

Stream & Location: Big Creek, Downstream of Pearl Rd

RM: 09.80 Date: 6/24/24

Robinson & (Tele)

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 19-003-009 STORET #: 303734 Lat./Long.: 41.3884 / 81.7664

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

Check ONE (Or 2 & average)

- BEST TYPES**
- ☐ BLDR / SLABS [10] ☒ POOL ☒ RIFFLE
- ☒ BOULDER [9] ☒ ☒
- ☐ COBBLE [8] ☒ ☒
- ☐ GRAVEL [7] ☒ ☒
- ☐ SAND [6] ☒ ☒
- ☐ BEDROCK [5] ☒ ☒
- OTHER TYPES**
- ☐ HARDPAN [4] ☐ POOL ☐ RIFFLE
- ☐ DETRITUS [3] ☐ ☐
- ☐ MUCK [2] ☐ ☐
- ☐ SILT [2] ☐ ☐
- ☐ ARTIFICIAL [0] ☐ ☐

(Score natural substrates; ignore

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

Comments

9+7+2+1-0.5

- 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

188

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]
- ☐ 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]

Comments

1+1+1+7

Cover
Maximum 20

10

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

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

Comments

2+3+3+3

Channel
Maximum 20

11

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

River right looking downstream

- EROSION** ☒ NONE / LITTLE [3] ☐ MODERATE [2] ☐ HEAVY / SEVERE [1]
- RIPARIAN WIDTH** ☐ WIDE > 50m [4] ☐ MODERATE 10-50m [3] ☒ NARROW 5-10m [2] ☐ VERY NARROW < 5m [1] ☐ NONE [0]
- FLOOD PLAIN QUALITY** ☐ 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

3+2+0.5

Riparian
Maximum 10

55

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)

Comments

2+2+1+1

Pool /
Current
Maximum 12

6

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

Comments

1+1+2+0

Riffle /
Run
Maximum 8

4

- 6] GRADIENT (21.2 ft/mi) ☐ VERY LOW - LOW [2-4] ☐ MODERATE [6-10] ☒ HIGH - VERY HIGH [10-6]
- DRAINAGE AREA (5.6 mi²)

%POOL:

%GLIDE:

Gradient
Maximum 10

10

%RUN:

%RIFFLE:

AJ SAMPLED REACH

Check ALL that apply

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ 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: ☐ > 100ft ☐ > 3ft

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

large boulders throughout reach.

Stream Drawing:

Flow ← NA

Willows

1X/1 willows

1X/1 willows

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Flow ← NA

Willows

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Flow ← NA

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Flow ← NA

Willows

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Flow ← NA

Willows

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Flow ← NA

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Flow ← NA

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Flow ← NA

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Flow ← NA

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Stream & Location: Big Creek, Memphis Picnic Area

RM: 04.40 Date: 6/28/24

Mark Matheson

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 019-006-000 STORET #: 301193 Lat./Long.: 41.446 / 81.754

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)
☐ 3 or less [0]

Comments

9+7+2+1.5

- | 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

16.5

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] |
| ☐ OVERHANGING VEGETATION [1] |
| ☒ SHALLOWS (IN SLOW WATER) [1] |
| ☐ ROOTMATS [1] |

- | |
|--|
| ☐ POOLS > 70cm [2] |
| ☐ ROOTWADS [1] |
| ☒ BOULDERS [1] |

- | |
|---|
| ☐ OXBOWS, BACKWATERS [1] |
| ☒ AQUATIC MACROPHYTES [1] |
| ☐ LOGS OR WOODY DEBRIS [1] |

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

Cover

Maximum 20

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] | |

Comments

1.5+3+1+3

Channel
Maximum 20

8.5

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

River right looking downstream

- | EROSION | RIPIARIAN 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.Riparian
Maximum 10

6

Comments

3+2.5+0.5

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] | ☒ 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

5

Comments

2+0+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] |

Comments

Riffle /
Run
Maximum 8

4.5

6] GRADIENT (17.6 ft/mi)

DRAINAGE AREA

(19.3 mi²)

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

%POOL:

%GLIDE:

%RUN:

%RIFFLE:

Gradient
Maximum 10

10

Stream & Location: Big Creek, Downstream of John Nagy Drop Structure RM: 02.40 Date: 9/6/24

Justin Teled

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer DistrictRiver Code: 019-005-000 STORET #: P01520 Lat./Long.: 41.4509 / 81.7625Office 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] | ☐ |
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| ☐ 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

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

Comments

Limestone origin from restoration

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]

Comments

Cover Maximum 20 **6**

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 **13**

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] | |

Comments

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

Indicate for reach - pools and riffles.

Recreation Potential

Primary Contact

Secondary Contact

(circle one and comment on back)

Comments

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 **5**

Comments

22.0 ft/mi from Ohio EPA

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

DRAINAGE AREA

(33.8 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.

Site 225 lower (ack cascade) John Noyes. limestone from forest aggregating through the lower half (Rt) of 200 m zone, showing the lower slashy stream conditions.

Moderate algae growth only on limestone substrates. Local gravel deposits. Observed effects of stream demonstrate the scouring effect caused by channelized banks and a gradient drop through this section.

AJ SAMPLED REACH

Check ALL that apply

METHOD STAGE

- ☐ BOAT
- ☐ WADE
- ☐ 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

BJ AESTHETICS		DJ MAINTENANCE		EJ ISSUES		FJ MEASUREMENTS	
☐ NUISANCE ALGAE	☐ PUBLIC/PRIVATE / BOTH / NA	☐ WWTP / CSO / NPDES / INDUSTRY	☐ $\bar{x}$ width	☐ HARDENED / URBAN / DIRT&GRIME	☐ $\bar{x}$ depth	☐ max. depth	☐ bankfull $\bar{x}$ width
☐ INVASIVE MACROPHYTES	☐ ACTIVE / HISTORIC / BOTH / NA	☐ CONTAMINATED / LANDFILL	☐ BMPs-CONSTRUCTION-SEDIMENT	☐ LOGGING / IRRIGATION / COOLING	☐ bankfull $\bar{x}$ depth	☐ W/D ratio	☐ bankfull max. depth
☐ EXCESS TURBIDITY	☐ YOUNG-SUCCESSION-OLD	☐ FALSE BANK / MANURE / LAGOON	☐ WASH H ₂ O / TILE / H ₂ O TABLE	☐ ACID / MINE / QUARRY / FLOW	☐ floodprone $\bar{x}^2$ width	☐ entrench. ratio	☐ Legacy Tree:
☐ DISCOLORATION	☐ SPRAY / SNAG / REMOVED	☐ NATURAL / WETLAND / STAGNANT	☐ PARK / GOLF / LAWN / HOME	☐ ATMOSPHERE / DATA PAUCITY			
☐ FOAM / SCUM	☐ MODIFIED / DIPPED OUT / NA						
☐ OIL SHEEN	☐ LEVEED / ONE-SIDED						
☐ TRASH / LITTER	☐ RELOCATED / CUTOFFS						
☐ NUISANCE ODOR	☐ MOVING-BEDLOAD-STABLE						
☐ SLUDGE DEPOSITS	☐ ARMOURED / SLUMPS						
☐ CSOs/SSOs/OUTFALLS	☐ ISLANDS / SCOURED						
	☐ IMPOUNDED / DESICCATED						
	☐ FLOOD CONTROL / DRAINAGE						

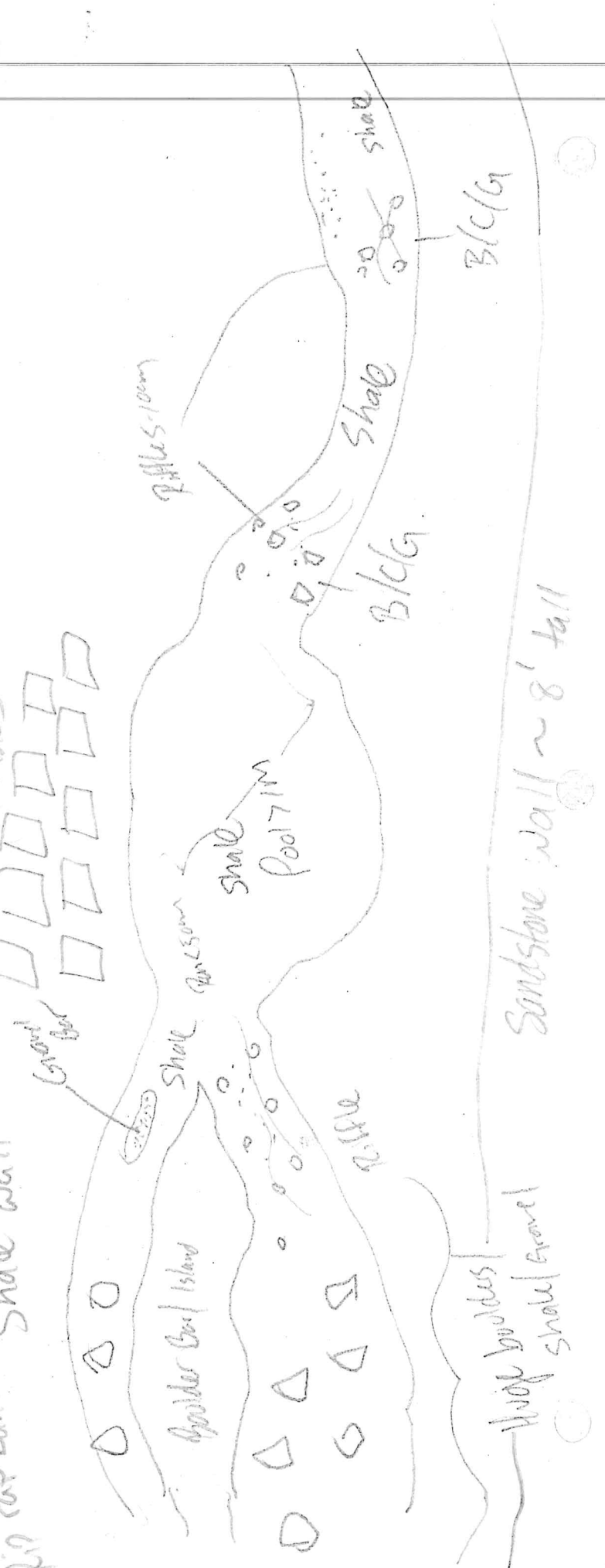
CJ RECREATION

AREA DEPTH

POOL: ☐ >100ft² ☐ >3ft

Stream Drawing:

Flow →





Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **54.75**

Stream & Location: Big Creek, Downstream of Jennings Rd

RM: 00.15 Date: 08/15/24

Seth Hothorn Justin Klep

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 019-005-000 STORET #: 502120 Lat./ Long.: 41.4462 / 81.6853

Office verified location ☐

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

Check ONE (Or 2 & average)

BEST TYPES
☐ BLDR /SLABS [10]
☐ BOULDER [9]
☐ COBBLE [8]
☒ GRAVEL [7]
☒ SAND [6]
☐ BEDROCK [5]
POOL RIFFLE
☒ ☐
OTHER TYPES
☐ HARDPAN [4]
☐ DETRITUS [3]
☐ MUCK [2]
☐ SILT [2]
☒ ARTIFICIAL [0]
POOL RIFFLE
☒ ☐
(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]
SILT
☐
EMBEDDEDNESS
☐

Substrate
12
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)

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

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

Cover
Maximum 20
10

Comments

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

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

Channel
Maximum 20
11.5

Comments

Several deep pools but numerous glides and no riffle or run

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

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

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

Riparian
Maximum 10
3.25

Comments

1.5 + 1 = 1.25

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
8

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

Riffle /
Run
Maximum 8
0

Comments

6] **GRADIENT** (17.6 ft/mi)
DRAINAGE AREA (37.1 mi²)
☐ VERY LOW - LOW [2-4]
☐ MODERATE [6-10]
☒ HIGH - VERY HIGH [10-6]

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

Gradient
Maximum 10
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

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 / SCOURED
☐ IMPOUNDED / DESICCATED
☐ FLOOD CONTROL / DRAINAGE

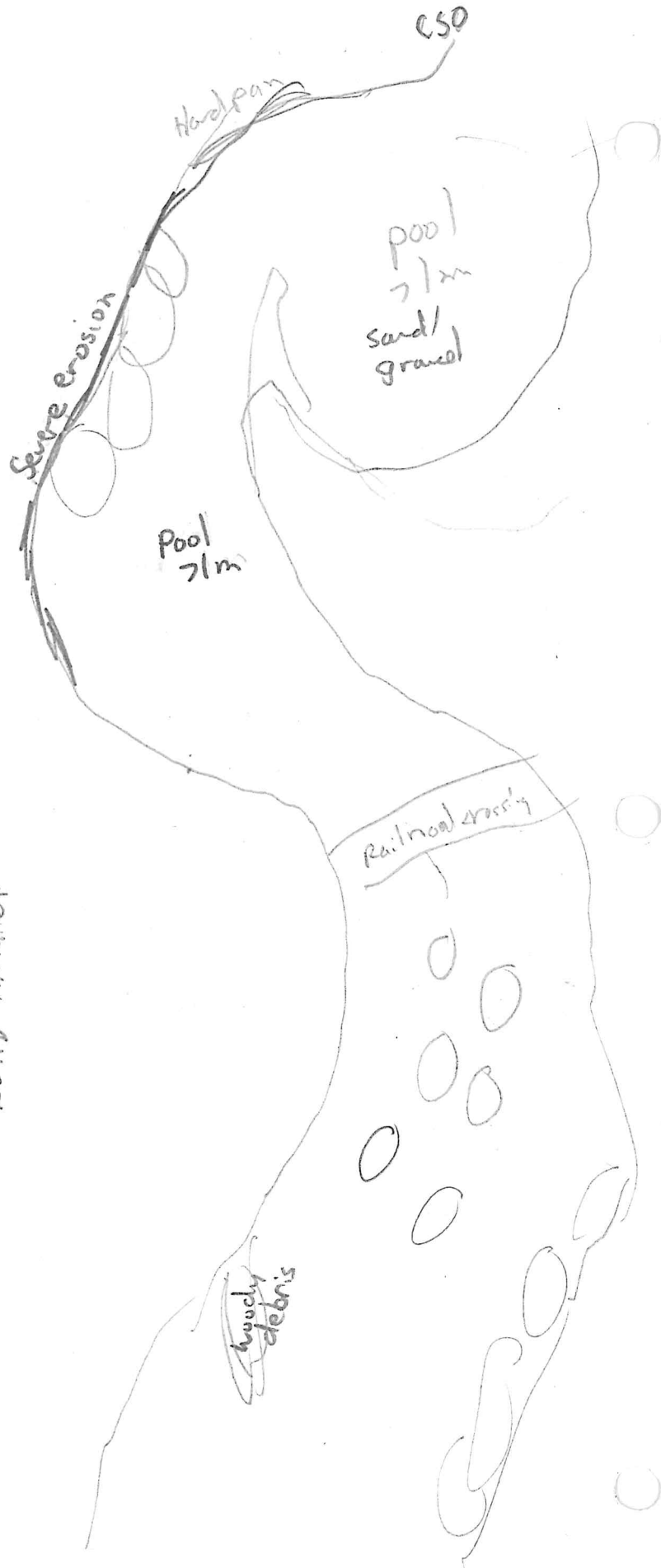
Circle some & COMMENT

FJ MEASUREMENTS

- 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
- $\bar{x}$ 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:

No HD installed



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

Scum on surface for lower half of zone. Upstream 1/3 of zone unstable; some shifting from year to year

Stream & Location: Big Creek Tributary @ RM 7.78

RM: 00.20 Date: 6/25/24

JUSTIN TELEP

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 019-005-000 STORET #: 302642 Lat./Long.: 41.4089 / 81.7522

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
15.5
Maximum
20

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

Comments

15+2+0.5=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

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]

Comments

Cover
Maximum
20
13

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

One pool well defined, riffles shallower

Channel
Maximum
20
15

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] | |

Comments

2+3.5+1

Indicate predominant land use(s) past 100m riparian.
Riparian
Maximum
10
6.5

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)

Comments

4+2+1

Pool / Current
Maximum
12
7

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

1+1+1.5=0

Riffle / Run
Maximum
8
3.5

6] **GRADIENT** (51.28 ft/mi)
DRAINAGE AREA (2.5 mi²)

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

%POOL: 15 %GLIDE: 30
%RUN: 30 %RIFFLE: 25

Gradient
Maximum
10
4

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

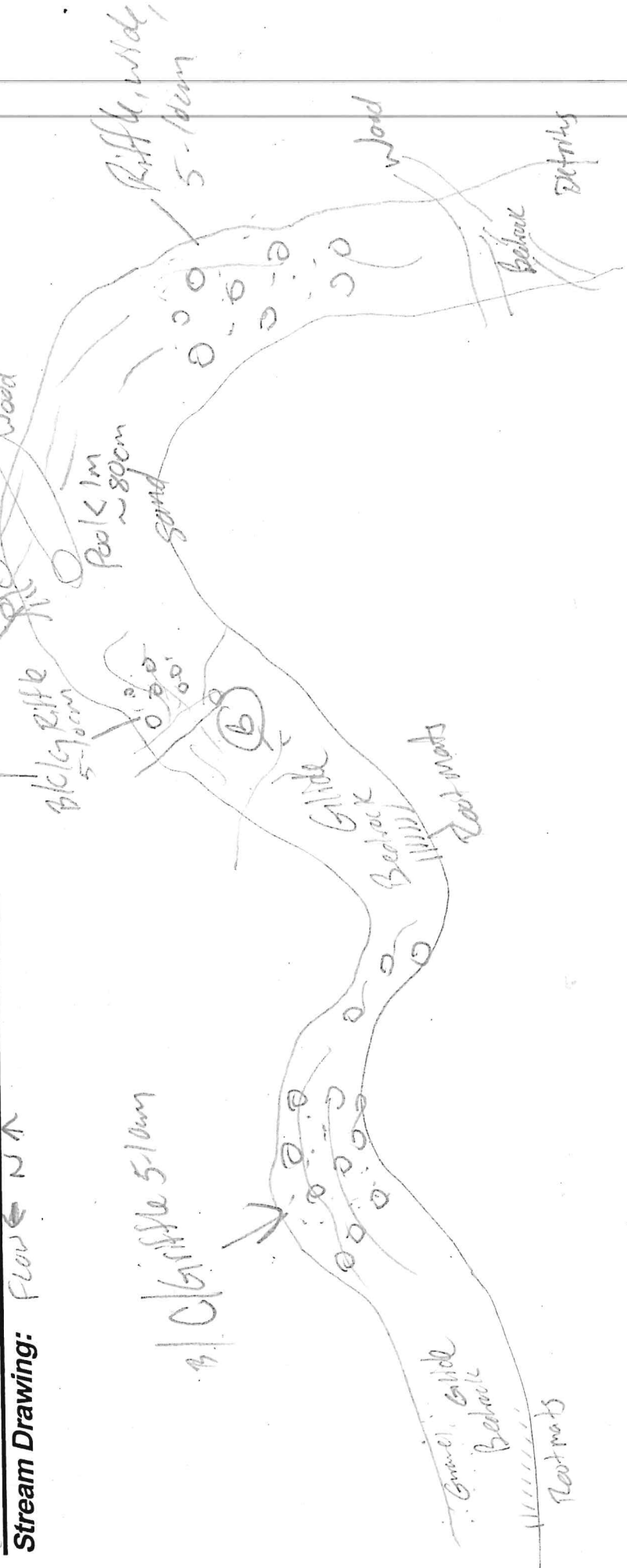
- ☐ > 85%- OPEN
☐ 55%-<85%
☐ 30%-<55%
☐ 10%-<30%
☒ <10%- CLOSED

CJ RECREATION

POOL: ☐ >100R2 ☐ >3ft

Stream Drawing:

Flow ← N ↑



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

Ripples have large cobble boulders as major functional component but embedded with shale fines and gravel throughout zone

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:

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



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **71.5**

Stream & Location: Big Creek / West Branch, Memphis picnic / upstream RM: 00.02 Date: 6/28/24
Mark Matleson

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District
River Code: 019-005-000 STORET #: 200072 Lat./Long.: 41.4461 / 81.7543 (NAD 83 - decimal °) Office verified location ☐

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

BEST TYPES	PPOOL RIFFLE	OTHER TYPES	PPOOL RIFFLE	ORIGIN	QUALITY
☐ 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]	☐			☐ RIP/RAP [0]	☒ MODERATE [-1]

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

Comments: 7+7+2 = 0.5

Check ONE (Or 2 & average)

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

EMBEDDEDNESS ☐ LACUSTURINE [0] ☒ SHALE [-1] ☐ COAL FINES [-2]

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

Comments: 1+1+1+2+1+1+5

Check ONE (Or 2 & average)

Channel Maximum 20 **12**

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+6+3

Channel Maximum 20 **13**

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

River right looking downstream

EROSION	RIPIARIAN 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]

Comments: 2.5+3+0.5

Riparian Maximum 10 **6**

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]

Indicate for reach - pools and riffles.

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

Comments: 6+1+2

Pool / Current Maximum 12 **9**

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
☐ 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: 1+1+1.5 = 0.5

Riffle / Run Maximum 8 **4**

6] **GRADIENT** (14.49 ft/mi) ☐ VERY LOW - LOW [2-4] ☒ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (11.9 mi²)

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

Gradient Maximum 10 **10**

Stream & Location: STECKNEY CREEK - VS RIDGE RDRM: 1.15 Date: 08/08/24DA 3.17 GRAD 41.67 John Rhodes Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer DistrictRiver Code: 019-005-002 STORET #: 303948 Lat./Long.: 41.4335 181.7351Office 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)☒ 3 or less [0]

Comments

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

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.

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]

Comments

Cover
Maximum 20

6

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

14.5

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	
☒ 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.

Comments

Riparian
Maximum 10

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]

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)

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).

☐ 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

Riffle /
Run
Maximum 8

3.5

6) GRADIENT (41.67 ft/mi)

DRAINAGE AREA

(3.17 mi²)

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

%POOL:

%GLIDE:

%RUN:

%RIFFLE:

Gradient
Maximum 10

4



Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: **51.5**

Stream & Location: STICKNEY CREEK VS RICHMAN CREEK

RM: 0.50 Date: 08/02/24

J. R. HANSEN

Scorers Full Name & Affiliation: Northeast Ohio Regional Sewer District

River Code: 019-005-002 STORET #: 200073 Lat./Long.: 41.4384 181.7448

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
12
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)

- | | | |
|---|---|---|
| ☐ 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
6

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
10.5

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 | 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] | |

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

Riparian
Maximum
10
5

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
5

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
3

Comments

6] GRADIENT (19.6 ft/mi)
DRAINAGE AREA (4.45 mi²)

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

%POOL:

%GLIDE:

%RUN:

%RIFFLE:

Gradient
Maximum
10
10

