/> - Best Areas < 5 cm [RIFFLE=0]		<input checked="" type="checkbox"/> - UNSTABLE (Fine Gravel, Sand) [0]	<input type="checkbox"/> - MODERATE [0]	6 Max 10
COMMENTS: _____		<input type="checkbox"/> - NO RIFFLE [Metric=0]	<input checked="" type="checkbox"/> - EXTENSIVE [-1]	

6) GRADIENT (ft/mi): 6.3 DRAINAGE AREA (sq.mi.): 2.3

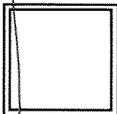
%POOL: 10	%GLIDE: 80
%RIFFLE: 10	%RUN: -

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

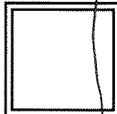
Is Sampling Reach Representative of the Stream (Y/N) ___ If Not, Explain:

VEGETATED CHANNEL

- 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)

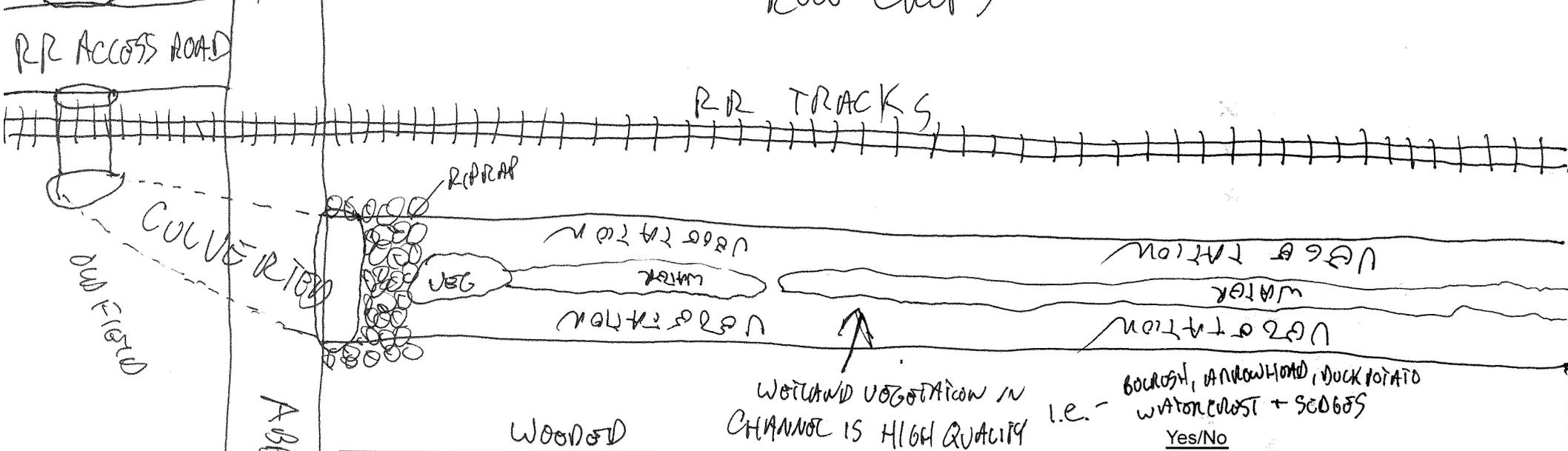
Gradient: - Low, - Moderate, - High

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. 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?