

Thomas M. Kelly
Marine Consultant

October 28, 1983

Fisheries
Limnology
Resource Planning
Vessel Surveys

MEMO TO: Wm. Weiss, Institute for Water Quality Research

FROM: T. KELLY

SUBJECT: Shanty Creek Streams Project, Second Sampling.

I made the second sampling of Shanty Creek area streams on Oct. 24 - 25 1983. A heavy rain occurred on Oct. 25 and Stream No. 1 (at the old RR depot) was very turbid. Others streams were not affected, at least when seen on that day. Discharge measurements were added this sampling and will repeated next week.

My original field notes and typed results are attached.

cc: Peterson/Comfort

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RESULTS OF SHANTY CREEK AREA STREAMS SAMPLING
ANTRIM COUNTY, MICHIGAN, OCT. 24-25, 1983

Field Work by T. M. Kelly

Sampling sites are the same as previous week unless noted.
Sample (125 ml.) for chemistry taken at each site. Sample frozen.

24 OCTOBER 1983

Station No. 5 : Shanty Creek at Grass River Road

Time: 1710 EDT

Air Temp: 8.4 C

Water temp: 11.5 C

pH: 8.2+.06=8.26

Turb: 0.74 NTU

Weather: Heavy overcast, wind light NE

Water is clear, few leaves entrained (about 1/sec. passing downstream)

Photos: B&W No. 12-looking upstream into culvert

Color #25-same as 12 above

#26-looking downstream towards pond

Discharge (Q): Insufficient data on shape of culvert (irregular)

Velocity: 3.1 ft/sec (through culvert)

Depth at center of culvert discharge: 12.75 inches

Talked with Norm Klintworth of Terrace Villa Cabins. He reported that the stream always (past 20 yrs.) has had a sandy bottom. Has flooded several times and washed out dams upstream. Pond below sampling site has filled with sediment during the time he has lived here.

25 OCTOBER 1983

Visited Antrim County ASCS Office and Planning Department to look at Shanty Creek Site Development Plans. Plans showed detailed topography and locations of proposed sewer and sanitary sewer lines, sediment retention ponds and other construction, but did not show present surface drainage (creeks) or wet areas.

Purchased Xerox copies of aerial photography of study area.

Station No. 1: Depot Creek* at M-88 crossing

Time: 1012 EDT

Air Temp: 10.4 C

Water Temp: 8.3 C

pH: 8.20+.06=8.26

Turb: 125 NTU

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(Continued)

*I have taken the liberty to name the nameless creeks.

RESULTS OF SHANTY CREEK AREA STREAMS, SECOND SAMPLING, Page 2.
OCTOBER 25, 1983

Station No. 1. Continued.

Weather: Heavy overcast, occasional rain, heavy rain earlier today.
Water: very turbid, light brown color, visibility about 1.5"
Water level higher than first sampling-over top of culvert
by 0.75". Some leaves in stream (about 5 leaves/sec. passing).
Velocity through culvert: $2.9 \text{ ft/sec surface} \times 0.85 = 2.5 \text{ ft/sec average}$.
 $Q = 0.35 \text{ cfs}$ (cubic feet/sec) (Q measured at 5656 Fisherman's Par. Rd.)
Photos: B&W #13,14
Color #28,29,30,31

1115 EDT.

Stopped at a small stream that runs parallel to Stream No. 1, about $\frac{1}{2}$ mile north. This creek crosses a dirt N-S road off off N. Fisherman's Paradise Road just beyond a sign reading "Private Drive, No Outlet, McClelland & Faulkner". Stream has sand bottom and clear water. Raining. Color photo #32 looking downstream toward Lake Bellaire.

Station No. 2. Kernel Creek at M-88 crossing

Time: 1130 EDT
Air Temp: 10.5 C
Water Temp: 9.1 C
pH: $7.80 + .06 = 7.86$
Turb: 2.0 NTU
Weather: Heavy rain, hail
Water: Clear
Velocity: 2.2 surface, 1.9 ft/sec. average (through culvert)
Q: 0.32 cfs
Photos: B&W #15,16
Color #35-37

Station No. 3. Pumphouse Creek

Time: 1213 EDT
Air Temp: 9.8 C
Water Temp: 8.4 C
pH: $8.10 + .06 = 8.16$
Turb: 32 NTU
Weather: Occasional rain, overcast
Water: Slightly turbid
Deer tracks on stream banks. Hundreds of isopods moving upstream along stream margins.
Velocity: $1.3 \times 0.85 = 1.1 \text{ ft/sec}$. (through typical reach)
Q: 0.46 cfs
Photos: #17 B&W
#1,2 color, roll 2.

Continued

RESULTS OF SHANTY CREEK AREA STREAMS, SECOND SAMPLING, PAGE 3.

OCTOBER 25, 1983.

Station No. 4. Fairway Creek, at Fairway 3, Bellaire Golf Club

Time: 1315 EDT

Water Temp: 8.5 C

pH: $7.9 \pm .06 = 7.96 = \underline{8.0}$

Turb: 1.7 NTU

Weather: Rain has stopped, few breaks in cloud cover

Water: Clear, few leaves passing w/ current (1 every 2 sec.)

Velocity: $0.72 \text{ ft/sec} \times 0.85 = \underline{0.62 \text{ ft/sec}}$ average

Q: 0.38 cfs

Photos: B&W #18

Color #4,5

Submitted October 27, 1983

Thomas M. Kelly
Marine Consultant

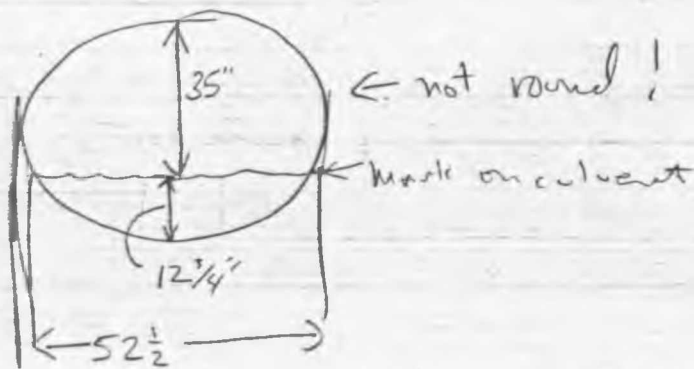
Shanty Creek Streams Project

24 OCT 83

T. Kelly

5 Shanty Creek @ Grass River Road

Time 1710 EDT
 pH 8.10 8.20
 Chem sample ✓
 Turb " ✓
 Water Temp 8.4/8.4 y
 Air " 12.0 / 11.5 y



Culvert length: 60'4"

Trials 1 - 16 sec
 2 - 17 sec
 3 - 17 sec } Surface floats

Weather: heavy overcast (no shadows)
Wind ~~calm~~ - light NE

Water clear, v. few leaves (w/see passing)

Photos

B&W: #12 } looking upstream into culvert sampling site
 Color: #25 }
 #26 } Downstream towards pond from Grass R. Road

Talked w/ Norm Klintworth - Terrace Villa Cabins - long term resident

TK
10/24/83

25 OCT '83 - TUESDAY

Tom Kelly

Stream 1 Time or 1012

Temp. AIR 10.8 (10.44)

H₂O temp 8.5 (8.34)

H ~~8.10~~ 8.20

Turb & chem samples taken

Weather - lvy, overcast, occasional
rain - heavy rain earlier
Wind

Water v. turbid - light brown
V. s. b. l. ty ~ 1 1/2"

Water level higher than last time here - water
over top of culvert pipe (3/4" over)

Below 13 - downstream looking N from "DO NOT PASS" sign
14 - up stream, from S of metal post.

Color 28 - same as 13 above

29 - same as 14 "

30 - small pipe draining Sed. Ret. Pond - at creek

31 - Small pipe entering Sed. Reten. Pond

Culvert at ⁵⁶⁵⁶ Fisherman Paradise Road

Trunk 1 - 10 in

2 - ~~10~~ 11 in

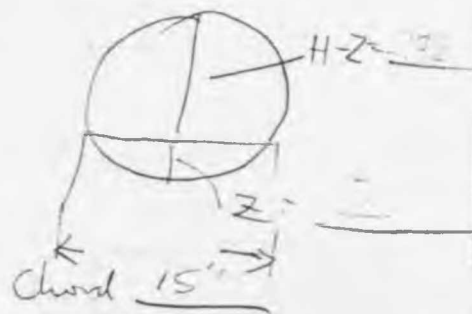
3 - 10 "

Z = 2 - 2 in

Dia (H) 30 inside

$$L = ~~31 - 8~~ = 30'4"$$

I have 100 in



added

Photo 33, Color, - cyanotype

FRIDAY

OCT 25, 1983

TM Kelly

1115 at small stream at end of dirt road
that enters ~~State~~ F. Partridge Road
at Sgr Private Drive
No Outlet
McClelland & Faulkner

Color Photo # 32 looking upstream W of
conduit
This stream looks clear.

St. 2 ~ 0.2 mile S. of S. Fisherman Partridge Rd or 11-88

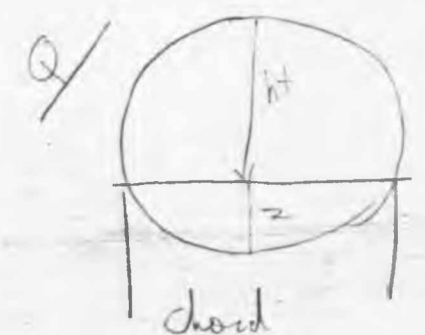
Photos: BW 15, 16, 34, 35
Color 34, 35, 36, 37
into pipe bottom DISTM

Rainy
time 1130
yellow { Air: 10.5
H₂O: 9.1

pH 7.8
Turb's chem sample W
Water - clear

(NOTE previous pH readings are
off - read meter wrong)

(524)
1 - 27 sec 4 - 23 sec
2 - 22 "
3 - 24 "
Length 41" x 8.5"



Dia 30.5" width 30.5" 29.34"
ht: 27.24
z: 2.7
Chord = 16"

TK.

LV
1205

res.
ST. 3.

25 OCT 83

TK Kelly

Time 1213 EDT

H₂O Temp 8.4°C

Air Temp 9.8C - occ rail

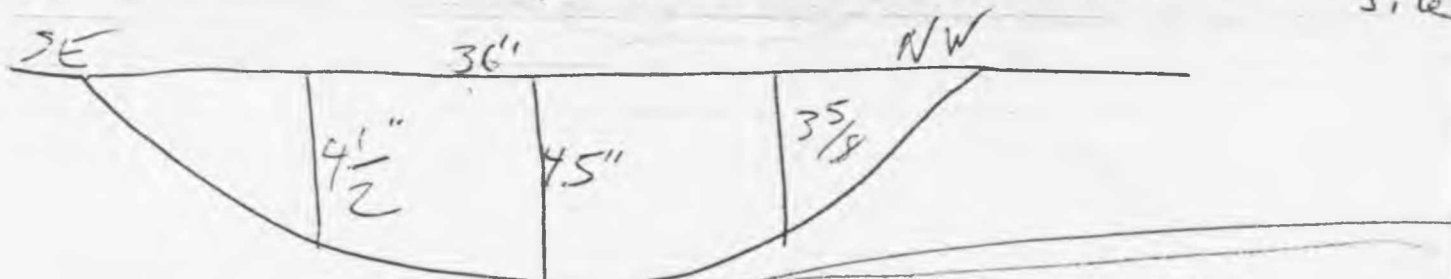
pH 8.1

Turb/chem samples ✓✓

Water: Fairly clear - no milkiness - not as clear as St. 2.

Photos: Color #1, 2 (chara bed in upper pond)
17 (same as 1 above) - stream into upper pond

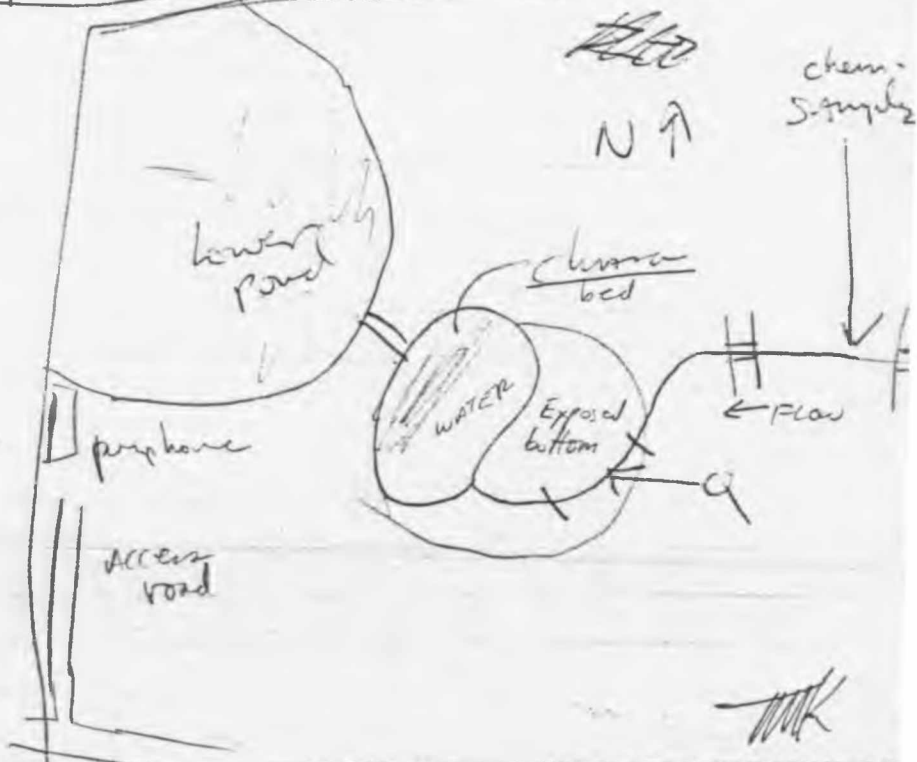
Q - stream into upper pond. Just below chem sample site



	L = 7 ft
Total	1 - 5 sec
"	2 - 6 "
"	3 - 5 "
"	3

Hundreds of isopods migrating up-stream along stream bank margin

Deer tracks



Tuesday

25 OCT 83

T.M. Kelly

ST 4

Time 1315

Air Temp _____

Water Temp 8.5°C

pH 7.9

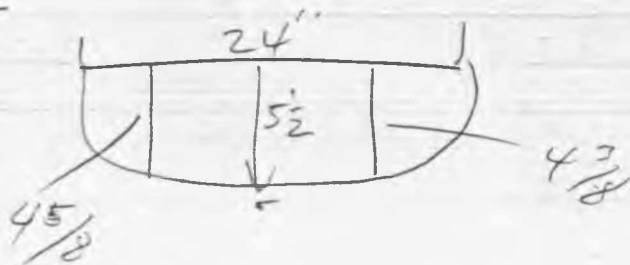
Few breaks in cloud cover, stopped raining

Turb, & chem ✓

Water clear, few g/covers

L = 12 ft
Trial 1 16 sec
2 17 sec

Typical X Section



Upstream from sampling site
(formed in stream)
1/2 sec

Photos: Color

#4 #5
bottom

Below #8 Same as #4 above
looking upstream, below sample site

T.M. Kelly