

Stream & Location: Mill Creek, Upstream, Highland Golf Rest, site RM: 11.52 Date: 6/24/24

JUSTIN TELEP

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 019-006-000 STORET #: 301194 Lat./Long.: 41.4622 / 81.5446

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]	☐	☐				

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

175

Maximum 20

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

Comments

Limestone artificial

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

☐ EXTENSIVE >75% [11]

☒ MODERATE 25-75% [7]

☒ SPARSE 5-<25% [3]

☐ NEARLY ABSENT <5% [1]

Comments

Cover

9

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

Channel

13

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

Comments

Willow now woody, maturing

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

Riparian

6.5

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]

☐ 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)

Comments

Pool / Current

6

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

50.0 C.S. 05/21/24

6] **GRADIENT** (1.30 ft/mi) ☐ VERY LOW - LOW [2-4] ☐ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (1.30 mi²)

%POOL: %GLIDE:

%RUN: %RIFFLE:

Gradient

4

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
☒ WALK 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

meters

CANOPY

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

CJ RECREATION

AREA DEPTH
POOL: ☐ >100R2 ☐ >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

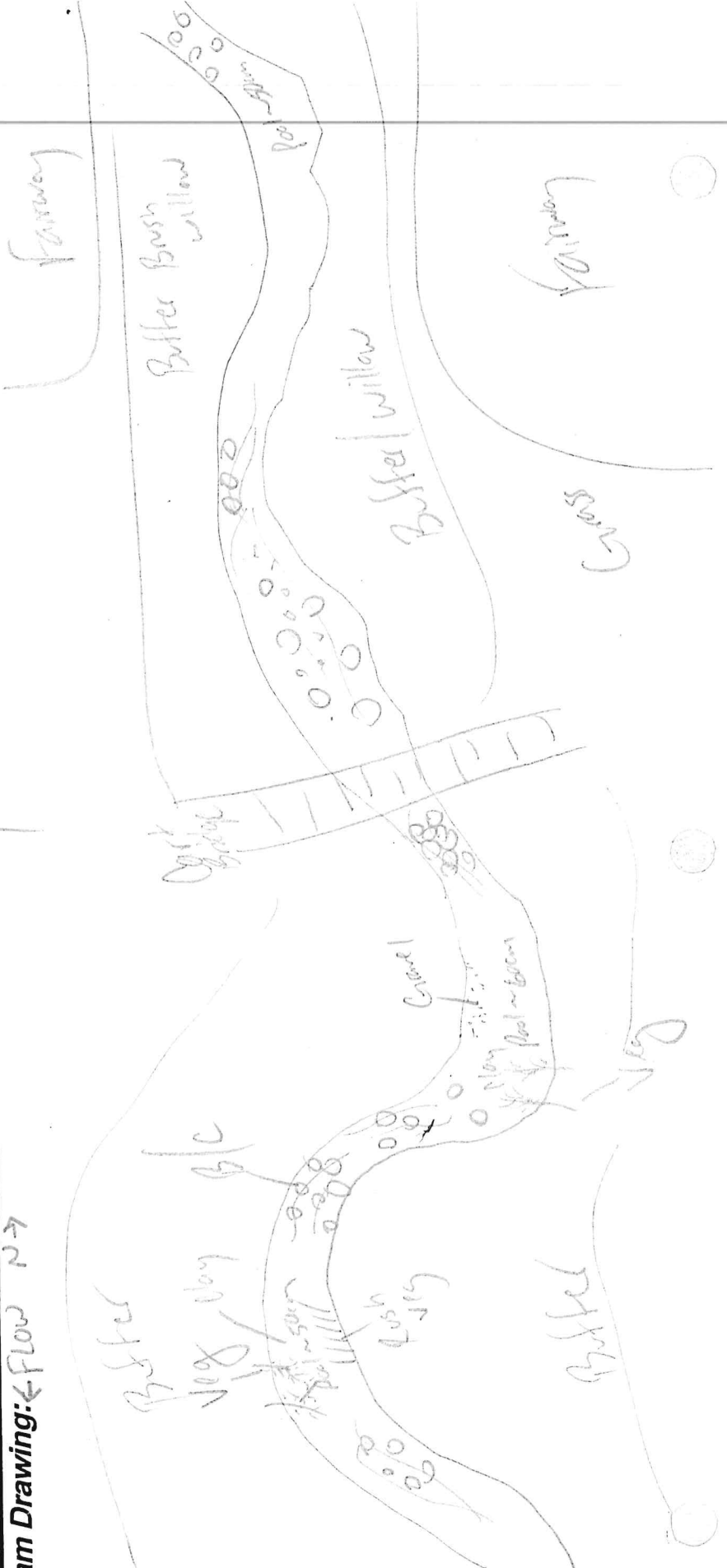
EJ ISSUES

- 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

- $\bar{x}$ 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: ← Flow →



Stream & Location: Mill Creek, Downstream of Highland Golf Restor. Site RM: 10.70 Date: 6/24/24

Mark Matteson

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer DistrictRiver Code: 019-006-000 STORET #: 301195 Lat./Long.: 41.4520 / 81.5254 (NAD 83 - decimal °) 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	
☐ BLDR / SLABS [10]		☒ X	☒ X	☐ HARDPAN [4]	☒ X	☐ LIMESTONE [1]		☐ TILLS [1]		☐ HEAVY [-2]	
☐ BOULDER [9]		☒ X	☒ X	☐ DETRITUS [3]		☒ WETLANDS [0]		☐ SANDSTONE [0]		☐ MODERATE [-1]	
☒ COBBLE [8]		☒ X	☒ X	☐ MUCK [2]		☒ RIP/RAP [0]		☐ LACUSTURINE [0]		☒ NORMAL [0]	
☒ GRAVEL [7]		☒ X	☒ X	☐ SILT [2]		☐ SHALE [-1]		☐ COAL FINES [-2]		☐ FREE [1]	
☐ SAND [6]		☒ X	☒ X	☐ ARTIFICIAL [0]						☐ EXTENSIVE [-2]	
☐ BEDROCK [5]										☐ MODERATE [-1]	

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

Comments: 8+7+2+0.5

Substrate Maximum 20 **17.5**

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]		

Comments: 1+2+1+1+5

Cover Maximum 20 **10**

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: 3+3+4+3

Channel Maximum 20 **13**

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

Comments: half the riparian buffer is brush hogged 3+1+1

Riparian Maximum 10 **5**

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	
☐ > 1m [6]	☒ 0.7-1m [4]	☒ POOL WIDTH > RIFFLE WIDTH [2]	☐ POOL WIDTH = RIFFLE WIDTH [1]	☐ TORRENTIAL [-1]	☒ SLOW [1]	Secondary Contact	
☐ 0.4-0.7m [2]	☐ 0.2-0.4m [1]	☐ POOL WIDTH < RIFFLE WIDTH [0]		☐ VERY FAST [1]	☐ INTERSTITIAL [-1]	(circle one and comment on back)	
☐ 0.2-0.4m [1]	☐ < 0.2m [0]			☐ FAST [1]	☐ INTERMITTENT [-2]		
				☒ MODERATE [1]	☐ EDDIES [1]		

Comments: 4+2+1+1

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]

Comments: 2+1+1.5+1

Riffle / Run Maximum 8 **5.5**

6] GRADIENT (43.47 ft/mi)
DRAINAGE AREA
(1.80 mi²)

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

%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
- ☐ 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

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/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 / SCQUIRED
☐ IMPOUNDED / DESICCATED
☐ FLOOD CONTROL / DRAINAGE

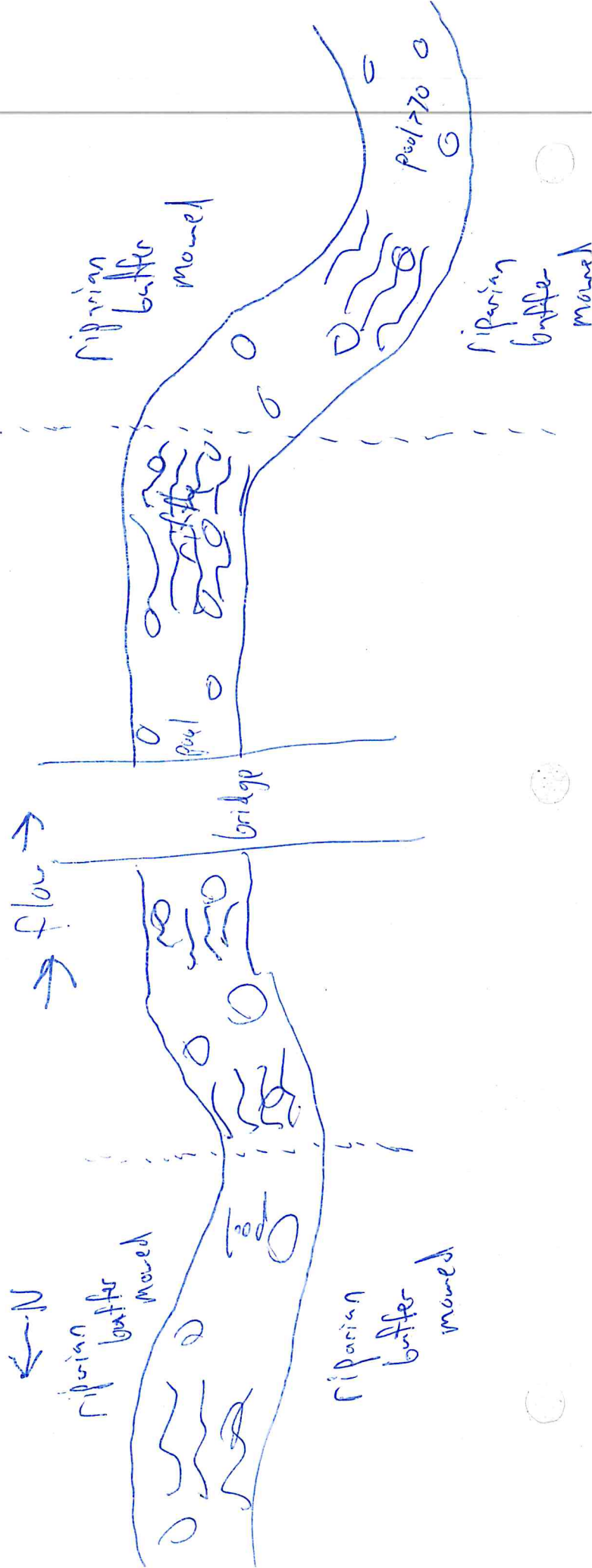
EJ ISSUES

- 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 $\bar{x}$ 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:

70

Stream & Location: Mill Creek, upstream of Kermish Basin/South Mills Rd RM: 08.30 Date: 7/2/24

Scorers Full Name & Affiliation: Justin TELEP* Northeast Ohio Regional Sewer District

River Code: 019-006-000 STORET #: F01P06 Lat./Long.: 41.4300 / 81.5446

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]	☐		

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
7.5

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

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)

☒ 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
14

Comments

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
14

Comments

Stream incised, developed lands bordering both banks

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]

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

☐ CONSERVATION TILLAGE [1]

☒ URBAN OR INDUSTRIAL [0]

☐ MINING / CONSTRUCTION [0]

Riparian
Maximum
10
6

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]

☒ 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
10

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
☐ 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
4.5

Comments

6] GRADIENT (111.10 ft/mi) ☐ VERY LOW - LOW [2-4]

DRAINAGE AREA (3.90 mi²) ☐ MODERATE [6-10]

☐ HIGH - VERY HIGH [10-6]

%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 ☐ 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 ☐

meters

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 / CUT / NA ☐ LEVEED / ONE SIDED ☐ RELOCATED / CUTOFFS ☐ MOVING-BEDLOAD-STABLE ☐ ARMOURD / SLUMPS ☐ ISLANDS / SCOURED ☐ IMPOUNDED / DESICCATED ☐ FLOOD CONTROL / DRAINAGE

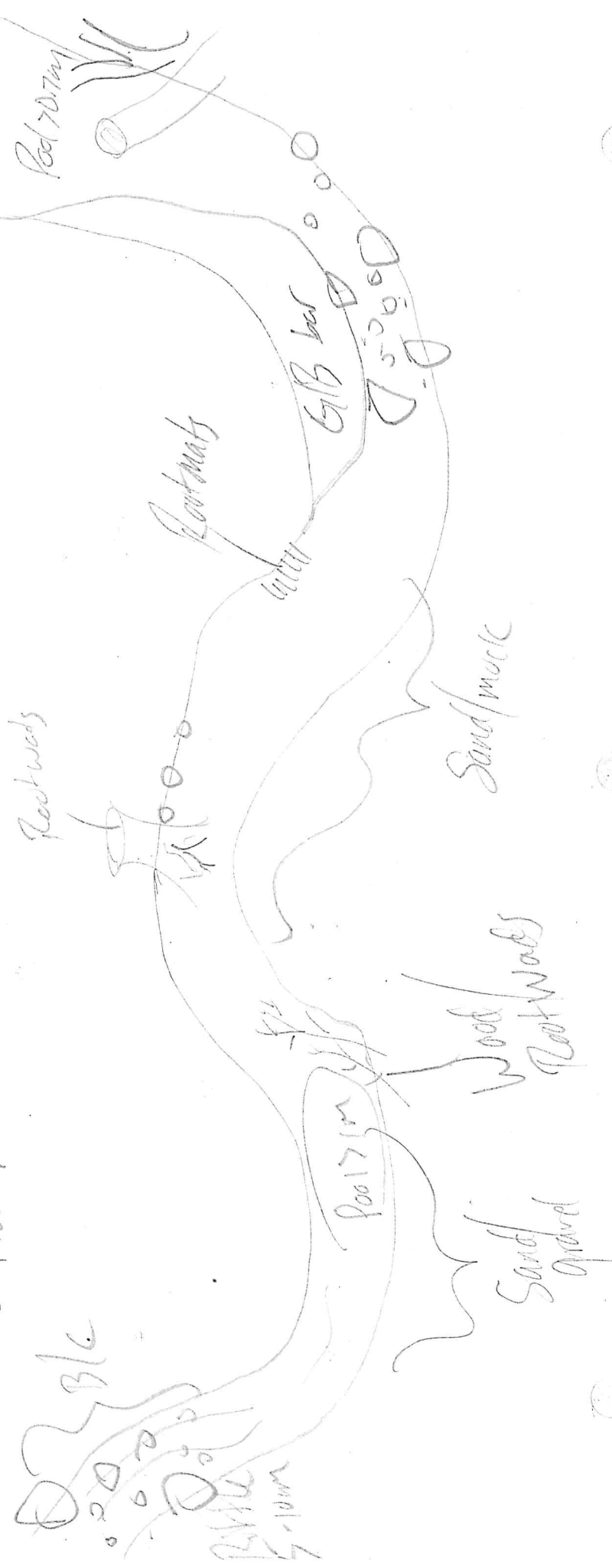
EJ ISSUES

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

Stream Drawing: Flow →





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score:

70.75

Stream & Location:

Mill Creek Dist Kernish Basin

RM:

7.40

Date:

7/1/24

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 19-000-000 STORET #: 302013 Lat./Long.: 41.4258 -81.5577

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

- ☐ BLDG / SLABS [10]
☐ BOULDER [9]
☐ COBBLE [8]
☒ GRAVEL [7]
☒ SAND [6]
☐ BEDROCK [5]

- ☐ HARDPAN [4]
☐ DETRITUS [3]
☐ MUCK [2]
☐ SILT [2]
☐ ARTIFICIAL [0]

- ☒ LIMESTONE [1]
☒ TILLS [1]
☐ WETLANDS [0]
☐ HARDPAN [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]

Substrate
12.5
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)

- 1 UNDERCUT BANKS [1]
1 OVERHANGING VEGETATION [1]
1 SHALLOWS (IN SLOW WATER) [1]
ROOTMATS [1]

- 2 POOLS > 70cm [2]
2 ROOTWADS [1]
BOULDERS [1]

- OXBOWS, BACKWATERS [1]
AQUATIC MACROPHYTES [1]
2 LOGS OR WOODY DEBRIS [1]

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

Cover
Maximum
20
13

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

SINUOSITY

DEVELOPMENT

CHANNELIZATION

STABILITY

- ☐ HIGH [4]
☒ MODERATE [3]
☐ LOW [2]
☐ NONE [1]

- ☐ EXCELLENT [7]
☒ GOOD [5]
☐ FAIR [3]
☐ POOR [1]

- ☒ NONE [6]
☐ RECOVERED [4]
☐ RECOVERING [3]
☐ RECENT OR NO RECOVERY [1]

- ☐ HIGH [3]
☒ MODERATE [2]
☒ LOW [1]

Channel
Maximum
20
15.5

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

R

R

L

R

L

R

- ☒ 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.

Riparian
Maximum
10
7.25

Comments

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]
☐ 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
10

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

- ☐ 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]

Riffle /
Run
Maximum
8
2.5

Comments

6] GRADIENT (35.64 ft/mi)

DRAINAGE AREA

(4.23 mi²)

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

%POOL:

%GLIDE:

%RUN:

%RIFFLE:

Gradient
Maximum
10

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

- 1st _____ cm
2nd _____ cm

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/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

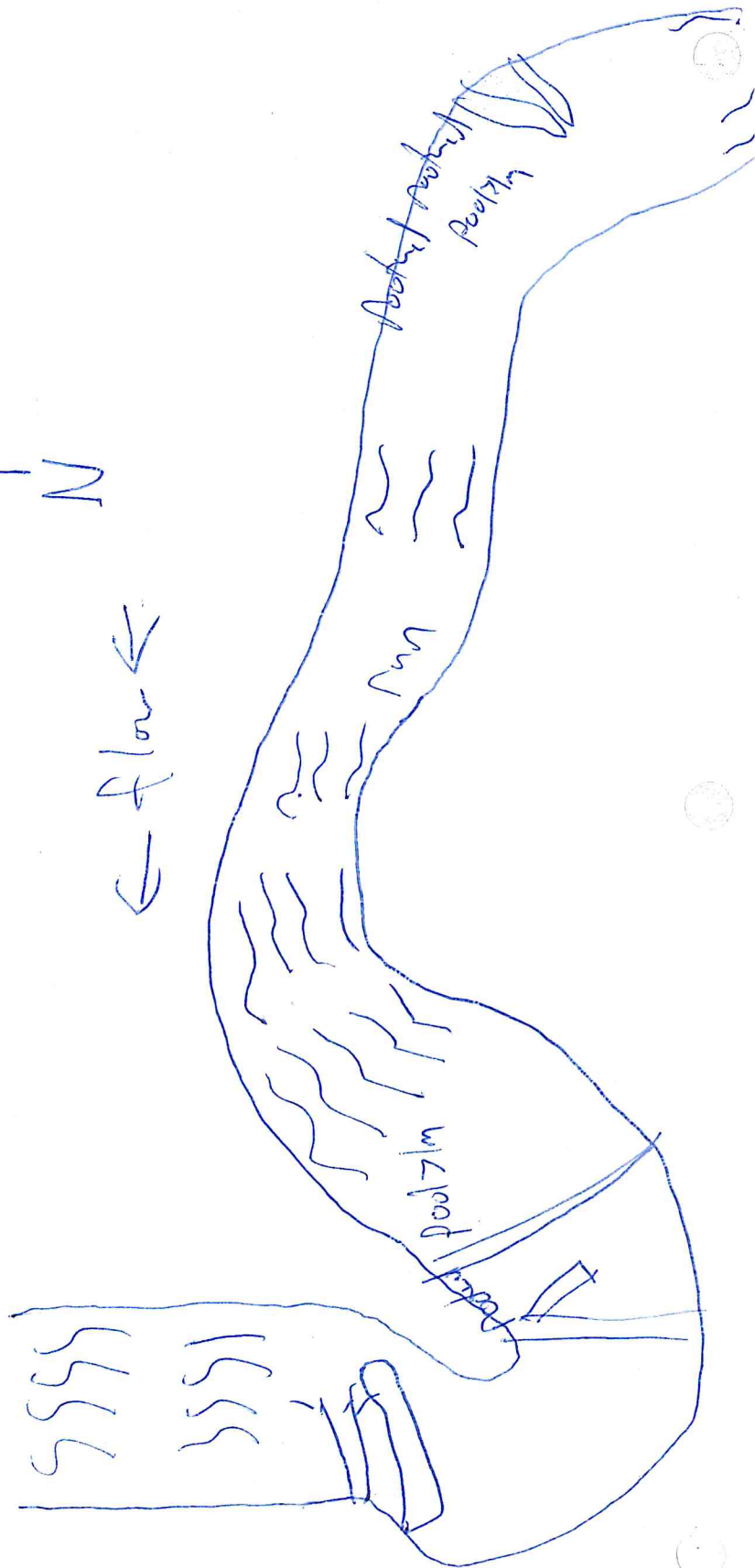
EJ ISSUES

- 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:





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **54**

Stream & Location: Mill Creek, Upstream Mill Creek Falls & Downstream Wolf RM: 03.15 Date: 7/5/24

Robinson (Telap)

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 019-006-000 STORET #: F01523 Lat./Long.: 41.4422 / 81.6216 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 sludge from point-sources)	

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
13.5
Maximum
20

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

Comments

12+2+0.5+0-1

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

1+1+3

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

2+3+4+2

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

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

Riparian
Maximum
10

Comments

3+2.5+1

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]	☒ 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

Comments

2+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
☐ 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

1+1+1+0

6] **GRADIENT** (12.70 ft/mi)

DRAINAGE AREA

(14.60 mi²)

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

%POOL: 0

%GLIDE: 60

%RUN: 20

%RIFFLE: 20

Gradient
Maximum
10

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

A) 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

C) RECREATION

AREA DEPTH
POOL: ☐ >100ft² ☐ >3ft

B) AESTHETICS

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

D) MAINTENANCE

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

Circle some & COMMENT

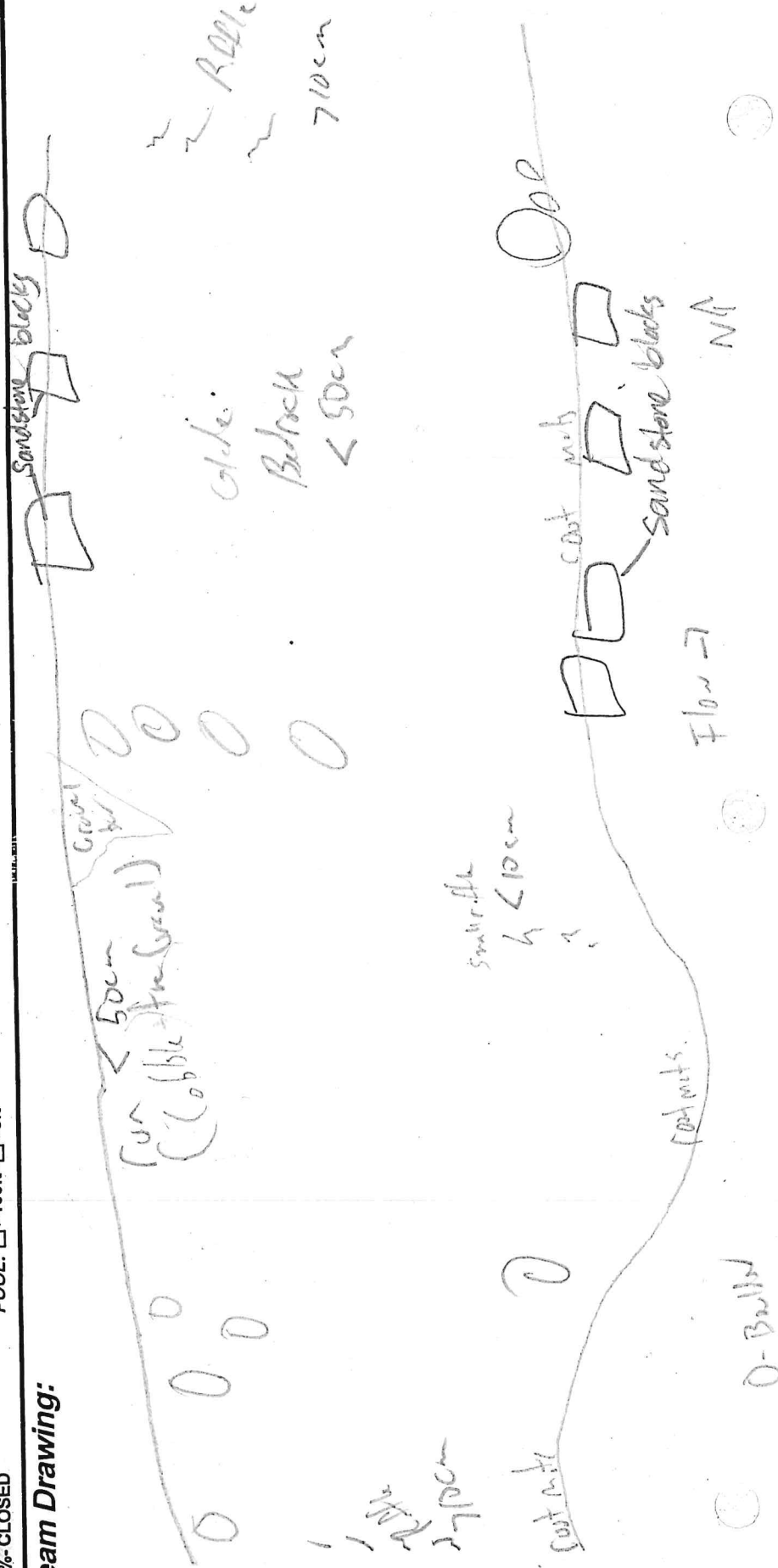
E) ISSUES

- 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

F) 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: **69.5**

Stream & Location: Mill Creek, Upstream of Warner Rd. Tributary

RM: 00.70 Date: 6/18/24

Jeff Harrison / Mark Matteson

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 019-006-000 STORET # 200075 Lat./Long.: 41.4240 / 81.6374

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] | ☐ | | |

- ORIGIN
- ☐ LIMESTONE [1]
- ☐ SILT
- ☐ 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
17.5
Maximum
20

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

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)

- | | | |
|---|---|---|
| ☐ 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
9

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
15.5

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] | ☐ CONSERVATION TILLAGE [1] |
| ☐ NONE / LITTLE [3] | ☐ MODERATE 10-50m [3] | ☐ SHRUB OR OLD FIELD [2] | ☐ URBAN OR INDUSTRIAL [0] |
| ☐ MODERATE [2] | ☐ NARROW 5-10m [2] | ☐ RESIDENTIAL, PARK, NEW FIELD [1] | ☐ MINING / CONSTRUCTION [0] |
| ☐ 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
4.5

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]
- ☐ 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
10

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 |
|---|---|---|---|
| ☒ 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
6

Comments

6] GRADIENT

(26.32 ft/mi)

DRAINAGE AREA

(18.20 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

1st-sample pass-- 2nd

STAGE

BOAT

WADE

L. LINE

OTHER

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

AREA DEPTH

POOL: <100ft² >3ft

Stream Drawing:

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:

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

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

BJ AESTHETICS

NUISANCE ALGAE

INVASIVE MACROPHYTES

EXCESS TURBIDITY

DISCOLORATION

FOAM / SCUM

OIL SHEEN

TRASH / LITTER

NUISANCE ODOR

SLUDGE DEPOSITS

CSOs/SSOs/OUTFALLS

CLARITY

1st --sample pass-- 2nd

< 20 cm

20-40 cm

40-70 cm

> 70 cm/ CTB

SECCHI DEPTH

1st _____ cm

2nd _____ cm

Stream & Location: Mill Creek, Upstream of Canal Rd

RM: 00.13 Date: 6/20/24

JUSTIN TELEP

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 019-006-000 STORET #: 502110 Lat./ Long.: 41.4178 / 81.6385

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]	☐		

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
16.5

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)

☐ 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
9

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
16

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	CONSERVATION TILLAGE
☐ NONE / LITTLE [3]	☐ WIDE > 50m [4]	☐ FOREST, SWAMP [3]	☐ URBAN OR INDUSTRIAL [0]
☒ MODERATE [2]	☒ MODERATE 10-50m [3]	☐ SHRUB OR OLD FIELD [2]	☐ MINING / CONSTRUCTION [0]
☐ 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]	

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

Riparian
Maximum
10
5.75

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]

☐ 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]

☒ 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
11

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
3.5

Comments

6] **GRADIENT** (10.20 ft/mi)
DRAINAGE AREA (19.50 mi²)

☐ VERY LOW - LOW [2-4]

☒ MODERATE [6-10]

☐ HIGH - VERY HIGH [10-6]

%POOL:

%GLIDE:

%RUN:

%RIFFLE:

Gradient
Maximum
10
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
- ☐ DISTANCE

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

meters

CANOPY

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

CJ RECREATION

AREA DEPTH

POOL: ☐ >100R2 ☐ >3ft

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
☐ ARMoured / SLUMPS
☐ ISLANDS / SCQUIRED
☐ IMPOUNDED / DESICCATED
☐ FLOOD CONTROL / DRAINAGE

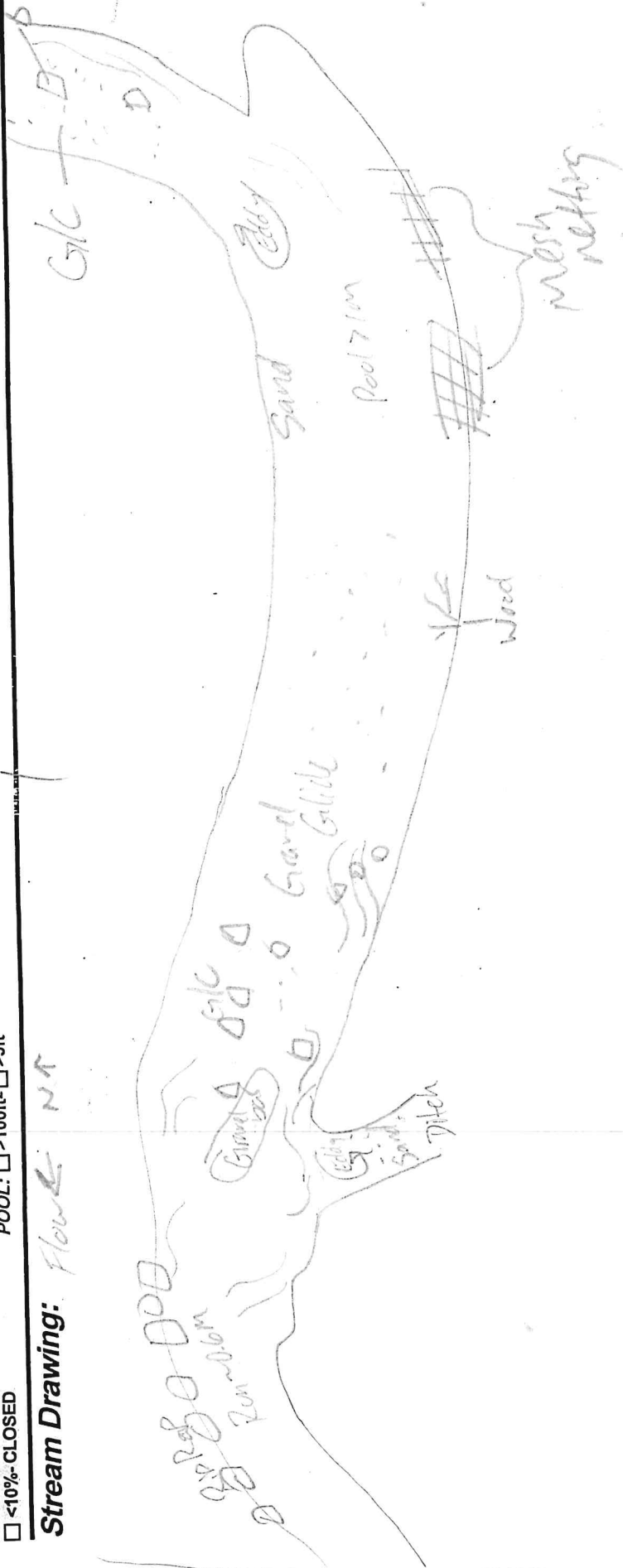
EJ ISSUES

- 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:



Stream & Location: Wolf Creek, Upstream Confluence w/ Mill Creek RM: 00.05 Date: 6/21/24

Mark Matteson

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 19-006-003 STORET #: 304230 Lat./Long.: 41.4313 / 81.605 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
☐ BLDR / SLABS [10]	☐	☐	☐	☐ HARDPAN [4]	☐	☐	☐	☒ LIMESTONE [1]	☐	☐ HEAVY [-2]	☐	
☒ 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)				☐ RIPRAP [0]	☐	☐ MODERATE [-1]	☐	
NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]								☐ LACUSTURINE [0]	☐	☒ NORMAL [0]	☐	
								☐ SHALE [-1]	☐	☐ NONE [1]	☐	
								☐ COAL FINES [-2]	☐	☐	☐	

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)

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

Comments

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

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

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

Comments

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

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

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

6) GRADIENT (43.48 ft/mi)

DRAINAGE AREA

(2.2 mi²)

- ☐ VERY LOW - LOW [2-4]
☐ 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

1st--sample pass-- 2nd

- ☐ BOAT
☐ WADE
☐ L. LINE
☐ OTHER
- ☐ DISTANCE
- ☐ 0.5 Km
☐ 0.2 Km
☐ 0.15 Km
☐ 0.12 Km
☐ OTHER

STAGE

- ☐ HIGH
☐ UP
☐ NORMAL
☐ LOW
☐ DRY

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

- 1st _____ cm
2nd _____ cm

CJ RECREATION

AREA DEPTH
POOL: ☐ >100ft² ☐ >3ft

FJ MEASUREMENTS

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

Circle some & COMMENT

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

BJ AESTHETICS

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

Stream Drawing:

