



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **60.5**

Stream & Location: West Creek @ Stewardship Center RM: 5.30 Date: 08/18/16

Braver Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: - STORET #: - Lat./Long.: 41.3897 181.6982 Office verified location ☐

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

BEST TYPES		OTHER TYPES		ORIGIN		QUALITY	
☐ BLDR / SLABS [10]	☒ POOL RIFFLE	☐ HARDPAN [4]	☒ POOL RIFFLE	☐ LIMESTONE [1]	☐ SILT	☐ HEAVY [-2]	Substrate 155 Maximum 20
☐ BOULDER [9]	☒	☐ DETRITUS [3]	☒	☒ TILLS [1]	☐	☒ MODERATE [-1]	
☐ COBBLE [8]	☒	☐ MUCK [2]	☒	☐ WETLANDS [0]	☐	☐ NORMAL [0]	
☐ GRAVEL [7]	☒	☐ SILT [2]	☒	☐ HARDPAN [0]	☐	☐ FREE [1]	
☐ SAND [6]	☒	☐ ARTIFICIAL [0]	☒	☐ SANDSTONE [0]	☐	☐ EXTENSIVE [-2]	
☒ BEDROCK [5]	☒	(Score natural substrates; ignore sludge from point-sources)		☐ RIP/RAP [0]	☐	☒ MODERATE [-1]	
NUMBER OF BEST TYPES: ☒ 4 or more [2] ☐ 3 or less [0]				☐ LACUSTURINE [0]	☐	☒ NORMAL [0]	
Comments				☐ SHALE [-1]	☐	☒ NONE [1]	
				☐ COAL FINES [-2]	☐		

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	
☒ UNDERCUT BANKS [1]	☐ EXTENSIVE >75% [11]
☐ OVERHANGING VEGETATION [1]	☐ MODERATE 25-75% [7]
☒ SHALLOWS (IN SLOW WATER) [1]	☒ SPARSE 5-25% [3]
☐ ROOTMATS [1]	☐ NEARLY ABSENT <5% [1]

Comments

Cover Maximum 20 **8**

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

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

Comments

Channel Maximum 20 **12**

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

Comments

Riparian Maximum 10 **8**

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

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
☐ > 1m [6]	☒ POOL WIDTH > RIFFLE WIDTH [2]	☐ TORRENTIAL [-1]	☒ Primary Contact
☐ 0.7-1m [4]	☐ POOL WIDTH = RIFFLE WIDTH [1]	☐ VERY FAST [1]	☐ Secondary Contact
☐ 0.4-0.7m [2]	☐ POOL WIDTH < RIFFLE WIDTH [0]	☐ FAST [1]	
☒ 0.2-0.4m [1]		☒ MODERATE [1]	
☐ < 0.2m [0]		☐ INTERSTITIAL [-1]	
		☐ INTERMITTENT [-2]	
		☐ EDDIES [1]	

Comments

Pool / Current Maximum 12 **5**

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
☐ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☒ NONE [2]
☒ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☒ MOD. STABLE (e.g., Large Gravel) [1]	☒ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☒ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run Maximum 8 **4**

6) **GRADIENT** (33.3 ft/mi) ☐ VERY LOW - LOW [2-4] %POOL: %GLIDE:
DRAINAGE AREA (3.8 mi²) ☐ MODERATE [6-10] %RUN: %RIFFLE:
☒ HIGH - VERY HIGH [10-6] Gradient Maximum 10 **8**

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

A7 SAMPLED REACH

Check ALL that apply

METHOD

1st-sample pass-2nd

☐ WADE
☐ L. LINE
☐ OTHER

☐ HIGH
☐ UP
☐ NORMAL
☐ LOW
☐ DRY

DISTANCE

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

C7 R

POOL: $\square > 100\text{ft}^2$ $\square > 3\text{ft}$

Stream Drawing:

B1 AESTHETICS

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

D1 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**

Circle some & COMMENT

E/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

7 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

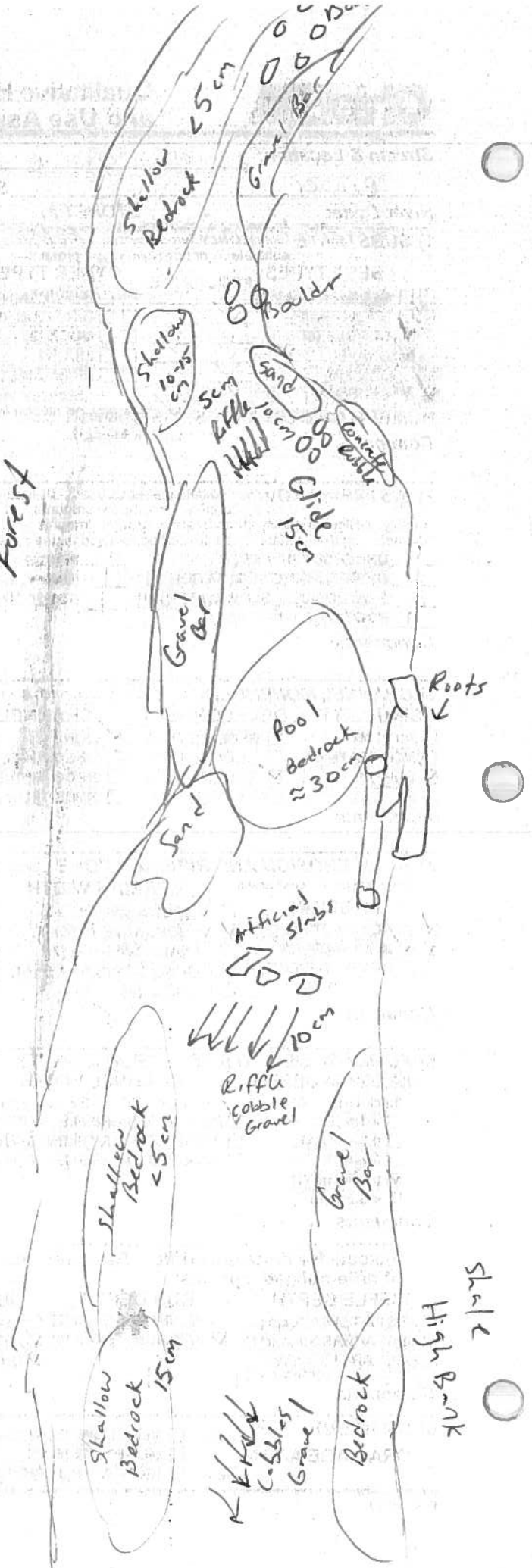
FT MEASUREMENTS

$\bar{x}$ width
 $\bar{x}$ depth
 max. depth
 $\bar{x}$ bankfull width
 bankfull $\bar{x}$ depth
 W/D ratio
 bankfull max. depth
 floodprone x^2 width
 entrench. ratio
Legacy Tree:

$$\frac{f(a)}{a}$$

Forested

Forest



Stream & Location: West Creek (Upstream of Broadview Rd) RM: 03.65 Date: 07/22/16

S. R. HANES

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer DistrictRiver Code: - - - STORET #: - - - Lat./Long.: 41.4103181.6943 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
☐ BLDR/SLABS [10]	☒	☐ HARDPAN [4]	☐
☐ BOULDER [9]	☒	☐ DETRITUS [3]	☐
☐ COBBLE [8]	☒	☐ MUCK [2]	☐
☐ GRAVEL [7]	☒	☐ SILT [2]	☒
☐ SAND [6]	☒	☐ ARTIFICIAL [0]	☒
☒ BEDROCK [5]	☒		

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

Comments

Cobble/sand/gravel on margins of Pools in upper section / Entire section mostly made of bedrock

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.

☐ 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]		

Comments

AMOUNT

Check ONE (Or 2 & average)

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

Cover
Maximum
20

7

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

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

Comments

Channel
Maximum
20

14

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

Comments

2.5

3.5

1.5

Indicate predominant land use(s)
past 100m riparian.Riparian
Maximum
10

7.5

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]

Comments

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

Indicate for reach - pools and riffles.

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:

Check ONE (Or 2 & average).

☐ NO RIFFLE [metric=0]

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

Comments

R/R substrate mostly COBBLERiffle /
Run
Maximum
8

5

6] GRADIENT (48.4 ft/mi) ☐ 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

A7 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

- | | |
|--------------------------|-------------|
| ☐ | > 85%- OPEN |
| ☐ | 55%-<85% |
| ☐ | 30%-<55% |
| ☐ | 10%-<30% |
| ☐ | <10%- CLOSE |

C7 REC

- ATION** **AREA** **DEPTH**
POOL: ☐ >100ft² ☐ >3ft

BI AESTHETICS

- ☐ NUISANCE ALGAE
☐ INVASIVE MACROPHYTES
☐ EXCESS TURBIDITY
☐ DISCOLORATION
☐ FOAM / SCUM
☐ OIL SHEEN
☐ TRASH / LITTER
☐ NUISANCE ODOR
☐ SLUDGE DEPOSITS
☐ CSQS/SSQS/OUTFALLS

D1 MAINTENANCE

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

Circle some & COMMENT

SENSIBLE

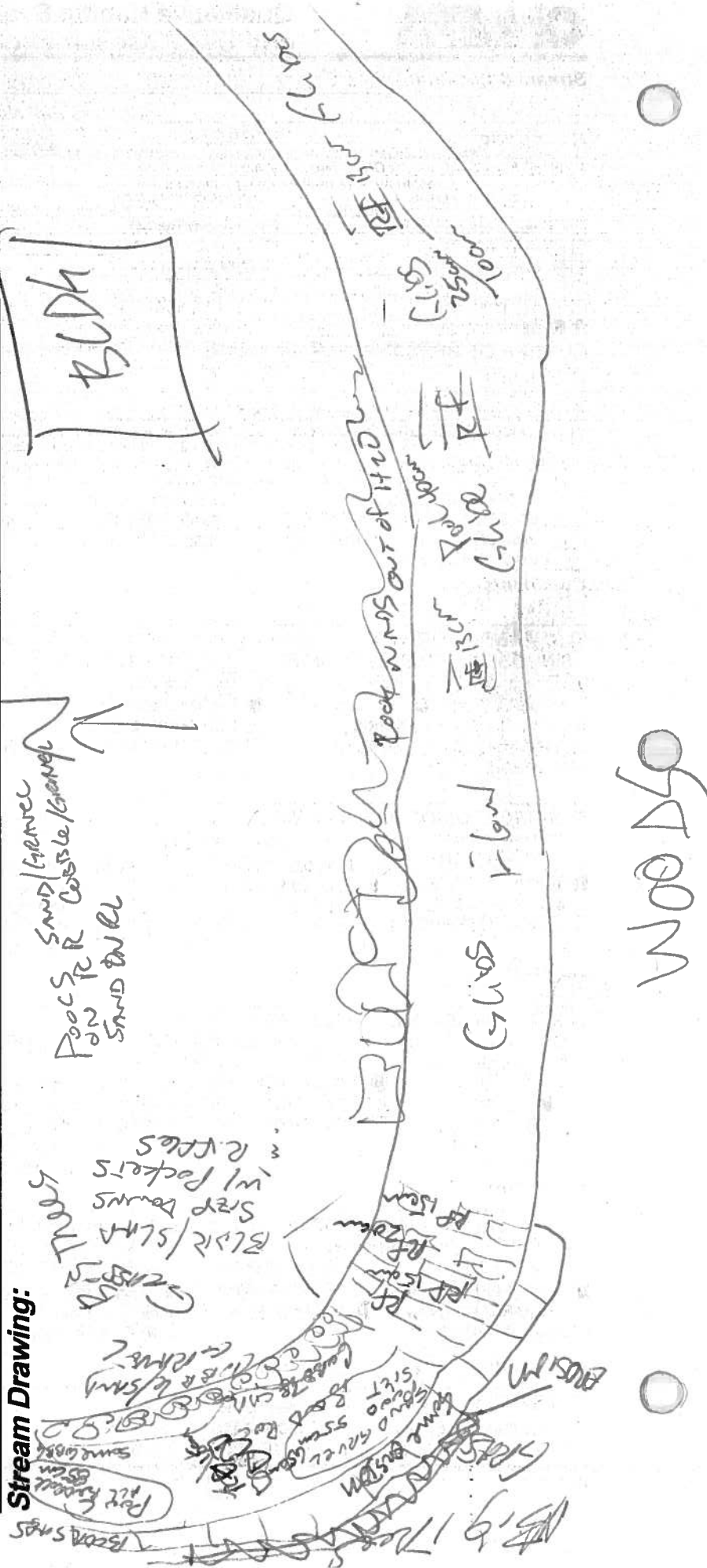
- WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H₂O / TILE / H₂O TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN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

F7 MEASUREMENTS

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

Legacy Tree:

Stream Drawing:



Stream & Location: West Creek (Downstream I-480)RM: 02.10 Date: 8/1/16

Matheron

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: - - -

STORET #: - - -

Lat./ Long.: 41.413618 81.6705Office 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	
☐	Bldr / Slabs [10]	☐	☒	☐	Hardpan [4]	☐	☐
☐	Boulder [9]	☐	☒	☐	Detritus [3]	☐	☐
☒	Cobble [8]	☐	☒	☐	Muck [2]	☐	☐
☒	Gravel [7]	☐	☒	☐	Silt [2]	☐	☒
☐	Sand [6]	☐	☒	☐	Artificial [0]	☐	☒
☐	Bedrock [5]	☐	☒				

ORIGIN	
☐	Limestone [1]
☒	Tills [1]
☐	Wetlands [0]
☐	Hardpan [0]
☐	Sandstone [0]
☐	Rip/Rap [0]
☐	Lacustrine [0]
☐	Shale [-1]
☐	Coal fines [-2]

QUALITY	
☐	Heavy [-2]
☒	Moderate [-1]
☒	Normal [0]
☐	Free [1]
☐	Extensive [-2]
☒	Moderate [-1]
☒	Normal [0]
☐	None [1]

Substrate
17.5
Maximum
20NUMBER OF BEST TYPES: ☒ 4 or more [2] ☐ 3 or less [0]

Comments

8+7+2+1+(-0.5)

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)

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]				

☐	Extensive >75% [11]
☒	Moderate 25-75% [7]
☒	Sparse 5-<25% [3]
☐	Nearly absent <5% [1]

Cover
Maximum
20

Comments

6+5

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

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

Channel
Maximum
20

Comments

1+5+3+3

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

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

Indicate predominant land use(s)
past 100m riparian.Riparian
Maximum
10

Comments

3+3+1.5

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
☒ > 1m [6]	☒ POOL WIDTH > RIFFLE WIDTH [2]	☐ TORRENTIAL [-1]
☐ 0.7-1m [4]	☐ POOL WIDTH = RIFFLE WIDTH [1]	☒ SLOW [1]
☐ 0.4-0.7m [2]	☐ POOL WIDTH < RIFFLE WIDTH [0]	☐ VERY FAST [1]
☐ 0.2-0.4m [1]		☐ INTERSTITIAL [-1]
☐ < 0.2m [0]		☐ FAST [1]
		☐ INTERMITTENT [-2]
		☒ MODERATE [1]
		☐ 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

6+1.5+3

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
☒ BEST AREAS > 10cm [2]	☒ MAXIMUM > 50cm [2]	☐ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☐ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☒ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Riffle /
Run
Maximum
8

Comments

2+2+2+0.5

6] GRADIENT (36.4 ft/mi) ☐ VERY LOW - LOW [2-4]
DRAINAGE AREA (8.7 mi²) ☐ MODERATE [6-10]
☒ HIGH - VERY HIGH [10-6]%POOL: %GLIDE:
%RUN: %RIFFLE: 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 STAGE

- ☐ BOAT ☐ WADE ☐ L. LINE ☐ OTHER
- ☐ DISTANCE
- 1st - sample pass-- 2nd
- ☐ HIGH ☐ UP ☐ NORMAL ☐ LOW ☐ DRY

CLARITY

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

CANOPY

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

CJ RECREATION

POOL: ☐ < 100ft ☐ > 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
- ☐ ARMOURD / SLUMPS
- ☐ ISLANDS / SCoured
- ☐ IMPOUNDED / DESICCATED
- ☐ FLOOD CONTROL / DRAINAGE

EJ ISSUES

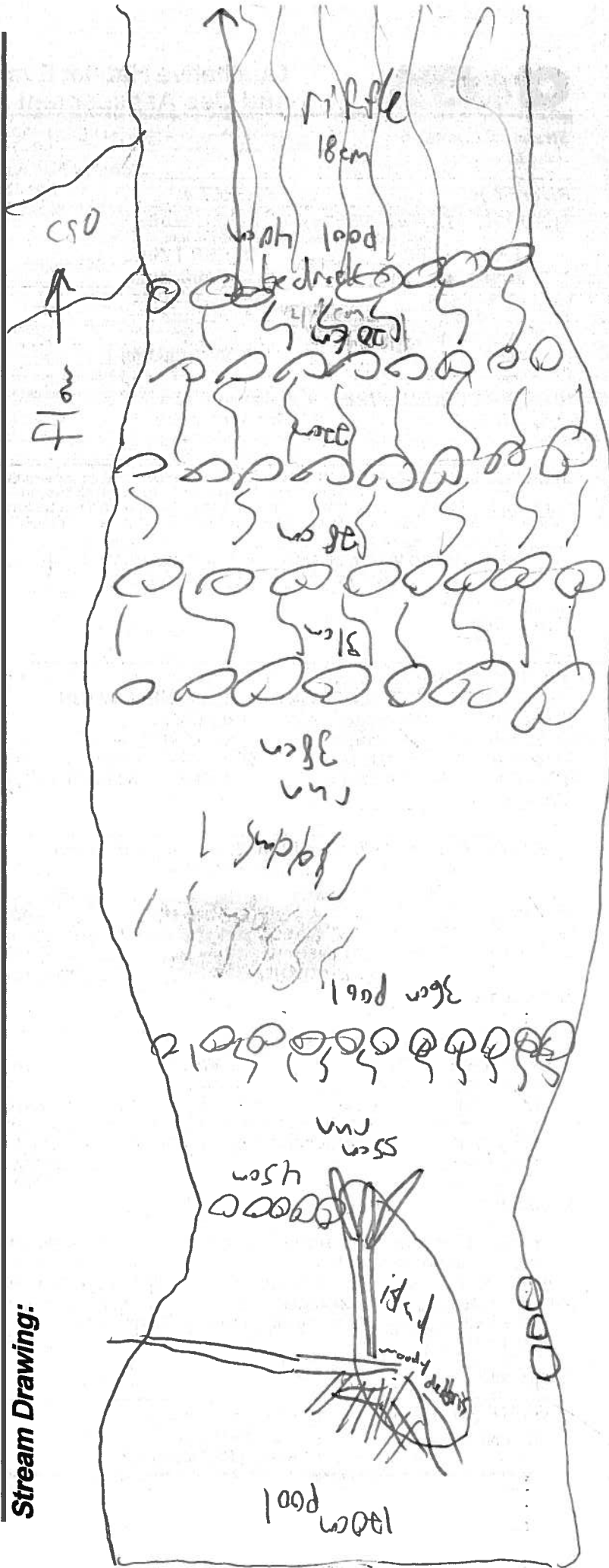
- ☐ WWTP / CSO / NPDES / INDUSTRY
- ☐ HARDENED / URBAN / DIRT&GRIME
- ☐ CONTAMINATED / LANDFILL
- ☐ BMPs-CONSTRUCTION-SEDIMENT
- ☐ LOGGING / IRRIGATION / COOLING
- ☐ BANK / EROSION / SURFACE
- ☐ FALSE BANK / MANURE / LAGOON
- ☐ WASH H₂O / TILE / H₂O TABLE
- ☐ ACID / MINE / QUARRY / FLOW
- ☐ NATURAL / 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:



Stream & Location: West Creek (downstream of Lancaster Dr bridge) RM: 01.60 Date: 7/30/16

Mallory

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer DistrictRiver Code: - - - - -STORET #: - - - - -Lat./ Long.: 41.4144181.6618Office 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	
☐	BLDR/SLABS [10]	☒	☒	☐	HARDPAN [4]	☐	☐
☐	BOULDER [9]	☒	☒	☐	DETritus [3]	☐	☐
☒	COBBLE [8]	☒	☒	☐	MUCK [2]	☐	☐
☒	GRAVEL [7]	☒	☒	☐	SILT [2]	☒	☒
☐	SAND [6]	☒	☒	☐	ARTIFICIAL [0]	☐	☐
☐	BEDROCK [5]						

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

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

Substrate
Maximum
20
16NUMBER OF BEST TYPES: ☒ 4 or more [2] ☐ 3 or less [0] ☐ sludge from point-sources

Comments

8+7+1+0+0

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)

☐	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]				

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

Cover
Maximum
20
10

Comments

5+5

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

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐	☒ EXCELLENT [7]	☐	☒ HIGH [3]
☐	☒ GOOD [5]	☐	☐ MODERATE [2]
☐	☐ FAIR [3]	☒ RECOVERED [4]	☐ LOW [1]
☒	☐ POOR [1]	☒ RECOVERING [3]	
		☐ RECENT OR NO RECOVERY [1]	

Channel
Maximum
20
13

Comments

1+6+3+3

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

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY	
☒	EROSION	☐	WIDE > 50m [4]	☐	FOREST, SWAMP [3]
☒	NONE / LITTLE [3]	☐	MODERATE 10-50m [3]	☐	SHRUB OR OLD FIELD [2]
☐	MODERATE [2]	☒	NARROW 5-10m [2]	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	HEAVY / SEVERE [1]	☐	VERY NARROW < 5m [1]	☐	FENCED PASTURE [1]
		☐	NONE [0]	☐	OPEN PASTURE, ROWCROP [0]

Indicate predominant land use(s)
past 100m riparian.Riparian
Maximum
10
5

Comments

3+2+0

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
☐	☐	☐
☒	☒	☒
☐	☐	☐
☐	☐	☐
☐	☐	☐

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)Pool /
Current
Maximum
12
8

Comments

4+1+3

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
☒	☐	☒	☐
☐	☒	☒	☒
☐	☐	☐	☐

Riffle /
Run
Maximum
8
7

Comments

2+1+3+1

6] GRADIENT (33.3 ft/mi) DRAINAGE AREA (6.9 mi²)

☐	VERY LOW - LOW [2-4]
☐	MODERATE [6-10]
☒	HIGH - VERY HIGH [10-6]

%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

meters

SECCHI DEPTH

1st pass _____ cm

2nd pass _____ cm

CANOPY

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

CJ RECREATION

POOL: ☐ >100R? ☐ >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
☐ ARMoured / SLUMPS
☐ ISLANDS / SCoured
☐ IMPOUNDED / DESICCATED
☐ FLOOD CONTROL / DRAINAGE

Circle some & COMMENT

EJ ISSUES

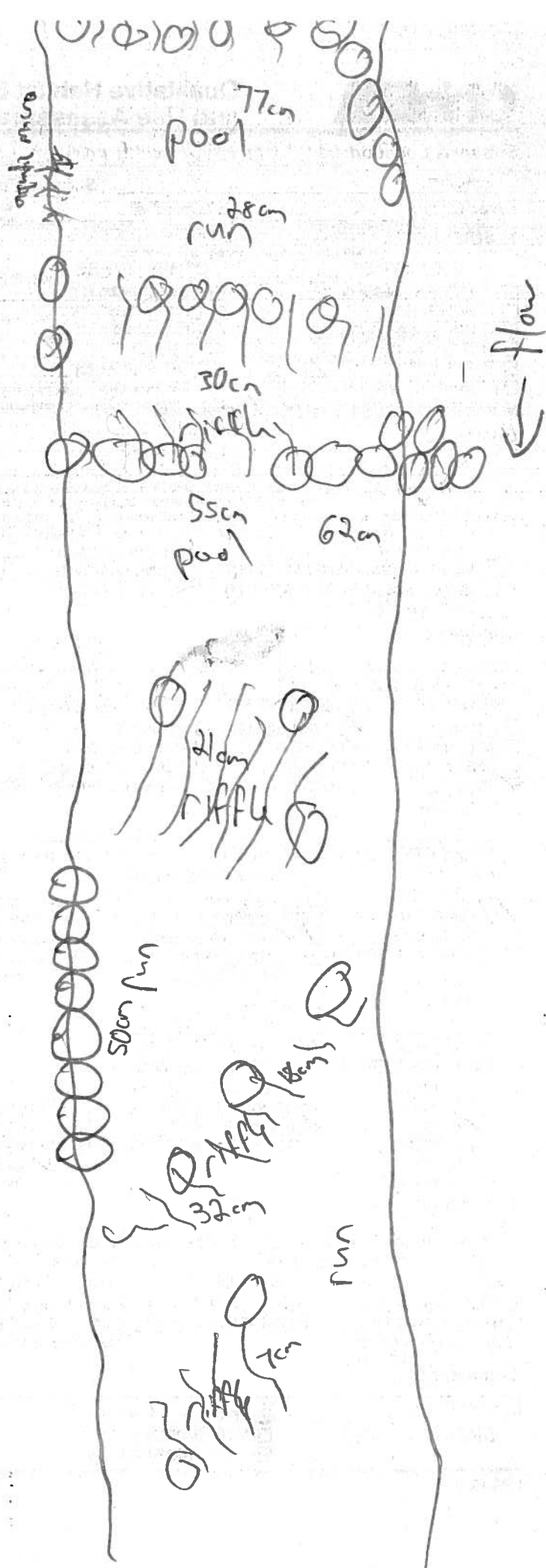
- ☐ WWTP / CSO / NPDES / INDUSTRY
☐ HARDENED / URBAN / DIRT&GRIME
☐ CONTAMINATED / LANDFILL
☐ BMPs-CONSTRUCTION-SEDIMENT
☐ LOGGING / IRRIGATION / COOLING
☐ BANK / EROSION / SURFACE
☐ FALSE BANK / MANURE / LAGOON
☐ WASH H₂O / TILE / H₂O TABLE
☐ ACID / MINE / QUARRY / FLOW
☐ NATURAL / WETLAND / STAGNANT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



Stream & Location: West Creek (Downstream Granger Rd)

RM: 00.20 Date: 06/17/16

Mattean (Friedman)

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: - STORET #: -

Lat./ Long.: 41.4145 181.6477

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

(Score natural substrates; ignore

NUMBER OF BEST TYPES: ☒ 4 or more [2] sludge from point-sources)

Comments

☐ 3 or less [0]

8+7+2+1+0+(-1)

ORIGIN

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

QUALITY

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

SILT

EMBEDDEDNESS

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.

AMOUNT

Check ONE (Or 2 & average)

☐ UNDERCUT BANKS [1]	☐ POOLS > 70cm [2]	☐ OXBOWS, BACKWATERS [1]
☐ OVERHANGING VEGETATION [1]	☐ ROOTWADS [1]	☐ AQUATIC MACROPHYTES [1]
☒ 2 SHALLOWS (IN SLOW WATER) [1]	☒ 3 BOULDERS [1]	☐ LOGS OR WOODY DEBRIS [1]
☐ ROOTMATS [1]		

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

Comments

2+5

Cover
Maximum 20

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

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

Comments

2+2+3

Channel
Maximum 20

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

River right looking downstream	RIPARIAN WIDTH	FLOOD PLAIN QUALITY
☒ EROSION	☒ WIDE > 50m [4]	☐ FOREST, SWAMP [3]
☒ NONE / LITTLE [3]	☐ MODERATE 10-50m [3]	☒ SHRUB OR OLD FIELD [2]
☐ MODERATE [2]	☐ NARROW 5-10m [2]	☐ RESIDENTIAL, PARK, NEW FIELD [1]
☐ HEAVY / SEVERE [1]	☐ VERY NARROW < 5m [1]	☐ FENCED PASTURE [1]
	☐ NONE [0]	☐ OPEN PASTURE, ROWCROP [0]

Comments

3+4+2

Indicate predominant land use(s)
past 100m riparian.Riparian
Maximum 10

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
☐ > 1m [6]	☐ POOL WIDTH > RIFFLE WIDTH [2]	☐ TORRENTIAL [-1]
☐ 0.7-1m [4]	☐ POOL WIDTH = RIFFLE WIDTH [1]	☒ SLOW [1]
☒ 0.4-0.7m [2]	☒ POOL WIDTH < RIFFLE WIDTH [0]	☐ VERY FAST [1]
☐ 0.2-0.4m [1]		☒ FAST [1]
☐ < 0.2m [0]		☒ MODERATE [1]
		☐ INTERSTITIAL [-1]
		☐ INTERMITTENT [-2]
		☐ EDDIES [1]

Comments

2+0+3

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)Pool /
Current
Maximum 12

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
☒ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☒ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☐ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☒ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

2+1+2+0

Riffle /
Run
Maximum 86] GRADIENT 5.4 ft/mi
DRAINAGE AREA 13.2 mi²

☒ VERY LOW - LOW [2-4]
☐ 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

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
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☐ SECCHI DEPTH

meters

CANOPY

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

CJ RECREATION

POOL: ☐ >100ft ☐ >3ft

BJ AESTHETICS

- ☐ NUISANCE ALGAE
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Circle some & COMMENT

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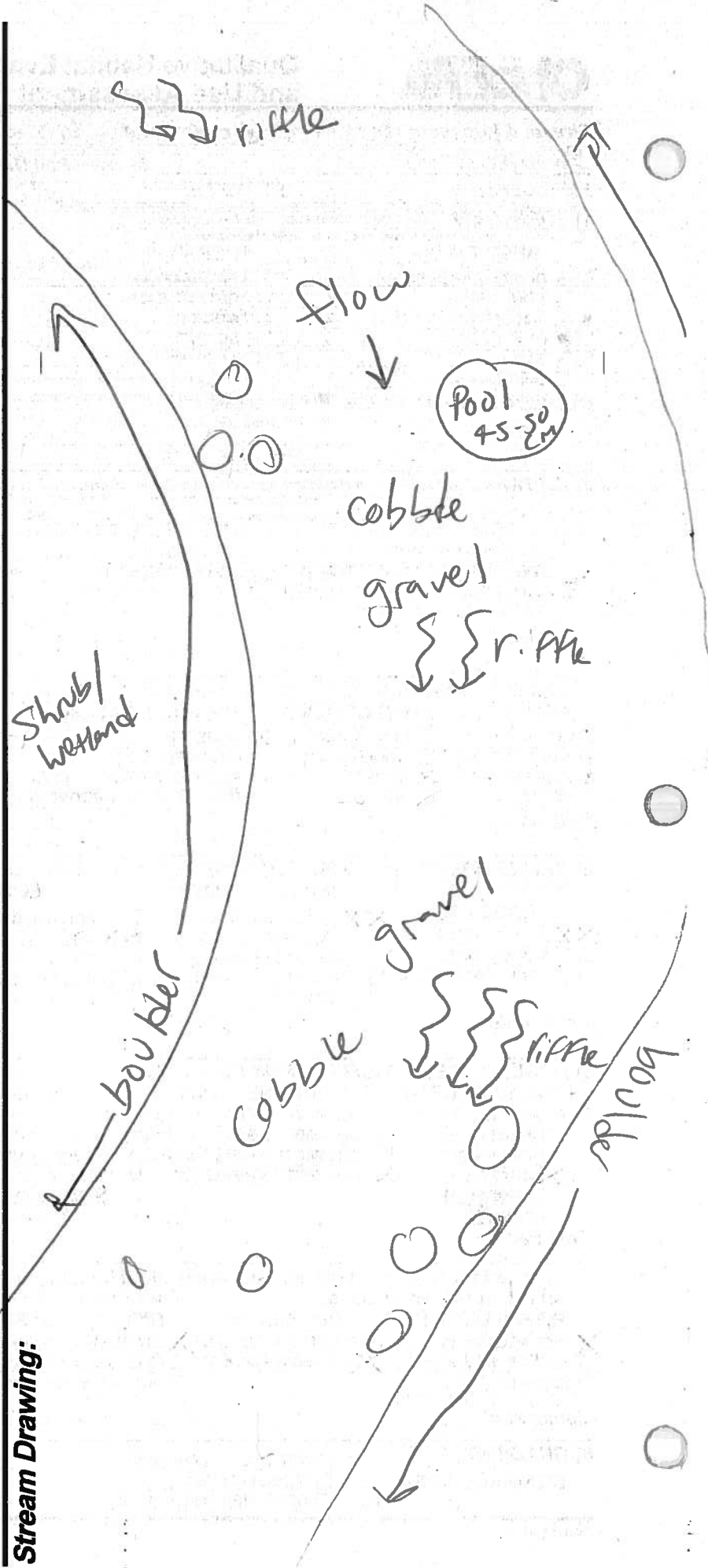
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Legacy Tree:

Stream Drawing:



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