



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 54

Stream & Location: WEST CREEK - SIDE #1

RM: 0.20 Date: 02/26/06

River Code: - - - STORET #: - - - Scorers Full Name & Affiliation: C. Zimborovsky / S. Hodson - NEGRSD
Lat/Long: 41.4145 181.6472 Office verified location

1) **SUBSTRATE** Check ONLY two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		Substrate 15 Maximum 20
<input type="checkbox"/>	BLDR / SLABS [10]	<input type="checkbox"/>		<input type="checkbox"/>	HARDPAN [4]	<input type="checkbox"/>		<input type="checkbox"/>	LIMESTONE [1]	<input type="checkbox"/>	HEAVY [-2]	
<input type="checkbox"/>	BOULDER [9]	<input checked="" type="checkbox"/>		<input type="checkbox"/>	DETRITUS [3]	<input type="checkbox"/>		<input checked="" type="checkbox"/>	TILLS [1]	<input checked="" type="checkbox"/>	MODERATE [-1]	
<input type="checkbox"/>	COBBLE [8]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	MUCK [2]	<input type="checkbox"/>		<input type="checkbox"/>	WETLANDS [0]	<input type="checkbox"/>	NORMAL [0]	
<input checked="" type="checkbox"/>	GRAVEL [7]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SILT [2]	<input checked="" type="checkbox"/>		<input type="checkbox"/>	HARDPAN [0]	<input type="checkbox"/>	FREE [1]	
<input checked="" type="checkbox"/>	SAND [6]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ARTIFICIAL [0]	<input type="checkbox"/>		<input type="checkbox"/>	SANDSTONE [0]	<input type="checkbox"/>	EXTENSIVE [-2]	
<input type="checkbox"/>	BEDROCK [5]							<input type="checkbox"/>	RIP/RAP [0]	<input checked="" type="checkbox"/>	MODERATE [-1]	
				(Score natural substrates; ignore sludge from point-sources)				<input type="checkbox"/>	LACUSTURINE [0]	<input type="checkbox"/>	NORMAL [0]	
								<input type="checkbox"/>	SHALE [-1]	<input type="checkbox"/>	NONE [1]	
								<input type="checkbox"/>	COAL FINES [-2]			

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0]

Comments

2) **INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.)

			AMOUNT				
			Check ONE (Or 2 & average)				
<u>0</u>	<u>UNDERCUT BANKS [1]</u>	<u>2</u>	<u>POOLS > 70cm [2]</u>	<u>0</u>	<u>OXBOWS, BACKWATERS [1]</u>	<input type="checkbox"/>	EXTENSIVE >75% [11]
<u>0</u>	<u>OVERHANGING VEGETATION [1]</u>	<u>1</u>	<u>ROOTWADS [1]</u>	<u>0</u>	<u>AQUATIC MACROPHYTES [1]</u>	<input type="checkbox"/>	MODERATE 25-75% [7]
<u>2</u>	<u>SHALLOWS (IN SLOW WATER) [1]</u>	<u>1</u>	<u>BOULDERS [1]</u>	<u>1</u>	<u>LOGS OR WOODY DEBRIS [1]</u>	<input checked="" type="checkbox"/>	SPARSE 5-<25% [3]
<u>1</u>	<u>ROOTMATS [1]</u>					<input type="checkbox"/>	NEARLY ABSENT <5% [1]

Comments

Cover 10
Maximum 20

3) **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	Channel Maximum 20
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]	
<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"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]	
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input checked="" type="checkbox"/> RECENT OR NO RECOVERY [1]		

Comments

CREEK CROSSES UNDER 2 BRIDGES

4) **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		Riparian Maximum 10	
<input checked="" type="checkbox"/>	NONE / LITTLE [3]	<input type="checkbox"/>	WIDE > 50m [4]	<input type="checkbox"/>	FOREST, SWAMP [3]		<input type="checkbox"/>
<input type="checkbox"/>	MODERATE [2]	<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"/>	HEAVY / SEVERE [1]	<input type="checkbox"/>	NARROW 5-10m [2]	<input type="checkbox"/>	RESIDENTIAL, PARK, NEW FIELD [1]	<input type="checkbox"/>	MINING / CONSTRUCTION [0]
		<input checked="" type="checkbox"/>	VERY NARROW < 5m [1]	<input type="checkbox"/>	FENCED PASTURE [1]	Indicate predominant land use(s) past 100m riparian.	
		<input type="checkbox"/>	NONE [0]	<input type="checkbox"/>	OPEN PASTURE, ROWCROP [0]	3.5	

Comments

5) **POOL / GLIDE AND RIFFLE / RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)
Check ONE (ONLY)	Check ONE (Or 2 & average)	Check ALL that apply	
<input checked="" type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	
<input type="checkbox"/> 0.7-<1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input checked="" type="checkbox"/> SLOW [1]	
<input type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [0]	<input type="checkbox"/> INTERSTITIAL [-1]	
<input type="checkbox"/> 0.2-<0.4m [1]		<input checked="" type="checkbox"/> FAST [1]	<input type="checkbox"/> INTERMITTENT [-2]
<input type="checkbox"/> < 0.2m [0]		<input checked="" type="checkbox"/> MODERATE [1]	<input type="checkbox"/> EDDIES [1]

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: NO RIFFLE [metric=0]

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

Comments

6) GRADIENT (<u>5.4</u> ft/mi)	<input type="checkbox"/> VERY LOW - LOW [2-4]	% POOL: <input type="text"/>	% GLIDE: <input type="text"/>	Gradient Maximum 10 6
DRAINAGE AREA (<u>14.0</u> mi ²)	<input type="checkbox"/> MODERATE [6-10]	% RUN: <input type="text"/>	% RIFFLE: <input type="text"/>	

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

AJ SAMPLED REACH

Check ALL that apply

METHOD

- BOAT
- WADE
- L-LINE
- OTHER

DISTANCE

- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

STAGE

- 1st - sample pass - 2nd
- HIGH
- UP
- NORMAL
- LOW
- DRY

CLARITY

- 1st - sample pass - 2nd
- < 20 cm
- 20-40 cm
- 40-70 cm
- > 70 cm / CTB
- SECCHI DEPTH

CANOPY

- > 85% - OPEN
- 55% - 85%
- 30% - 55%
- 10% - 30%
- < 10% - CLOSED

CJ RECREATION

AREA DEPTH
POOL: > 100Rz > 3R

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs / ISSOs / OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMOURED / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

EJ ISSUES

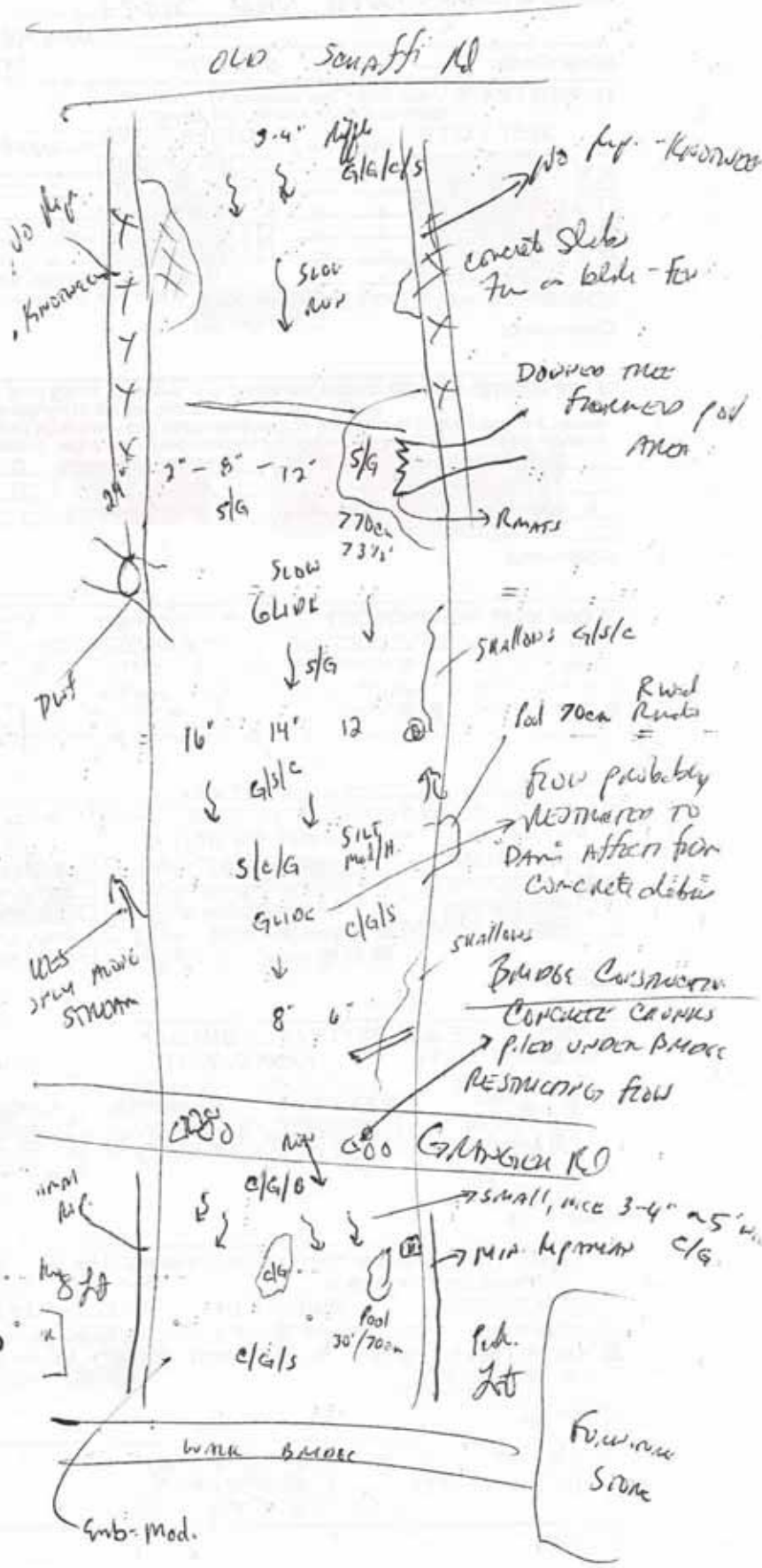
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT & GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- width
- depth
- max. depth
- bankfull width
- bankfull depth
- W/D ratio
- bankfull max. depth
- floodprone x² width
- entrench. ratio

Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **51.25**

Stream & Location: WEST CREEK - SIDE #2

RM: 0.25 Date: 09/26/06

River Code: - STORET #: -

Scorers Full Name & Affiliation: C. Zimorsky / S. Horton - NEDASD

Lat./ Long.: 41.4137 / 81.6476

Office verified location

1) SUBSTRATE

Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

- | BEST TYPES | | OTHER TYPES | |
|--|--------------------------------------|---|--------------------------------------|
| <input type="checkbox"/> BLDR / SLABS [10] | <input type="checkbox"/> POOL RIFFLE | <input type="checkbox"/> HARDPAN [4] | <input type="checkbox"/> POOL RIFFLE |
| <input type="checkbox"/> BOULDER [9] | <input checked="" type="checkbox"/> | <input type="checkbox"/> DETRITUS [3] | <input type="checkbox"/> |
| <input type="checkbox"/> COBBLE [8] | <input checked="" type="checkbox"/> | <input type="checkbox"/> MUCK [2] | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> GRAVEL [7] | <input checked="" type="checkbox"/> | <input type="checkbox"/> SILT [2] | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> SAND [6] | <input checked="" type="checkbox"/> | <input type="checkbox"/> ARTIFICIAL [0] | <input type="checkbox"/> |
| <input type="checkbox"/> BEDROCK [5] | <input type="checkbox"/> | | |

- Check ONE (Or 2 & average)
- | ORIGIN | QUALITY |
|--|---|
| <input type="checkbox"/> LIMESTONE [1] | <input type="checkbox"/> HEAVY [-2] |
| <input type="checkbox"/> TILLS [1] | <input checked="" type="checkbox"/> MODERATE [-1] |
| <input type="checkbox"/> WETLANDS [0] | <input type="checkbox"/> NORMAL [0] |
| <input type="checkbox"/> HARDPAN [0] | <input type="checkbox"/> FREE [1] |
| <input type="checkbox"/> SANDSTONE [0] | <input type="checkbox"/> EXTENSIVE [-2] |
| <input type="checkbox"/> RIP/RAP [0] | <input checked="" type="checkbox"/> MODERATE [-1] |
| <input type="checkbox"/> LACUSTURINE [0] | <input type="checkbox"/> NORMAL [0] |
| <input type="checkbox"/> SHALE [-1] | <input type="checkbox"/> NONE [1] |
| <input type="checkbox"/> COAL FINES [-2] | |

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0]

Comments

Substrate
15
Maximum 20

2) INSTREAM COVER

Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

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

- Check ONE (Or 2 & average)
- | |
|---|
| <input type="checkbox"/> EXTENSIVE >75% [1] |
| <input checked="" type="checkbox"/> MODERATE 25-75% [7] |
| <input checked="" type="checkbox"/> SPARSE 5-<25% [3] |
| <input type="checkbox"/> NEARLY ABSENT <5% [1] |

Comments

Cover
Maximum 20
13

3) CHANNEL MORPHOLOGY

Check ONE in each category (Or 2 & average)

- | SINUOSITY | DEVELOPMENT | CHANNELIZATION | STABILITY |
|---|--|---|--|
| <input type="checkbox"/> HIGH [4] | <input type="checkbox"/> EXCELLENT [7] | <input type="checkbox"/> NONE [6] | <input type="checkbox"/> HIGH [3] |
| <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"/> LOW [2] | <input type="checkbox"/> FAIR [3] | <input type="checkbox"/> RECOVERING [3] | <input type="checkbox"/> LOW [1] |
| <input type="checkbox"/> NONE [1] | <input checked="" type="checkbox"/> POOR [1] | <input checked="" type="checkbox"/> RECENT OR NO RECOVERY [1] | |

Comments

Channel
Maximum 20
6

4) BANK EROSION AND RIPARIAN ZONE

Check ONE in each category for EACH BANK (Or 2 per bank & average)

- River right looking downstream
- | EROSION | RIPARIAN WIDTH | FLOOD PLAIN QUALITY |
|---|--|---|
| <input checked="" type="checkbox"/> NONE / LITTLE [3] | <input type="checkbox"/> WIDE > 50m [4] | <input type="checkbox"/> FOREST, SWAMP [3] |
| <input type="checkbox"/> MODERATE [2] | <input type="checkbox"/> MODERATE 10-50m [3] | <input type="checkbox"/> SHRUB OR OLD FIELD [2] |
| <input type="checkbox"/> HEAVY / SEVERE [1] | <input type="checkbox"/> NARROW 5-10m [2] | <input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1] |
| | <input checked="" type="checkbox"/> VERY NARROW < 5m [1] | <input type="checkbox"/> FENCED PASTURE [1] |
| | <input checked="" type="checkbox"/> NONE [0] | <input type="checkbox"/> OPEN PASTURE, ROWCROP [0] |
- Indicate predominant land use(s) past 100m riparian.
- | |
|---|
| <input type="checkbox"/> CONSERVATION TILLAGE [1] |
| <input type="checkbox"/> URBAN OR INDUSTRIAL [0] |
| <input checked="" type="checkbox"/> MINING / CONSTRUCTION [0] |

Comments

Riparian
Maximum 10
3.25

5) POOL / GLIDE AND RIFFLE / RUN QUALITY

- | MAXIMUM DEPTH | CHANNEL WIDTH | CURRENT VELOCITY |
|---|---|--|
| Check ONE (ONLY) | Check ONE (Or 2 & average) | Check ALL that apply |
| <input type="checkbox"/> > 1m [6] | <input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2] | <input type="checkbox"/> TORRENTIAL [-1] |
| <input checked="" type="checkbox"/> 0.7-<1m [4] | <input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1] | <input type="checkbox"/> VERY FAST [1] |
| <input type="checkbox"/> 0.4-<0.7m [2] | <input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [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 [0] | | <input type="checkbox"/> SLOW [1] |
| | | <input type="checkbox"/> INTERSTITIAL [-1] |
| | | <input type="checkbox"/> INTERMITTENT [-2] |
| | | <input type="checkbox"/> EDDIES [1] |
- Indicate for reach - pools and riffles.

Comments

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Pool / Current
Maximum 12
8

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: NO RIFFLE [metric=0]

- | RIFFLE DEPTH | RUN DEPTH | RIFFLE / RUN SUBSTRATE | RIFFLE / RUN EMBEDDEDNESS |
|--|--|---|--|
| <input type="checkbox"/> BEST AREAS > 10cm [2] | <input type="checkbox"/> MAXIMUM > 50cm [2] | <input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] | <input type="checkbox"/> NONE [2] |
| <input type="checkbox"/> BEST AREAS 5-10cm [1] | <input checked="" type="checkbox"/> MAXIMUM < 50cm [1] | <input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] | <input type="checkbox"/> LOW [1] |
| <input type="checkbox"/> BEST AREAS < 5cm [metric=0] | | <input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0] | <input type="checkbox"/> MODERATE [0] |
| | | | <input checked="" type="checkbox"/> EXTENSIVE [-1] |

Comments

Riffle / Run
Maximum 8
0

- 6) GRADIENT (5.4 ft/mi) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]
- DRAINAGE AREA (14.0 mi²)

%POOL: %GLIDE:
%RUN: %RIFFLE:

Gradient
Maximum 10
6

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

AJ SAMPLED REACH
Check ALL that apply

- METHOD**
- BOAT
 - WADE
 - L. LINE
 - OTHER
- STAGE**
- 1st - sample pass - 2nd
- HIGH
 - UP
 - NORMAL
 - LOW
 - DRY

- DISTANCE**
- 0.5 Km
 - 0.2 Km
 - 0.15 Km
 - 0.12 Km
 - OTHER

- CLARITY**
- 1st - sample pass - 2nd
- < 20 cm
 - 20-40 cm
 - 40-70 cm
 - > 70 cm / CTB
 - SECCHI DEPTH
- 1st _____ cm
- 2nd _____ cm

- CANOPY**
- > 85% - OPEN
 - 55% - 85%
 - 30% - 55%
 - 10% - 30%
 - < 10% - CLOSED

CJ RECREATION

- POOL: > 100ft² > 3ft

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL / SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMORED / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

EJ ISSUES

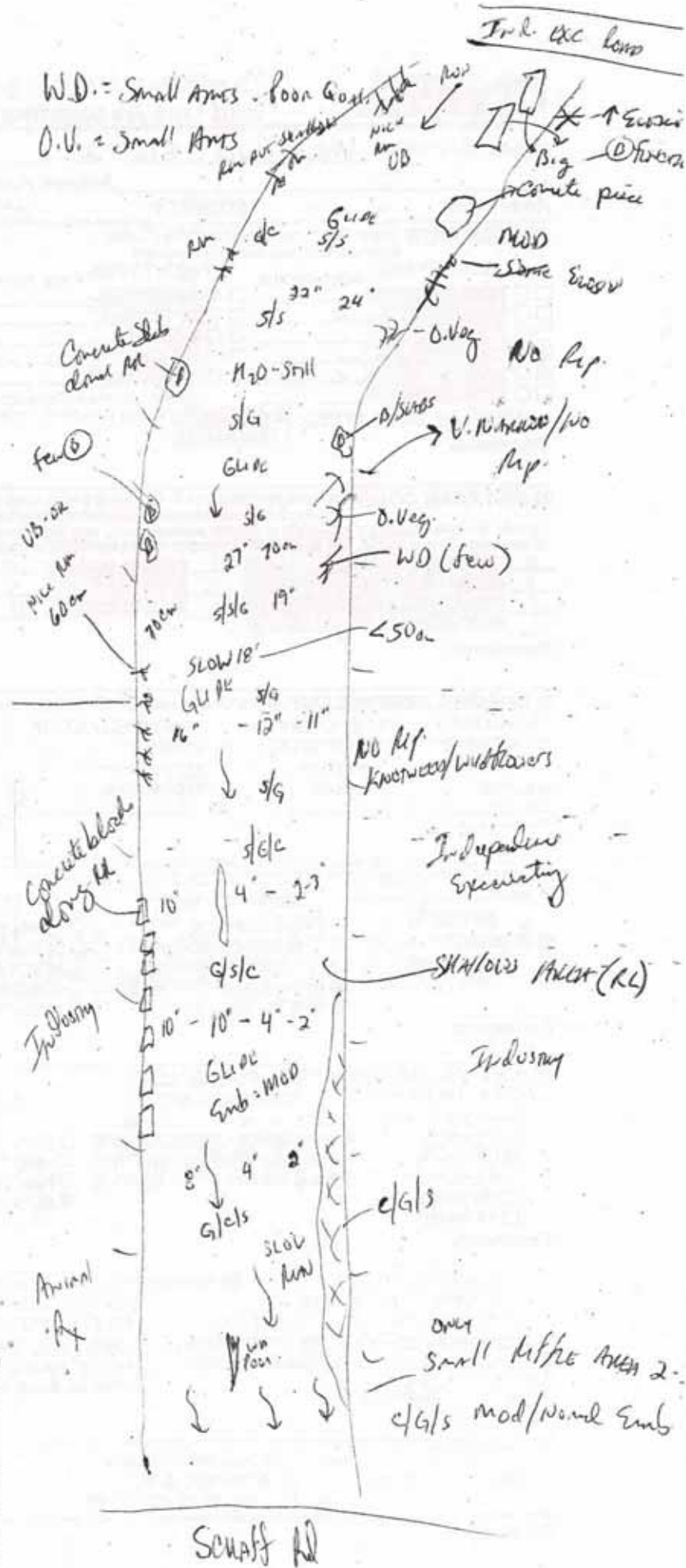
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT & GRIME
- CONTAMINATED / LANDFILL
- BMPs - CONSTRUCTION - SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- \bar{x} width
- \bar{x} depth
- max. depth
- \bar{x} bankfull width
- bankfull \bar{x} depth
- W/D ratio
- bankfull max. depth
- floodprone \bar{x}^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **60.25**

Stream & Location: WEST CREEK - SIDE #3

RM: 0.4 Date: 07/26/06

Scorers Full Name & Affiliation: C. Zamborsky / S. Ibrahim - NEDSO

River Code: -

STORET #: -

Lat/ Long: 41.4118 181.6470

Office verified location

1) **SUBSTRATE** Check ONLY two substrate TYPE BOXES; estimate % or note every type present

Check ONE (Or 2 & average)

- | BEST TYPES | | OTHER TYPES | |
|--|--------------------------------------|---|--------------------------------------|
| <input type="checkbox"/> BLDR / SLABS [10] | <input type="checkbox"/> POOL RIFFLE | <input type="checkbox"/> HARDPAN [4] | <input type="checkbox"/> POOL RIFFLE |
| <input type="checkbox"/> BOULDER [9] | <input checked="" type="checkbox"/> | <input type="checkbox"/> DETRITUS [3] | <input type="checkbox"/> |
| <input type="checkbox"/> COBBLE [8] | <input checked="" type="checkbox"/> | <input type="checkbox"/> MUCK [2] | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> GRAVEL [7] | <input checked="" type="checkbox"/> | <input type="checkbox"/> SILT [2] | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> SAND [6] | <input checked="" type="checkbox"/> | <input type="checkbox"/> ARTIFICIAL [0] | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> BEDROCK [5] | <input type="checkbox"/> | | |

ORIGIN

- LIMESTONE [1]
- TILLS [1]
- WETLANDS [0]
- HARDPAN [0]
- SANDSTONE [0]
- RIP/RAP [0]
- LACUSTURINE [0]
- SHALE [-1]
- COAL FINES [-2]

SILT

EMBEDDEDNESS

QUALITY

- HEAVY [-2]
- MODERATE [-1]
- NORMAL [0]
- FREE [1]
- EXTENSIVE [-2]
- MODERATE [-1]
- NORMAL [0]
- NONE [1]

Substrate

Maximum 20

NUMBER OF BEST TYPES: 4 or more [2]

3 or less [0]

Comments

2) **INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.)

AMOUNT

Check ONE (Or 2 & average)

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> UNDERCUT BANKS [1] | <input type="checkbox"/> POOLS > 70cm [2] | <input type="checkbox"/> OXBOWS, BACKWATERS [1] |
| <input type="checkbox"/> OVERHANGING VEGETATION [1] | <input type="checkbox"/> ROOTWADS [1] | <input type="checkbox"/> AQUATIC MACROPHYTES [1] |
| <input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1] | <input type="checkbox"/> BOULDERS [1] | <input type="checkbox"/> LOGS OR WOODY DEBRIS [1] |
| <input checked="" type="checkbox"/> ROOTMATS [1] | | |

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

Cover

Maximum 20

Comments

3) **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

- | SINUOSITY | DEVELOPMENT | CHANNELIZATION | STABILITY |
|--|--|--|--|
| <input type="checkbox"/> HIGH [4] | <input type="checkbox"/> EXCELLENT [7] | <input type="checkbox"/> NONE [6] | <input type="checkbox"/> HIGH [3] |
| <input checked="" type="checkbox"/> MODERATE [3] | <input checked="" type="checkbox"/> GOOD [5] | <input type="checkbox"/> RECOVERED [4] | <input checked="" type="checkbox"/> MODERATE [2] |
| <input type="checkbox"/> LOW [2] | <input type="checkbox"/> FAIR [3] | <input checked="" type="checkbox"/> RECOVERING [3] | <input type="checkbox"/> LOW [1] |
| <input type="checkbox"/> NONE [1] | <input type="checkbox"/> POOR [1] | <input type="checkbox"/> RECENT OR NO RECOVERY [1] | |

Channel

Maximum 20

Comments

4) **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

- | EROSION | | RIPARIAN WIDTH | | FLOOD PLAIN QUALITY | |
|--|---|--|--|---|--|
| <input type="checkbox"/> NONE / LITTLE [3] | <input type="checkbox"/> MODERATE [2] | <input type="checkbox"/> WIDE > 50m [4] | <input type="checkbox"/> MODERATE 10-50m [3] | <input type="checkbox"/> FOREST, SWAMP [3] | <input type="checkbox"/> SHRUB OR OLD FIELD [2] |
| <input type="checkbox"/> MODERATE [2] | <input type="checkbox"/> HEAVY / SEVERE [1] | <input type="checkbox"/> NARROW 5-10m [2] | <input checked="" type="checkbox"/> VERY NARROW < 5m [1] | <input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1] | <input type="checkbox"/> FENCED PASTURE [1] |
| | | <input checked="" type="checkbox"/> NONE [0] | | <input type="checkbox"/> OPEN PASTURE, ROWCROP [0] | <input type="checkbox"/> CONSERVATION TILLAGE [1] |
| | | | | | <input type="checkbox"/> URBAN OR INDUSTRIAL [0] |
| | | | | | <input type="checkbox"/> MINING / CONSTRUCTION [0] |

Indicate predominant land use(s) past 100m riparian.

Riparian

Maximum 10

Comments

5) **POOL / GLIDE AND RIFFLE / RUN QUALITY**

MAXIMUM DEPTH

Check ONE (ONLY)

- > 1m [6]
- 0.7-<1m [4]
- 0.4-<0.7m [2]
- 0.2-<0.4m [1]
- < 0.2m [0]

CHANNEL WIDTH

Check ONE (Or 2 & average)

- POOL WIDTH > RIFFLE WIDTH [2]
- POOL WIDTH = RIFFLE WIDTH [1]
- POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply

- TORRENTIAL [-1]
- VERY FAST [1]
- FAST [1]
- MODERATE [1]
- SLOW [1]
- INTERSTITIAL [-1]
- INTERMITTENT [-2]
- EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential

Primary Contact

Secondary Contact

(circle one and comment on back)

Pool / Current

Maximum 12

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

Check ONE (Or 2 & average).

NO RIFFLE [metric=0]

- | RIFFLE DEPTH | RUN DEPTH | RIFFLE / RUN SUBSTRATE | RIFFLE / RUN EMBEDDEDNESS |
|---|--|--|---|
| <input checked="" type="checkbox"/> BEST AREAS > 10cm [2] | <input type="checkbox"/> MAXIMUM > 50cm [2] | <input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2] | <input type="checkbox"/> NONE [2] |
| <input checked="" type="checkbox"/> BEST AREAS 5-10cm [1] | <input checked="" type="checkbox"/> MAXIMUM < 50cm [1] | <input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1] | <input checked="" type="checkbox"/> LOW [1] |
| <input type="checkbox"/> BEST AREAS < 5cm [metric=0] | | <input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0] | <input type="checkbox"/> MODERATE [0] |
| | | | <input type="checkbox"/> EXTENSIVE [-1] |

Riffle / Run

Maximum 8

Comments

- 6) **GRADIENT** (5.4 ft/mi) VERY LOW - LOW [2-4]
- DRAINAGE AREA** (14.0 mi²) MODERATE [6-10]
- HIGH - VERY HIGH [10-6]

- %POOL: %GLIDE:
- %RUN: %RIFFLE:

Gradient

Maximum 10

AJ SAMPLED REACH

Check ALL that apply

METHOD

- BOAT
- WADE
- L. LINE
- OTHER

DISTANCE

- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

CLARITY

- 1st - sample pass - 2nd
- < 20 cm
- 20-40 cm
- 40-70 cm
- > 70 cm / CTB
- SECCHI DEPTH

meters

CANOPY

- > 85% - OPEN
- 55% - 85%
- 30% - 55%
- 10% - 30%
- < 10% - CLOSED

CJ RECREATION

AREA DEPTH
POOL: > 100R2 > 3R

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL-SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- GSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMORED / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

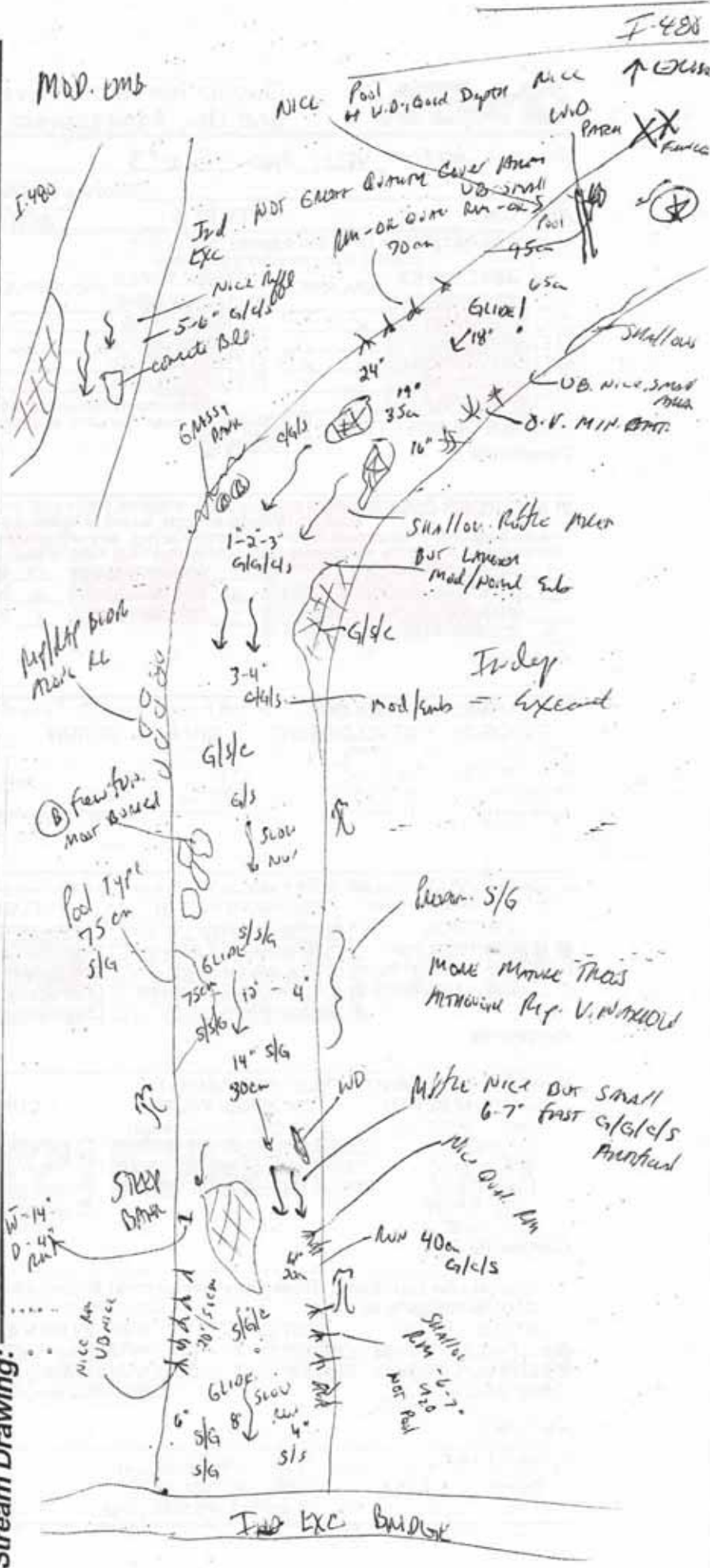
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT & GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- X width
- X depth
- max. depth
- X bankfull width
- bankfull X depth
- W/D ratio
- bankfull max. depth
- floodprone X² width
- entrench. ratio

Legacy Tree:

Stream Drawing:



Stream & Location: West Creek - Site #4

RM: 05 Date: 09/27/06

Scorers Full Name & Affiliation: Catherine Zimbalisky - NADSP

River Code: STORET #: Lat/Long: 41.4095 181.6478 Office verified location

1) SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

Substrate assessment grid with categories: BEST TYPES, OTHER TYPES, ORIGIN, QUALITY, and NUMBER OF BEST TYPES. Includes checkboxes for various substrate types like BLDR/SLABS, COBBLE, SAND, BEDROCK, etc.

2) INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

Instream Cover assessment grid with categories: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS, and AMOUNT. Includes checkboxes for cover types and amount levels.

3) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

Channel Morphology assessment grid with categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY, and AMOUNT. Includes checkboxes for channel characteristics and amount levels.

4) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

Bank Erosion and Riparian Zone assessment grid with categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY, and AMOUNT. Includes checkboxes for erosion levels, riparian width, and flood plain quality.

5) POOL / GLIDE AND RIFFLE / RUN QUALITY

Pool / Glide and Riffle / Run Quality assessment grid with categories: MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY, and Recreation Potential. Includes checkboxes for depth, width, velocity, and recreation potential.

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average). NO RIFFLE [metric=0]

Riffle / Run Quality assessment grid with categories: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS, and AMOUNT. Includes checkboxes for riffle/run characteristics and amount levels.

Gradient assessment grid with categories: GRADIENT, DRAINAGE AREA, and AMOUNT. Includes checkboxes for gradient levels and drainage area.

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

AJ SAMPLED REACH

Check ALL that apply

METHOD

- BOAT
- WADE
- LINE
- OTHER

STAGE

- 1st-sample pass-2nd
- HIGH
- UP
- NORMAL
- LOW
- DRY

DISTANCE

- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

CLARITY

- 1st --sample pass-- 2nd
- < 20 cm
- 20-240 cm
- 40-70 cm
- > 70 cm/ CTB
- SECCHI DEPTH

meters

CANOPY

- > 85% - OPEN
- 55% - 85%
- 30% - 55%
- 10% - 30%
- < 10% - CLOSED

CJ RECREATION

AREA DEPTH POOL: < 100ft² > 3ft

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM/ SCUM
- OIL SHEEN
- TRASH/ LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/ ISSOs/ OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMORED / SLUMPS
- ISLANDS / SCOURED
- FLOOD CONTROL / DRAINAGE

EJ ISSUES

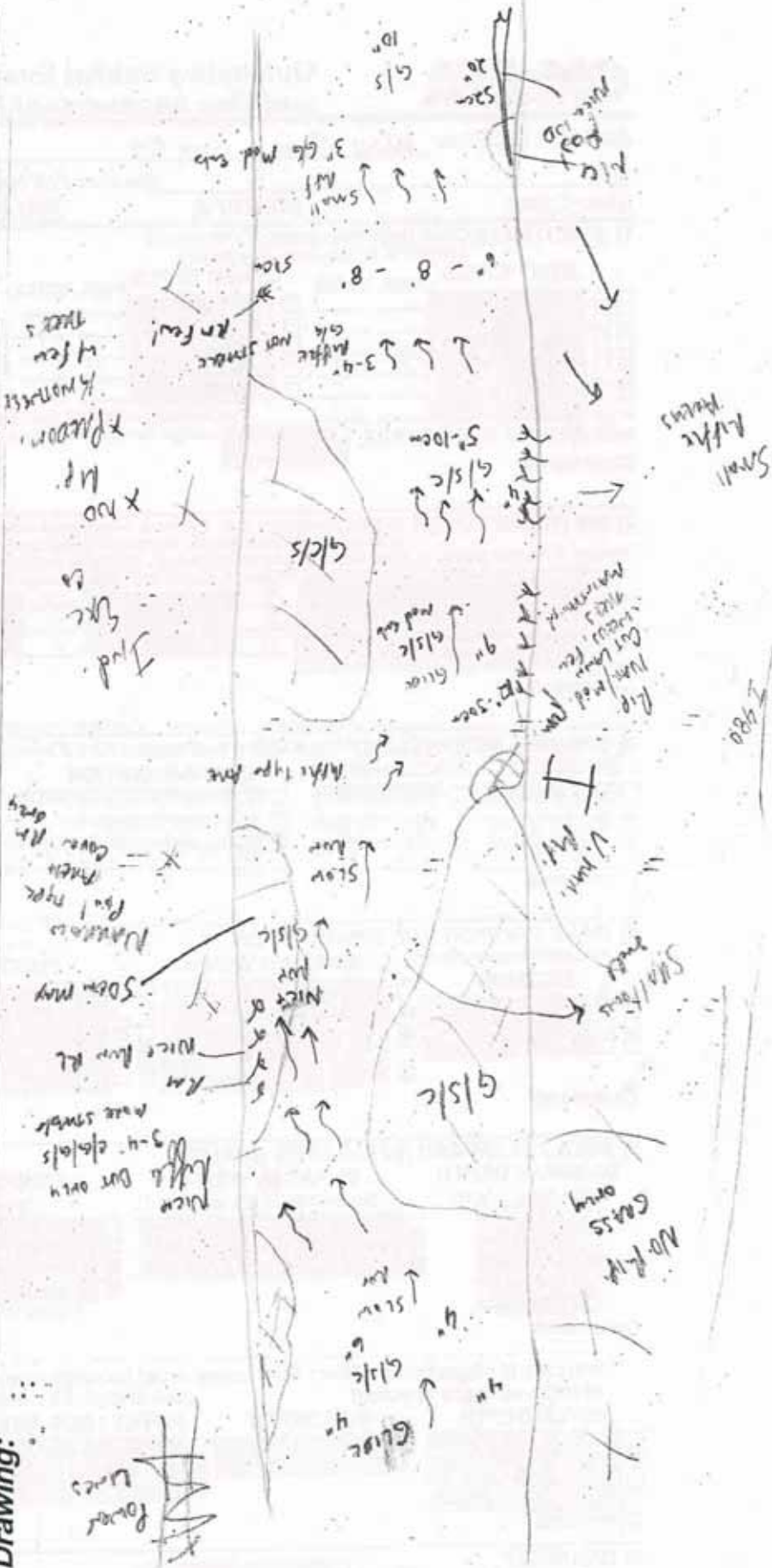
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT & GRIME
- CONTAMINATED / LANDFILL
- BMPs - CONSTRUCTION - SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- width
- depth
- max. depth
- bankfull width
- bankfull x depth
- W/D ratio
- bankfull max. depth
- floodprone x width
- entrench. ratio

Legacy Tree:

Stream Drawing:



Stream & Location: West Creek - Site #5 RM: 1.00 Date: 09/27/06

River Code: STORET #: Scorers Full Name & Affiliation: Catherine Zamorsky - NEORSD Office verified location

1) SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present. Includes categories: BEST TYPES, POOL RIFFLE, OTHER TYPES, POOL RIFFLE, ORIGIN, QUALITY, and EMBEDDEDNESS.

2) INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts... Includes categories: UNDERCUT BANKS, OVERHANGING VEGETATION, SHALLOWS, ROOTMATS, POOLS, ROOTWADS, BOULDERS, OXBOWS, BACKWATERS, AQUATIC MACROPHYTES, LOGS OR WOODY DEBRIS.

3) CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average). Includes categories: SINUOSITY, DEVELOPMENT, CHANNELIZATION, STABILITY.

4) BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average). Includes categories: EROSION, RIPARIAN WIDTH, FLOOD PLAIN QUALITY.

5) POOL / GLIDE AND RIFFLE / RUN QUALITY MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY. Includes categories: MAXIMUM DEPTH, CHANNEL WIDTH, CURRENT VELOCITY, Recreation Potential.

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: RIFFLE DEPTH, RUN DEPTH, RIFFLE / RUN SUBSTRATE, RIFFLE / RUN EMBEDDEDNESS.

6) GRADIENT (5.4 ft/mi) DRAINAGE AREA (12.5 mi^2). Includes categories: GRADIENT, DRAINAGE AREA, % POOL, % GLIDE, % RUN, % RIFFLE.



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **38.75**

Stream & Location: WEST CREEK - Side #6 RM: 1.10 Date: 07/27/06

River Code: - - - STORET #: - - - Scorers Full Name & Affiliation: CHRISTINE ZAMBONISKY - NEORSP Office verified location
Lat./ Long.: 41.4097 181.6570 (NAD 83 - decimal)

1) **SUBSTRATE** Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL RIFFLE	OTHER TYPES	POOL RIFFLE	ORIGIN	QUALITY
<input type="checkbox"/> BLDR/SLABS [10]	<input checked="" type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/>	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> HEAVY [-2]
<input type="checkbox"/> BOULDER [9]	<input checked="" type="checkbox"/>	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/>	<input type="checkbox"/> TILLS [1]	<input type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> COBBLE [8]	<input checked="" type="checkbox"/>	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/>	<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/> NORMAL [0]
<input type="checkbox"/> GRAVEL [7]	<input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [2]	<input type="checkbox"/>	<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/> FREE [1]
<input type="checkbox"/> SAND [6]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ARTIFICIAL [0]	<input checked="" type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> EXTENSIVE [-2]
<input type="checkbox"/> BEDROCK [5]	<input type="checkbox"/>	(Score natural substrates; ignore sludge from point-sources)		<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/> MODERATE [-1]

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0]

Comments: SUBSTRATE PREDOMINANTLY ARTIFICIAL (i.e. CONCRETE)

2) **INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.)

<input type="checkbox"/> UNDERCUT BANKS [1]	<input type="checkbox"/> POOLS > 70cm [2]	<input type="checkbox"/> OXBOWS, BACKWATERS [1]	AMOUNT
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> AQUATIC MACROPHYTES [1]	Check ONE (Or 2 & average)
<input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
<input type="checkbox"/> ROOTMATS [1]			<input type="checkbox"/> MODERATE 25-75% [7]
			<input type="checkbox"/> SPARSE 5-25% [3]
			<input type="checkbox"/> NEARLY ABSENT <5% [1]

Comments: COVER MAXIMUM 20

3) **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments: CHANNEL MAXIMUM 20

4) **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]
<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]
<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]
	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]

Comments: RIVER LEFT RIPARIAN = LANDFILL

5) **POOL / GLIDE AND RIFFLE / RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	Primary Contact
<input type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	Secondary Contact
<input type="checkbox"/> 0.7-1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	(circle one and comment on back)
<input type="checkbox"/> 0.4-0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> 0.2-0.4m [1]		<input type="checkbox"/> MODERATE [1]	Pool / Current
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> INTERSTITIAL [-1]	Maximum 12
		<input type="checkbox"/> INTERMITTENT [-2]	
		<input type="checkbox"/> EDDIES [1]	

Comments: NO RIFFLE [metric=0]

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (Or 2 & average).

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments: RIFFLE / RUN MAXIMUM 8

6) **GRADIENT** (5.4 ft/mi) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (10.4 mi²)

%POOL: %GLIDE:
%RUN: %RIFFLE:

Comments: GRADIENT MAXIMUM 10

AJ SAMPLED REACH
Check ALL that apply

METHOD

- BOAT WADE L. LINE OTHER

DISTANCE

- 0.5 Km 0.2 Km 0.15 Km 0.12 Km OTHER

CLARITY

- 1st - sample pass - 2nd
 < 20 cm
 20-40 cm
 40-70 cm
 > 70 cm / CTB
 SECCHI DEPTH

CANOPY

- 1st _____ cm
 2nd _____ cm
 > 85% - OPEN
 55% - 85%
 30% - 55%
 10% - 30%
 < 10% - CLOSED

CJ RECREATION

- AREA DEPTH POOL: > 100ft² > 3ft

Comment RE: Reach consistency/ Is reach typical of stream?, Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM/ SCUM
- OIL- SHEEN
- TRASH/ LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMOURED / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

EJ ISSUES

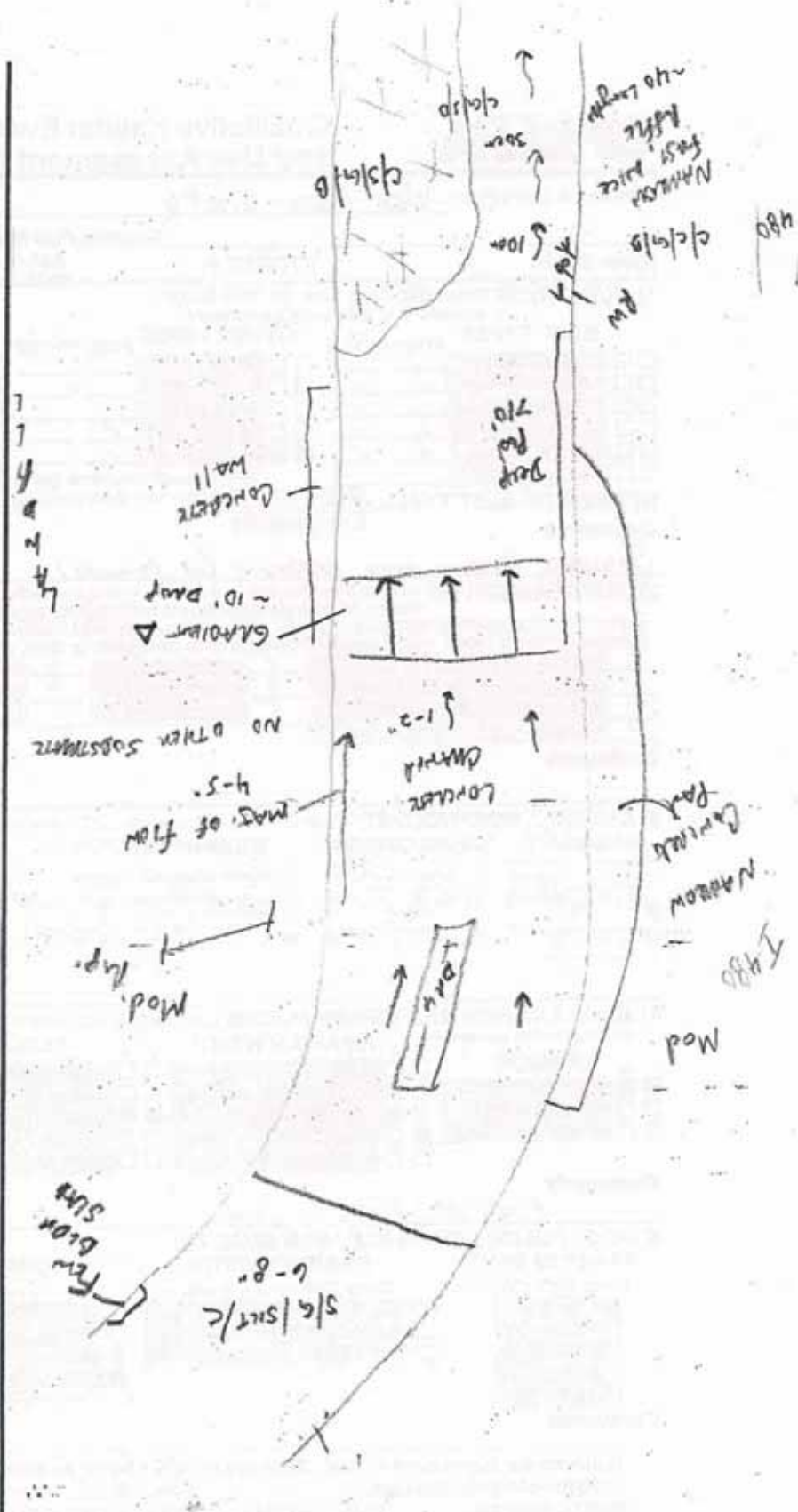
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- X width
- X depth
- max. depth
- X bankfull width
- bankfull X depth
- W/D ratio
- bankfull max. depth
- floodprone X² width
- entrench. ratio

Legacy Tree:

Stream Drawing:



*SOME TREES AFTER
SOUTH AS OF CURRENT POINT*



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **46.75**

Stream & Location: WEST CREEK - SITE #8

RM: L6 Date: 09/27/06

Scorers Full Name & Affiliation: CATHERINE ZAMBORSKY - NEDRSD

River Code: - STORET #: -

Lat/Long: 41.4144 181.6618

Office verified location

1] SUBSTRATE

Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

Check ONE (Or 2 & average)

BEST TYPES		POOL RIFFLE		OTHER TYPES		POOL RIFFLE		ORIGIN		QUALITY		Substrate Maximum 20
<input type="checkbox"/>	BLDR/SLABS [10]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	HARDPAN [4]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LIMESTONE [1]	<input type="checkbox"/>	HEAVY [-2]	
<input type="checkbox"/>	BOULDER [9]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DETRITUS [3]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	TILLS [1]	<input type="checkbox"/>	MODERATE [-1]	
<input type="checkbox"/>	COBBLE [8]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	MUCK [2]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WETLANDS [0]	<input type="checkbox"/>	NORMAL [0]	
<input type="checkbox"/>	GRAVEL [7]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SILT [2]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HARDPAN [0]	<input type="checkbox"/>	FREE [1]	
<input type="checkbox"/>	SAND [6]	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ARTIFICIAL [0]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SANDSTONE [0]	<input type="checkbox"/>	EXTENSIVE [-2]	
<input type="checkbox"/>	BEDROCK [5]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RIP/RAP [0]	<input type="checkbox"/>	MODERATE [-1]	

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0]

Comments: (Score natural substrates; ignore sludge from point-sources)

2] INSTREAM COVER

Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

AMOUNT

Check ONE (Or 2 & average)

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

Comments: Pool AREAS POOLY DEFINED

Channel Maximum 20 **9**

3] CHANNEL MORPHOLOGY

Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments: Pool AREAS POOLY DEFINED

4] BANK EROSION AND RIPARIAN ZONE

Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]
<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]
<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]
	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]

Comments: Pool AREAS POOLY DEFINED

Channel Maximum 20 **9**

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	Primary Contact
<input type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	Secondary Contact
<input type="checkbox"/> 0.7-<1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> SLOW [1]	(circle one and comment on back)
<input type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> VERY FAST [1]	
<input type="checkbox"/> 0.2-<0.4m [1]		<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> MODERATE [1]	

Comments: Pool AREAS POOLY DEFINED

Pool / Current Maximum 12 **5**

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]

Comments: Pool AREAS POOLY DEFINED

Riffle / Run Maximum 8 **4**

6] GRADIENT (33.3 ft/mi) VERY LOW - LOW [2-4] %POOL: %GLIDE:

DRAINAGE AREA (9.2 mi²) MODERATE [6-10] %RUN: %RIFFLE:

HIGH - VERY HIGH [10-6] Gradient Maximum 10 **6**

Comment RE: Reach consistency/ Is reach typical of stream? , Recreation/ Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

AJ SAMPLED REACH

Check ALL that apply

METHOD

- BOAT
- WADE
- L. LINE
- OTHER

DISTANCE

- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

STAGE

- 1st -sample pass-- 2nd
- HIGH
 - UP
 - NORMAL
 - LOW
 - DRY

CLARITY

- 1st -sample pass-- 2nd
- < 20 cm
 - 20-40 cm
 - 40-70 cm
 - > 70 cm / CTB
 - SECCHI DEPTH

CANOPY

- > 85% - OPEN
- 55% - < 85%
- 30% - < 55%
- 10% - < 30%
- < 10% - CLOSED

CJ RECREATION

- AREA DEPTH
- POOL: > 100R2 > 3R

BJ AESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM / SCUM
- OIL SHEEN
- TRASH / LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/ISSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMoured / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

EJ ISSUES

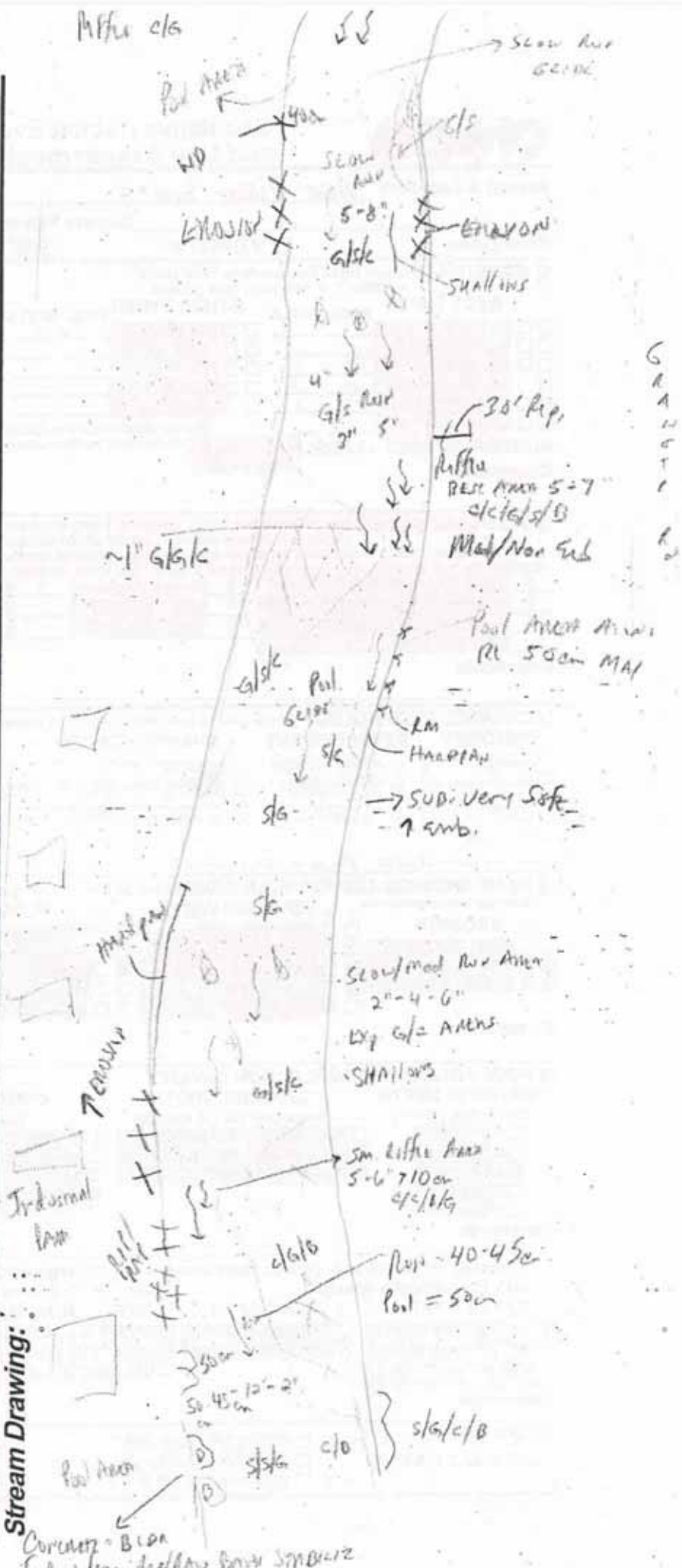
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT & GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H2O / TILE / H2O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- X width
- X depth
- max. depth
- X bankfull width
- bankfull X depth
- W/D ratio
- bankfull max. depth
- floodprone X2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 42.5

Stream & Location: WEST CREEK - SITE # 9A

RM: 2.10 **Date:** 07/27/06

River Code: - - **STORET #:** - - **Scorers Full Name & Affiliation:** Chitra Zimolusky - NEDAP
Lat./ Long.: 41.4134 181.6706 (NAD 83 - decimal) **Office verified location**

1] SUBSTRATE Check **ONLY** Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL RIFFLE	OTHER TYPES	POOL RIFFLE	ORIGIN	QUALITY
<input type="checkbox"/> BLDR/SLABS [10]	<input checked="" type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/>	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> HEAVY [-2]
<input type="checkbox"/> BOULDER [9]	<input checked="" type="checkbox"/>	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/>	<input type="checkbox"/> TILLS [1]	<input type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> COBBLE [8]	<input checked="" type="checkbox"/>	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/>	<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/> NORMAL [0]
<input type="checkbox"/> GRAVEL [7]	<input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [2]	<input type="checkbox"/>	<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/> FREE [1]
<input type="checkbox"/> SAND [6]	<input checked="" type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [0]	<input type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> EXTENSIVE [-2]
<input checked="" type="checkbox"/> BEDROCK [5]	<input checked="" type="checkbox"/>	<small>(Score natural substrates; ignore sludge from point-sources)</small>		<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/> MODERATE [-1]
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input type="checkbox"/> 3 or less [0]				<input type="checkbox"/> LACUSTURINE [0]	<input type="checkbox"/> NORMAL [0]
Comments				<input checked="" type="checkbox"/> SHALE [-1]	<input type="checkbox"/> NONE [1]
				<input type="checkbox"/> COAL FINES [-2]	

Substrate
9
 Maximum 20

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

<input checked="" type="checkbox"/> UNDERCUT BANKS [1]	<input type="checkbox"/> POOLS > 70cm [2]	<input type="checkbox"/> OXBOWS, BACKWATERS [1]	AMOUNT Check ONE (Or 2 & average)
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> AQUATIC MACROPHYTES [1]	
<input type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/> BOULDERS [1]	<input type="checkbox"/> LOGS OR WOODY DEBRIS [1]	
<input type="checkbox"/> ROOTMATS [1]			

Comments

Cover
 Maximum 20 6

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [6]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

Channel
 Maximum 20 7.5

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for **EACH BANK** (Or 2 per bank & average)

River right looking downstream

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]
<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]
<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]
	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]

Comments

Riparian
 Maximum 10 3

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH Check ONE (ONLY!)	CHANNEL WIDTH Check ONE (Or 2 & average)	CURRENT VELOCITY Check ALL that apply	Recreation Potential Primary Contact Secondary Contact <small>(circle one and comment on back)</small>
<input type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	
<input type="checkbox"/> 0.7-1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	
<input type="checkbox"/> 0.4-0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> 0.2-0.4m [1]		<input type="checkbox"/> MODERATE [1]	

Comments

Pool / Current
 Maximum 12 6

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input checked="" type="checkbox"/> BEST AREAS 5-10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD, STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input checked="" type="checkbox"/> EXTENSIVE [-1]

Comments Riffles formed by pockets and grade changes in shale throughout stream segment

Riffle / Run
 Maximum 3 3

6] GRADIENT (36.4 ft/mi) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (8.2 mi²)

%POOL: **%GLIDE:**
%RUN: **%RIFFLE:**

Gradient
 Maximum 10 8

Comment RE: Reach consistency/Is reach typical of stream?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.

AJ SAMPLED REACH
Check ALL that apply

- METHOD**
- BOAT
 - WADE
 - L. LINE
 - OTHER
- STAGE**
- 1st - sample pass - 2nd
- HIGH
 - UP
 - NORMAL
 - LOW
 - DRY

- DISTANCE**
- 0.5 Km
 - 0.2 Km
 - 0.15 Km
 - 0.12 Km
 - OTHER

- CLARITY**
- 1st - sample pass - 2nd
- < 20 cm
 - 20-40 cm
 - 40-70 cm
 - > 70 cm / CTB

- SECCHI DEPTH**
- meters
- CANOPY**
- > 85% - OPEN
 - 55% - 85%
 - 30% - 55%
 - 10% - 30%
 - < 10% - CLOSED

- BJ AESTHETICS**
- NUISANCE ALGAE
 - INVASIVE MACROPHYTES
 - EXCESS TURBIDITY
 - DISCOLORATION
 - FOAM / SCUM
 - OIL SHEEN
 - TRASH / LITTER
 - NUISANCE ODOR
 - SLUDGE DEPOSITS
 - CSOs/SSOs/OUTFALLS
- AREA DEPTH**
- POOL: > 100ft > 3ft

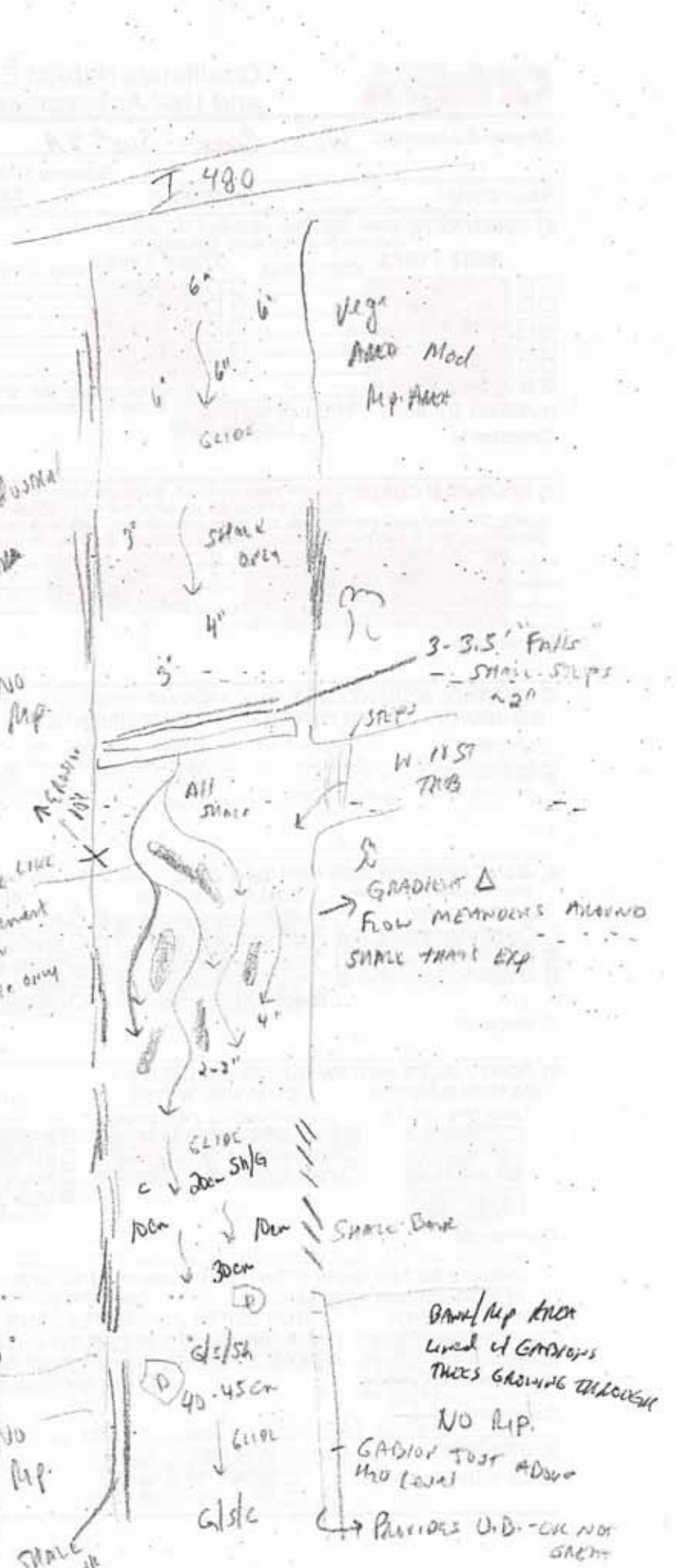
- DJ MAINTENANCE**
- PUBLIC / PRIVATE / BOTH / NA
 - ACTIVE / HISTORIC / BOTH / NA
 - YOUNG-SUCCESSION-OLD
 - SPRAY / SNAG / REMOVED
 - MODIFIED / DIPPED OUT / NA
 - LEVEED / ONE SIDED
 - RELOCATED / CUTOFFS
 - MOVING-BEDLOAD-STABLE
 - ARMORED / SLUMPS
 - ISLANDS / SCOURED
 - IMPOUNDED / DESICCATED
 - FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

- EJ ISSUES**
- WWTP / CSO / NPDES / INDUSTRY
 - HARDENED / URBAN / DIRT & GRIME
 - CONTAMINATED / LANDFILL
 - BMPs-CONSTRUCTION-SEDIMENT
 - LOGGING / IRRIGATION / COOLING
 - BANK EROSION / SURFACE
 - FALSE BANK / MANURE / LAGOON
 - WASH H₂O / TILE / H₂O TABLE
 - ACID / MINE / QUARRY / FLOW
 - NATURAL / WETLAND / STAGNANT
 - PARK / GOLF / LAWN / HOME
 - ATMOSPHERE / DATA PAUCITY

- FJ MEASUREMENTS**
- width
 - depth
 - max. depth
 - bankfull width
 - bankfull x depth
 - W/D ratio
 - bankfull max. depth
 - floodprone x² width
 - entrench. ratio
- Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **51.25**

Stream & Location: WEST CREEK - SITE #9-B

RM: 3.4 Date: 09/27/06

River Code: - - STORET #: - - Scores Full Name & Affiliation: CATHY JANE ZAMBORSKI - NEPAASD
 Lat/Long: 41.4122 181.6754 Office verified location

1] SUBSTRATE Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL RIFFLE	OTHER TYPES	POOL RIFFLE	ORIGIN	QUALITY
<input type="checkbox"/> BLDR/SLABS [10]	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> HEAVY [-2]
<input type="checkbox"/> BOULDER [9]	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> TILLS [1]	<input type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> COBBLE [8]	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> WETLANDS [0]	<input checked="" type="checkbox"/> NORMAL [0]
<input type="checkbox"/> GRAVEL [7]	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [2]	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> HARDPAN [0]	<input type="checkbox"/> FREE [1]
<input type="checkbox"/> SAND [6]	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [0]	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> EXTENSIVE [-2]
<input type="checkbox"/> BEDROCK [5]	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	(Score natural substrates; ignore sludge from point-sources)		<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/> MODERATE [-1]
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input type="checkbox"/> 3 or less [0]				<input type="checkbox"/> LACUSTURINE [0]	<input type="checkbox"/> NORMAL [0]
Comments				<input checked="" type="checkbox"/> SHALE [-1]	<input type="checkbox"/> NONE [1]
				<input type="checkbox"/> COAL FINES [-2]	

Substrate Maximum **20**

2] INSTREAM COVER Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

<input type="checkbox"/> UNDERCUT BANKS [1]	<input type="checkbox"/> POOLS > 70cm [2]	<input type="checkbox"/> OXBOWS, BACKWATERS [1]	AMOUNT Check ONE (Or 2 & average)
<input type="checkbox"/> OVERHANGING VEGETATION [1]	<input type="checkbox"/> ROOTWADS [1]	<input type="checkbox"/> AQUATIC MACROPHYTES [1]	
<input checked="" type="checkbox"/> SHALLOWS (IN SLOW WATER) [1]	<input checked="" type="checkbox"/> BOULDERS [1]	<input checked="" type="checkbox"/> LOGS OR WOODY DEBRIS [1]	
<input type="checkbox"/> ROOTMATS [1]			

Comments
Many boulders but only ~50% functional

Cover Maximum **20**

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY	Channel Maximum 20
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]	
<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"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input 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] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY	Riparian Maximum 10
<input type="checkbox"/> NONE / LITTLE [3]	<input type="checkbox"/> WIDE > 50m [4]	<input checked="" type="checkbox"/> FOREST, SWAMP [3]	
<input checked="" type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]	
<input checked="" type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]	
	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]	Indicate predominant land use(s) past 100m riparian.
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]	

Comments

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH Check ONE (ONLY!)	CHANNEL WIDTH Check ONE (Or 2 & average)	CURRENT VELOCITY Check ALL that apply	Recreation Potential Primary Contact Secondary Contact (circle one and comment on back)
<input type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	
<input type="checkbox"/> 0.7-1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	
<input type="checkbox"/> 0.4-0.7m [2]	<input checked="" type="checkbox"/> POOL WIDTH ≠ RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input checked="" type="checkbox"/> 0.2-0.4m [1]		<input type="checkbox"/> MODERATE [1]	Pool / Current Maximum 12
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> SLOW [1]	

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input checked="" type="checkbox"/> BEST AREAS 5-10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]

Comments

Riffle / Run Maximum **8**

6] GRADIENT (63.6 ft/ml) VERY LOW - LOW [2-4] %POOL: %GLIDE:
DRAINAGE AREA (8.2 mi²) MODERATE [6-10] %RUN: %RIFFLE:
 HIGH - VERY HIGH [10-6] Gradient Maximum **10**

Comment RE: Reach consistency/ is reach typical of stream?, Recreation/Observed - Inferred, Other/Sampling observations, Concerns, Access directions, etc.

AJ SAMPLED REACH

Check ALL that apply

METHOD

- BOAT
- WADE
- L. LINE
- OTHER

STAGE

- 1st -sample pass-- 2nd
- HIGH
- UP
- NORMAL
- LOW
- DRY

DISTANCE

- 0.5 Km
- 0.2 Km
- 0.15 Km
- 0.12 Km
- OTHER

CLARITY

- 1st --sample pass-- 2nd
- < 20 cm
- 20-40 cm
- 40-70 cm
- > 70 cm/ CTB
- SECCHI DEPTH

meters

CANOPY

- > 85% - OPEN
- 55% - < 85%
- 30% - < 55%
- 10% - < 30%
- < 10% - CLOSED

CJ RECREATION

AREA DEPTH POOL: > 100R2 < 3R

BJAESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM/ SCUM
- OIL SHEEN
- TRASH/ LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- CSOs/SSOs/OUTFALLS

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
- ACTIVE / HISTORIC / BOTH / NA
- YOUNG-SUCCESSION-OLD
- SPRAY / SNAG / REMOVED
- MODIFIED / DIPPED OUT / NA
- LEVEED / ONE SIDED
- RELOCATED / CUTOFFS
- MOVING-BEDLOAD-STABLE
- ARMORED / SLUMPS
- ISLANDS / SCoured
- IMPOUNDED / DESICCATED
- FLOOD CONTROL / DRAINAGE

EJ ISSUES

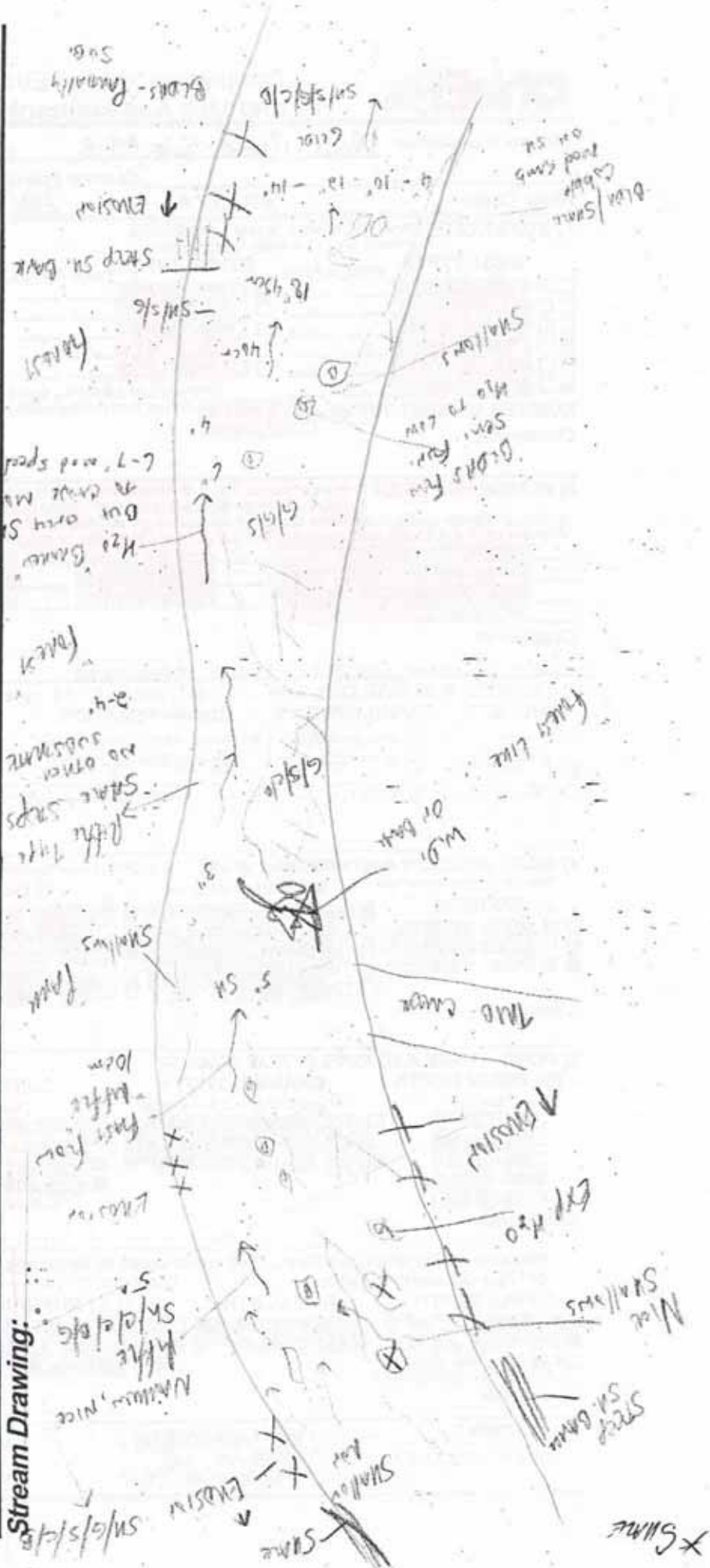
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT&GRIME
- CONTAMINATED / LANDFILL
- BMPs-CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- width
- depth
- max. depth
- bankfull width
- bankfull x depth
- W/D ratio
- bankfull max. depth
- floodprone x² width
- entrench. ratio

Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **48.5**

Stream & Location: WEST CREEK - SITE # 11

RM: 365 Date: 09/27/06

Scorers Full Name & Affiliation: CATHERINE ZIMBANSKY - NEORSD

River Code: - - - STORET #: - - - Lat/Long: 41.4103 181.6943 Office verified location

1) **SUBSTRATE** Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES		POOL RIFFLE	OTHER TYPES		POOL RIFFLE	ORIGIN		QUALITY		SILT BEDDEDNESS Substrate <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">10</div> Maximum 20
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

BLDR / SLABS [10] BOULDER [9] COBBLE [8] GRAVEL [7] SAND [6] BEDROCK [5]
 HARDPAN [4] DETRITUS [3] MUCK [2] SILT [2] ARTIFICIAL [0]
 (Score natural substrates; ignore sludge from point-sources)

LIMESTONE [1] TILLS [1] WETLANDS [0] SANDSTONE [0] RIP/RAP [0] LACUSTURINE [0] SHALE [-1] COAL FINES [-2]

HEAVY [-2] MODERATE [-1] NORMAL [0] FREE [1] EXTENSIVE [-2] MODERATE [-1] NORMAL [0] NONE [1]

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0]

Comments

2) **INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

AMOUNT: Check ONE (Or 2 & average)
 EXTENSIVE >75% [11] MODERATE 25-75% [7] SPARSE 5-<25% [3] NEARLY ABSENT <5% [1]

Comments: POOR QUALITY OF COVER TYPES

Channel Maximum 20 **5**

3) **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

HIGH [4] EXCELLENT [7] NONE [6] HIGH [3]
 MODERATE [3] GOOD [5] RECOVERED [4] MODERATE [2]
 LOW [2] FAIR [3] RECOVERING [3] LOW [1]
 NONE [1] POOR [1] RECENT OR NO RECOVERY [1]

Comments

Channel Maximum 20 **11.5**

4) **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NONE / LITTLE [3] MODERATE [2] HEAVY / SEVERE [1]
 WIDE > 50m [4] MODERATE 10-50m [3] NARROW 5-10m [2] VERY NARROW < 5m [1] NONE [0]
 FOREST, SWAMP [3] SHRUB OR OLD FIELD [2] RESIDENTIAL, PARK, NEW FIELD [1] FENCED PASTURE [1] OPEN PASTURE, ROWCROP [0]

CONSERVATION TILLAGE [1] URBAN OR INDUSTRIAL [0] MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian Maximum 10 **5**

5) **POOL / GLIDE AND RIFFLE / RUN QUALITY**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

> 1m [6] 0.7-<1m [4] 0.4-<0.7m [2] 0.2-<0.4m [1] < 0.2m [0]

POOL WIDTH > RIFFLE WIDTH [2] POOL WIDTH = RIFFLE WIDTH [1] POOL WIDTH < RIFFLE WIDTH [0]

TORRENTIAL [-1] VERY FAST [1] FAST [1] MODERATE [1] SLOW [1] INTERSTITIAL [-1] INTERMITTENT [-2] EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
 Primary Contact
 Secondary Contact (circle one and comment on back)

Pool / Current Maximum 12 **5**

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BEST AREAS > 10cm [2] BEST AREAS 5-10cm [1] BEST AREAS < 5cm [metric=0]

MAXIMUM > 50cm [2] MAXIMUM < 50cm [1]

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

NONE [2] LOW [1] MODERATE [0] EXTENSIVE [-1]

Comments: RIFFLE AREAS FORMED BY GRADE CHANGES & POCKETS IN SHALE THRUOUT STREAM CHANNELS

Riffle / Run Maximum **3**

6) **GRADIENT** (48.4 ft/ml) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (6.6 mi²)

%POOL: %GLIDE:

%RUN: %RIFFLE:

Gradient Maximum 10 **4**

Comment RE: Reach consistency/ is reach typical of stream?, Recreation/Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

AJ SAMPLED REACH
Check ALL that apply

METHOD
 BOAT
 WADE
 L. LINE
 OTHER

STAGE
 1st - sample pass-- 2nd
 HIGH
 UP
 NORMAL
 LOW
 DRY

DISTANCE
 0.5 Km
 0.2 Km
 0.15 Km
 0.12 Km
 OTHER

CLARITY
 1st -- sample pass-- 2nd
 < 20 cm
 20-40 cm
 40-70 cm
 > 70 cm/ CTB
 SECCHI DEPTH

CANOPY
 > 85% - OPEN
 55% - 85%
 30% - 55%
 10% - 30%
 < 10% - CLOSED

BJAESTHETICS

- NUISANCE ALGAE
- INVASIVE MACROPHYTES
- EXCESS TURBIDITY
- DISCOLORATION
- FOAM/ SCUM
- OIL SHEEN
- TRASH/ LITTER
- NUISANCE ODOR
- SLUDGE DEPOSITS
- GSOs/SSOs/OUTFALLS

CJ RECREATION
 POOL: > 100ft² > 3R

DJ MAINTENANCE
 PUBLIC / PRIVATE / BOTH / NA
 ACTIVE / HISTORIC / BOTH / NA
 YOUNG-SUCCESSION-OLD
 SPRAY / SNAG / REMOVED
 MODIFIED / DIPPED OUT / NA
 LEVEEED / ONE SIDED
 RELOCATED / CUTOFFS
 MOVING-BEDLOAD-STABLE
 ARMORED / SLUMPS
 ISLANDS / SCoured
 IMPOUNDED / DESICCATED
 FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

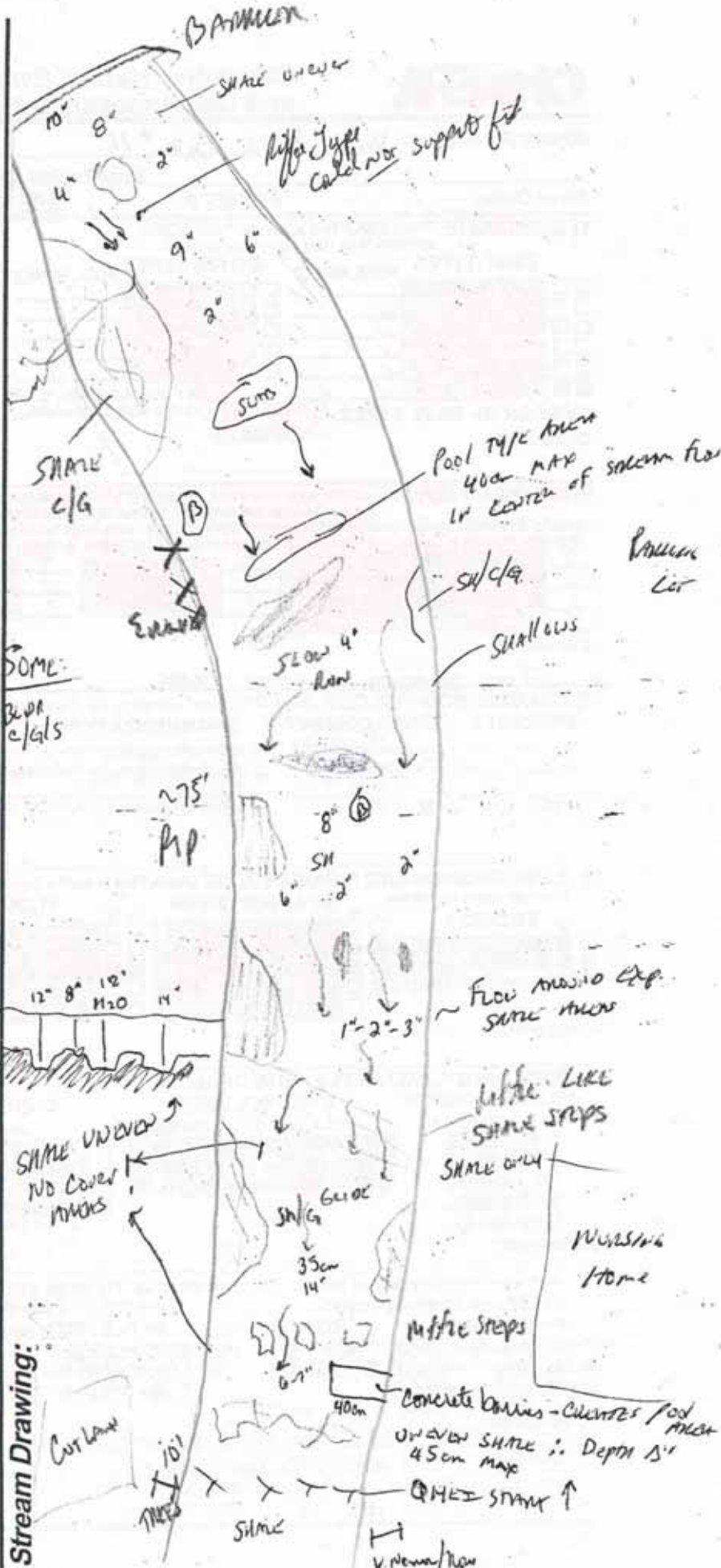
- WWTP / CSO / NPDES / INDUSTRY
- HARDENED / URBAN / DIRT & GRIME
- CONTAMINATED / LANDFILL
- BMPs - CONSTRUCTION-SEDIMENT
- LOGGING / IRRIGATION / COOLING
- BANK / EROSION / SURFACE
- FALSE BANK / MANURE / LAGOON
- WASH H₂O / TILE / H₂O TABLE
- ACID / MINE / QUARRY / FLOW
- NATURAL / WETLAND / STAGNANT
- PARK / GOLF / LAWN / HOME
- ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- X width
- X depth
- max. depth
- X bankfull width
- bankfull X depth
- W/D ratio
- bankfull max. depth
- floodprone X width
- entrench. ratio

Legacy Tree:

Stream Drawing:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **61.75**

Stream & Location: WEST Creek - Site #14

RM: 7.90 Date: 09/27/06

River Code: - - - STORET #: - - - Scorers Full Name & Affiliation: CATHERINE ZIMBARDA - NEDRSO
Lat./ Long.: 41.3610 181.6892 Office verified location

1] **SUBSTRATE** Check ONLY Two substrate TYPE BOXES, estimate % or note every type present

BEST TYPES	POOL RIFFLE	OTHER TYPES	POOL RIFFLE	ORIGIN	QUALITY
<input type="checkbox"/> BLDR/SLABS [10]	<input type="checkbox"/>	<input type="checkbox"/> HARDPAN [4]	<input type="checkbox"/>	<input type="checkbox"/> LIMESTONE [1]	<input type="checkbox"/> HEAVY [-2]
<input type="checkbox"/> BOULDER [9]	<input checked="" type="checkbox"/>	<input type="checkbox"/> DETRITUS [3]	<input type="checkbox"/>	<input type="checkbox"/> TILLS [1]	<input type="checkbox"/> MODERATE [-1]
<input type="checkbox"/> COBBLE [8]	<input checked="" type="checkbox"/>	<input type="checkbox"/> MUCK [2]	<input type="checkbox"/>	<input type="checkbox"/> WETLANDS [0]	<input type="checkbox"/> NORMAL [0]
<input checked="" type="checkbox"/> GRAVEL [7]	<input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [2]	<input checked="" type="checkbox"/>	<input type="checkbox"/> SANDSTONE [0]	<input type="checkbox"/> FREE [1]
<input checked="" type="checkbox"/> SAND [6]	<input checked="" type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [0]	<input checked="" type="checkbox"/>	<input type="checkbox"/> RIP/RAP [0]	<input type="checkbox"/> EXTENSIVE [-2]
<input type="checkbox"/> BEDROCK [5]	<input type="checkbox"/>			<input type="checkbox"/> LACUSTURINE [0]	<input type="checkbox"/> MODERATE [-1]
				<input type="checkbox"/> SHALE [-1]	<input type="checkbox"/> NORMAL [0]
				<input type="checkbox"/> COAL FINES [-2]	<input type="checkbox"/> NONE [1]

Check ONE (Or 2 & average) **EMBEDDEDNESS** SILT

NUMBER OF BEST TYPES: 4 or more [2] 3 or less [0] (Score natural substrates; ignore sludge from point-sources)

Comments

Substrate
Maximum 20
13

2] **INSTREAM COVER** Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

COVER	AMOUNT
<u>2</u> UNDERCUT BANKS [1]	<input type="checkbox"/> EXTENSIVE >75% [11]
<u>2</u> OVERHANGING VEGETATION [1]	<input checked="" type="checkbox"/> MODERATE 25-75% [7]
<u>1</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]
<u>2</u> POOLS > 70cm [2]	
<u>1</u> ROOTWADS [1]	
<u>0</u> OXBOWS, BACKWATERS [1]	
<u>0</u> AQUATIC MACROPHYTES [1]	
<u>1</u> BOULDERS [1]	
<u>3</u> LOGS OR WOODY DEBRIS [1]	

Check ONE (Or 2 & average)

Comments

Cover
Maximum 20
16

3] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input checked="" type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input checked="" type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input checked="" type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input checked="" type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

Channel
Maximum 20
14

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

EROSION	RIPARIAN WIDTH	FLOOD PLAIN QUALITY
<input checked="" type="checkbox"/> NONE / LITTLE [3]	<input checked="" type="checkbox"/> WIDE > 50m [4]	<input type="checkbox"/> FOREST, SWAMP [3]
<input type="checkbox"/> MODERATE [2]	<input type="checkbox"/> MODERATE 10-50m [3]	<input type="checkbox"/> SHRUB OR OLD FIELD [2]
<input type="checkbox"/> HEAVY / SEVERE [1]	<input type="checkbox"/> NARROW 5-10m [2]	<input type="checkbox"/> RESIDENTIAL, PARK, NEW FIELD [1]
	<input type="checkbox"/> VERY NARROW < 5m [1]	<input type="checkbox"/> FENCED PASTURE [1]
	<input type="checkbox"/> NONE [0]	<input type="checkbox"/> OPEN PASTURE, ROWCROP [0]
		<input type="checkbox"/> CONSERVATION TILLAGE [1]
		<input type="checkbox"/> URBAN OR INDUSTRIAL [0]
		<input type="checkbox"/> MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian
Maximum 10
5.75

5] **POOL / GLIDE AND RIFFLE / RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY
<input checked="" type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]
<input type="checkbox"/> 0.7-<1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input checked="" type="checkbox"/> SLOW [1]
<input type="checkbox"/> 0.4-<0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> VERY FAST [1]
<input type="checkbox"/> 0.2-<0.4m [1]		<input type="checkbox"/> FAST [1]
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> MODERATE [1]
		<input type="checkbox"/> INTERSTITIAL [-1]
		<input type="checkbox"/> INTERMITTENT [-2]
		<input type="checkbox"/> EDDIES [1]

Check ONE (ONLY) for depth. Check ONE (Or 2 & average) for width. Check ALL that apply for velocity.

Comments: Upstream area predominantly glide. Downstream area pool.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Pool / Current
Maximum 12
9

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5-10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric=0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

Riffle / Run
Maximum 8
0

6] **GRADIENT** (55.0 ft/mi) VERY LOW - LOW [2-4] MODERATE [6-10] HIGH - VERY HIGH [10-6]

DRAINAGE AREA (1.5 mi²)

%POOL: %GLIDE:
%RUN: %RIFFLE:

Gradient
Maximum 10
4

Comment RE: Reach consistency/is reach typical of stream?, Recreation/Observed - Inferred, Other/ Sampling observations, Concerns, Access directions, etc.

AJ SAMPLED REACH

Check ALL that apply

METHOD

- BOAT
 WADE
 L. LINE
 OTHER

STAGE

- 1st-sample pass-2nd
 HIGH
 UP
 NORMAL
 LOW
 DRY

DISTANCE

- 0.5 Km
 0.2 Km
 0.15 Km
 0.12 Km
 OTHER

CLARITY

- 1st -sample pass- 2nd
 < 20 cm
 20-40 cm
 40-70 cm
 > 70 cm/CTB
 SECCHI DEPTH

CANOPY

- > 85% - OPEN
 55% - 85%
 30% - 55%
 10% - 30%
 < 10% - CLOSED

CJ RECREATION

AREA DEPTH
 POOL: > 100R > 3R

DJ MAINTENANCE

- PUBLIC / PRIVATE / BOTH / NA
 ACTIVE / HISTORIC / BOTH / NA
 YOUNG-SUCCESSION-OLD
 SPRAY / SNAG / REMOVED
 MODIFIED / DIPPED OUT / NA
 LEVEED / ONE SIDED
 RELOCATED / CUTOFFS
 MOVING-BEDLOAD-STABLE
 ARMORED / SLUMPS
 ISLANDS / SCoured
 IMPOUNDED / DESICCATED
 FLOOD CONTROL / DRAINAGE

BJAESTHETICS

- NUISANCE ALGAE
 INVASIVE MACROPHYTES
 EXCESS TURBIDITY
 DISCOLORATION
 FOAM / SCUM
 OIL SHEEN
 TRASH / LITTER
 NUISANCE ODOR
 SLUDGE DEPOSITS
 CSQs/ISSOs/OUTFALLS

Circle some & COMMENT

EJ ISSUES

- WWTP / CSO / NPDES / INDUSTRY
 HARDENED / URBAN / DIRT & GRIME
 CONTAMINATED / LANDFILL
 BMPs-CONSTRUCTION-SEDIMENT
 LOGGING / IRRIGATION / COOLING
 BANK / EROSION / SURFACE
 FALSE BANK / MANURE / LAGOON
 WASH H₂O / TILE / H₂O TABLE
 ACID / MINE / QUARRY / FLOW
 NATURAL / WETLAND / STAGNANT
 PARK / GOLF / LAWN / HOME
 ATMOSPHERE / DATA PAUCITY

FJ MEASUREMENTS

- X width
 X depth
 max. depth
 X bankfull width
 bankfull x depth
 W/D ratio
 bankfull max. depth
 floodprone x² width
 entrench. ratio

Legacy Tree:

Stream Drawing:

