

Region SCR County Grant Report Date 8/1989 Classification LAL/LFF
 Water Body: Indian Creek, Trib to Indian Creek
 Discharger: Dickeyville WWTP

If stream is classified as Limited Forage Fish (LFF) or Limited Aquatic Life (LAL), check any of the following Use Attainability Analysis factors that are identified in the classification report:

- ☐ Naturally occurring pollutant concentrations prevent the attainment of use
- ☒ Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met
- ☐ Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place
- ☐ Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of the use
- ☒ Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses
- ☐ Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

Supporting Evidence in the report (include comments on how complete/thorough data is)

- ☒ Biological Data (fish/invert) invert, fish
- ☐ Chemical Data (temp, D.O., etc.)
- ☒ Physical Data (flow, depth, etc.)
- ☒ Habitat Description
- ☒ Site Description/Map
- ☒ Other: photos

Historical Reports in file:

8/1989 - Roger Schlessor
(7/22/1975) - Tom Bainbridge

Additional Comments/How to improve report:

- should LFF portion be WW?
- is low flow the limiting factor?
- check w/ region on class'n

claw change

TRIBUTARY TO AND INDIAN CREEK

AT DICKEYVILLE

TRIENNIAL STANDARDS REVIEW

DICKEYVILLE WWTP

AUGUST, 1989

ROGER SCHLESSER, SOUTHERN DISTRICT

BUREAU OF WATER RESOURCE MANAGEMENT

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

TABLE OF CONTENTS

Summary	1
Introduction	1
General Description	2-3
Table I. Low-Flow Characteristics	3
Stream Habitat	3
Water Quality	3-4
Biology	4-5
Map #1	4a
WWTP	5
Table II-III. Hilsenhoff Biotic Index	6-9
Table IV. Fish Survey Results.	10
Classification	11

PHOTOGRAPHS (3 pages)

APPENDIX I. Stream System Habitat Rating Form (2 pages)

APPENDIX II. 1988-89 DMR Data (4 pages)

APPENDIX III. 1975 Stream Classification (1 page)

APPENDIX IV. Final Effluent Limitations and Monitoring Requirements (1 page)

APPENDIX V. Chapter NR 104 (9 pages)

SUMMARY

The tributary to Indian Creek was originally classified as marginal (E). Indian Creek was classified as intermediate fish and aquatic life (D). This review indicates that the last 1.3 miles of Indian Creek should be classified full fish and aquatic life (B). The tributary and the remainder of Indian Creek should remain classified as the existing classification.

INTRODUCTION

This paper presents the results of an evaluation of the stream classification for a tributary to, and Indian Creek which are the receiving streams for the Dickeyville Municipal Wastewater Treatment Plant. The evaluation was conducted as part of the Triennial Standards Review.

The sites being reviewed are listed in NR 104.05 (Appendix V). These sites received a variance due to one or more of the following criteria:

- (a) The presence of inplace pollutants,
- (b) Low natural stream flow,
- (c) Natural background conditions, and
- (d) Irretrievable cultural alterations

GENERAL DESCRIPTION

The tributary to Indian Creek in the vicinity of the outfall has no base flow. Flow is limited to the WWTP effluent. The effluent flows approximately 0.8 mile before the juncture with Indian Creek.

Indian Creek from the juncture with the tributary to its mouth is approximately 3.1 miles in length. The stream corridor is mostly wooded pasture with some upland areas being in agricultural crops. Most of Indian Creek can best be described as having an extremely high gradient and subject to flash flooding. Indian Creek originates in the ridge tops and quickly drops to the valley floor before flowing into the Platte River. The substrate consists of bedrock and a combination of boulders and rubble. Stream width in many areas average 40' to 50'. Flood flows have really moved the bed material around which has created a wide channel, but due to normally low stream flow, water is confined to only a small portion of it. Pools are generally absent except at bridge crossings. Due to the constantly moving bed material instream cover is nearly absent and has limited colonization by macroinvertebrates.

The tributary to Indian Creek at the outfall has no base flow and consequently would have a Q_{710} of 0.0 cfs. The USGS computed Q_{72} of Indian Creek is <0.01 cfs and the Q_{710} is also <0.01 cfs. The USGS monitoring station is located approximately 1.7 miles from Indian Creek's mouth. Table 1 contains the

actual flows at the site taken from the publication "Low-Flow Characteristics of Wisconsin Streams at Sewage Treatment Plants and Industrial Plants".

Table 1: Low-Flow Characteristics, Indian Creek

<u>Drainage Area</u> <u>(mi²)</u>	<u>Date</u>	<u>Discharge</u> <u>(ft³/s)</u>
3.72	June 22, 1972	0.05
	August 30, 1972	0.01 (est.)
	August 2, 1973	1.79
	October 16, 1975	0.94
	July 27, 1976	0.33
	October 27, 1976	0.35

STREAM HABITAT

The tributary to Indian Creek is best described as high gradient, straight, little habitat, and carries only effluent flow. The upper reaches of Indian Creek are also high gradient, low flow, subject to flash flooding-relocation of bed material and unstable habitat. Stream bank erosion and the resultant sedimentation are also problems along much of the stream. Not until the lower reaches of Indian Creek does the gradient drop, pools begin to develop and the stream begins to meander. Only in this section of stream is habitat sufficient to support a decent fishery.

WATER QUALITY

Not much can be said about stream water quality. The tributary's flow is primarily effluent. Consequently, how well the WWTP is operating determines

the quality of water in this section. Also much of the upper reaches of Indian Creek is primarily effluent flow. Watercress was present at the two biological sampling sites which would indicate some groundwater discharge. Either filamentous algae or Potamogeton sp. was also abundant at these sites which would indicate a good quantity of nutrients entering the stream.

BIOLOGY

Macroinvertebrate samples were taken October 12, 1988 at two locations (Map #1). The results are contained in Tables II and III. According to the HBI data the first site sampled at a private drive had "fairly poor water quality". The sample was dominated by Asellus intermedius (63%). Due to the unstable habitat in Indian Creek Asellus intermedius is a likely inhabitant. Species which require stable habitat to colonize were mostly absent or present in very low numbers.

The second site sampled was below Indian Creek Road. This site was considered to have "poor water quality". It was also dominated by Asellus intermedius (71%). Due to flash flooding and movement of bed material the harsh environment of Indian Creek is suitable for only a limited number of macroinvertebrates which require a stable habitat.

A backpack shocker was used to sample Indian Creek at a private drive (Map #1). A large majority of the fish found were present under the bridge. Most of Indian Creek in this section is flat and shallow. Habitat and cover is so

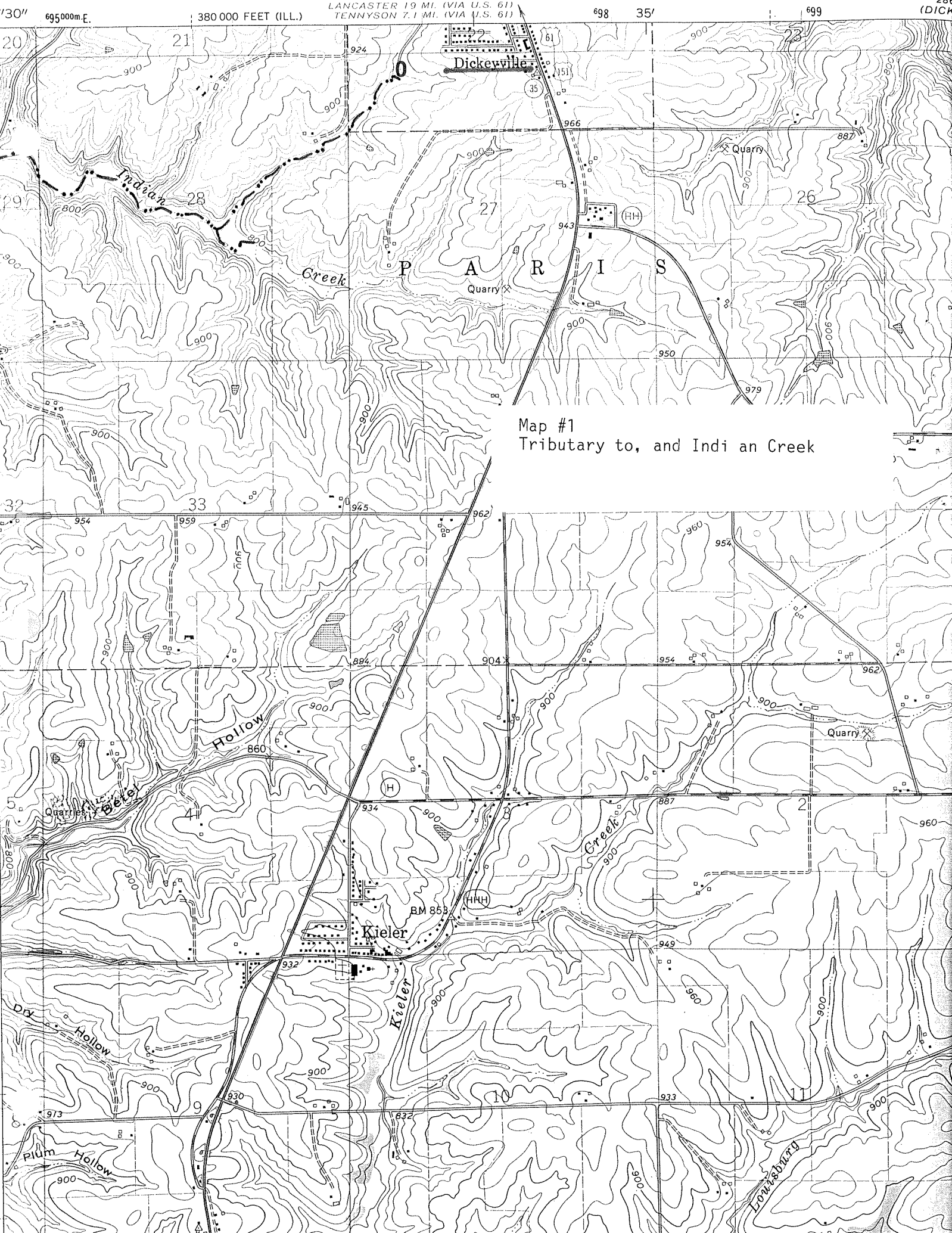
limited that wherever a little cover is present fish were found. Even branches and tree limbs laying in the water had small fish under them.

The site was dominated by creek chubs, which isn't surprising. Most of the sample was dominated by tolerant species but a few intolerant species were present also. Due to the wide range of flow conditions, including flooding and the unstable habitat the fishery in Indian Creek probably changes frequently throughout the year. In discussions with a local resident he had mentioned that sport fish move into the mouth of Indian Creek during the spring. Non-sport species probably also move into the lower reaches from the Platte and Mississippi Rivers during the spring spawning run.

Consequently, this section of Indian Creek should be upgraded to fish and aquatic life. As long as sufficient flows are present in this section, a number of these fish probably remain in Indian Creek.

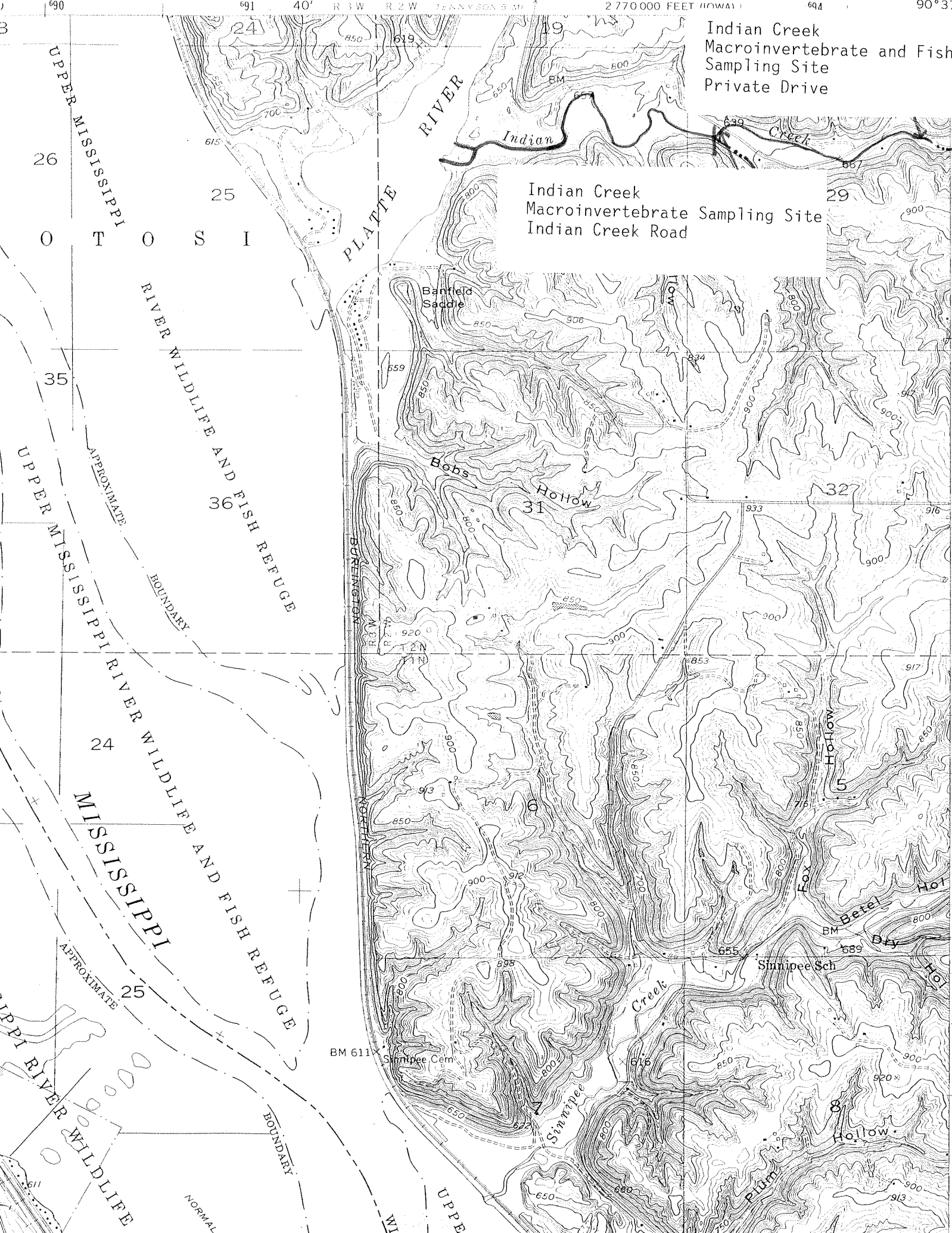
WWTP

Appendix II contains the 1988-89 DMR monthly averages for flow, BOD and TSS. According to this data the WWTP was having problems in February of 1988. According to the Wastewater Engineer they were experiencing filamentous organism problems. Chlorine dosing seems to have helped get the problem under control and has resulted in effluent limits generally in the single digits.



Map #1
Tributary to, and Indi an Creek

Indian Creek
Macroinvertebrate Sampling Site
Indian Creek Road



HBI _ 6.625 Rep1 _ Rep2 _ Rep3 _
 Sample ID # _ 881012-22-04 Waterbody Name _ INDIAN CR.
 Water Temp (Celsius) _ Dissolved Oxygen (mg/l) _
 Sample Location: SE NE S29 T 2N R 2W Master Waterbody # _
 Project Name _ TRIENNIAL STANDARDS Storet Station # _
 Ave. Stream Width (Ft.) at Site _ 1.5 Ave. Stream Depth (Ft.) at Site _ 0.4
 Collector _ SCHLESSER, R. Field # 04 Rep 1 _
 Measured Velocity (fps) _
 Est. Velocity (fps) _
 Sorter _ GEHRING, T. _ Moderate (0.5-1.5)
 Est % of sample sorted _ 10
 Taxonomist _ DIMICK, J. Sampled Habitat
 Location Description _ DWNS. OF PRIVATE DRIVE; STREAM HAS _ 1. Riffle
 _ EXTREME FLASH FLOODING PROBLEMS

Est. Time Spent Sampling (Min.) _ 3 _

Sampling Device _ 1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	20.0 Rubble	5.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	45.0 Gravel	15.0 Silt	0.0 Detritus	15.0 Debris/Veg

Substrate Sampled (%) (Same as above Yes)

0.0 Bedrock	0.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	0.0 Gravel	0.0 Silt	0.0 Detritus	0.0 Debris/Veg

Aquatic Vegetation 5 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ _ Fair _)

	Not Present	Insig- nificant	Sig- nificant	Comments
--	-------------	-----------------	---------------	----------

Turbidity	1			
Chlorine or Toxic Scour	1			
Macrophytes		2		H2O CRESS
Filamentous Algae			3	POTAMOGETON SP.
Planktonic Algae	1			
Slimes	1			
Iron Bacteria	1			

Factors Which May Be Affecting Habitat Quality

Sludge Deposits	1	
Silt and Sediment		3
Channel Ditching	1	
Down/Up Stream Impoundment	1	
Low Flows		3
Wetlands	1	

Pollutant Sources

Livestock Pasturing		3
Barnyard Runoff		3
Cropland Runoff		3
Tile Drains		
Septic Systems		
Stream Bank Erosion		3
Urban Runoff	2	
Construction Runoff	2	
Point Source (Specify Type)	2	
Other (Specify)		DICKEYVILLE WWTP

*** SOUTHERN DISTRICT DISTRICT BIOTIC INDEX REPORT ***

SAMPLE ID# 881012-22-04

7

***	TAXA	***	TAXONOMIC	TOL	ORGANISM	ORGANISM			
		SPECIES	KEY	VAL	ID	COUNT	REP1	REP2	REP3
			USED						
TRICHOPTERA									
HYDROPSYCHIDAE									
HYDROPSYCHE		BETTENI	*1	6.00	04040201	1		0	
CERATOPSYCHE		SLOSSONAE	*1	4.00	04040706	1		0	
COLEOPTERA									
ELMIDAE									
OPTIOSERVUS			*2	4.00	07020500	30		0	
STENELMIS			*2	5.00	07020600	7		0	
DIPTERA									
CHIRONOMIDAE									
EUKIEFFERIELLA		SP.B	*3	5.00	08052302	1		0	
TIPULIDAE									
TIPULA			*2	4.00	08141200	1		0	
ISOPODA									
ASELLIDAE									
ASELLUS		INTERMEDIUS	*4	8.00	10010101	71		0	
*** TOTALS: ***						112			0
*** BIOTIC INDEX: ***						6.625			

Taxonomic Key Code References

*1	Hilsenhoff 1981,86
*2	Hilsenhoff 1981
*3	Hilsenhoff 1981,85
*4	Williams 1972

HBI _ 7.610 Rep1 _ Rep2 _ Rep3 _
 Sample ID # _881012-22-05 Waterbody Name _INDIAN CR. 8
 Water Temp (Celsius) _ Dissolved Oxygen (mg/l) _
 Sample Location: SW NW S29 T 2N R 2W Master Waterbody # _
 Project Name _TRIENNIAL STANDARDS Storet Station # _
 Ave. Stream Width (Ft.) at Site _2.0 Ave. Stream Depth (Ft.) at Site _0.4
 Collector _SCHLESSER, R. Field # 05 Rep 1_
 Measured Velocity (fps) _
 Est. Velocity (fps) _
 Sorter _GEHRING, T. _Moderate (0.5-1.5)
 Est % of sample sorted _10 Sampled Habitat
 Taxonomist _DIMICK, J. _1. Riffle
 Location Description _DWNs. INDIAN CR. ROAD; STREAM HAS
 _EXTREME FLASH FLOODING PROBLEMS

Est. Time Spent Sampling (Min.) _ 4__

Sampling Device _1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	5.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	45.0 Gravel	20.0 Silt	0.0 Detritus	30.0 Debris/Veg

Substrate Sampled (%) (Same as above Yes)

0.0 Bedrock	0.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	0.0 Gravel	0.0 Silt	0.0 Detritus	0.0 Debris/Veg

Aquatic Vegetation 25 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ _Fair____)

	Not Present	Insig- nificant	Sig- nificant	Comments
Turbidity	1			
Chlorine or Toxic Scour	1			
Macrophytes			2	H2O CRESS, POTAMOGETON SP.
Filamentous Algae		2		
Planktonic Algae	1			
Slimes	1			
Iron Bacteria	1			

Factors Which May Be Affecting Habitat Quality

Sludge Deposits	1	
Silt and Sediment		3
Channel Ditching		3
Down/Up Stream Impoundment	1	
Low Flows		2
Wetlands		2

Pollutant Sources

Livestock Pasturing		3
Barneyard Runoff		3
Cropland Runoff		3
Tile Drains		
Septic Systems		
Stream Bank Erosion		3
Urban Runoff	2	
Construction Runoff	2	
Point Source(Specify Type)	2	DICKEYVILLE WWTP
Other (Specify)		

*** SOUTHERN DISTRICT DISTRICT BIOTIC INDEX REPORT ***

SAMPLE ID# 881012--22-05

PAGE

***	TAXA	***	TAXONOMIC	TOL	ORGANISM	ORGANISM	
		SPECIES	KEY	VAL	ID	COUNT	
			USED			REP1	REP2
EPHEMEROPTERA							
EPHEMERELLIDAE							
EPHEMERELLA		INERMIS (sp.A)	*1	1.00	02040411	1	0
COLEOPTERA							
ELMIDAE							
OPTIOSERVUS			*2	4.00	07020500	1	0
STENELMIS		CRENATA	*3	5.00	07020601	1	0
DIPTERA							
CHIRONOMIDAE							
CRICOTOPLUS		NR.BICINCTUS	*3	6.00	08051301	2	0
		NR.TRIFACIA	*3	7.00	08051303	3	0
ORTHOCLADIUS		SP.D	*3	5.00	08054004	1	0
SIMULIIDAE							
SIMULIUM		VITTATUM	*4	7.00	08110217	22	0
ISOPODA							
ASELLIDAE							
ASELLUS		INTERMEDIUS	*5	8.00	10010101	87	0
PELECYPODA							
SPHAERIIDAE							
POOR SPECIMEN			*6		15010400	1	0
OLIGOCHAETA			*7		16000000	3	0

*** TOTALS: *** 122

0

*** BIOTIC INDEX: *** 7.610

Taxonomic Key Code References

- *1 Hilsenhoff 1981,82
- *2 Hilsenhoff 1981
- *3 Hilsenhoff 1981,85
- *4 Hilsenhoff 1985
- *5 Williams 1972
- *6 Pennak 1978
- *7 Klemm 1985

TABLE: IV List of fish for sampling site: At bridge on private drive

DATE: 10/12/88 Twn 2N, R2W, Sec. 29, 1/4 1/4, SWNE STREAM: Indian Creek

Station mileage: 2.1D County: 22

SOURCE OF DATA: 05 GEAR: 3 EFFORT: 03

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M06	CENTRAL STONEROLLER	CYPRINIDAE	Campostoma anomalum	16	Intolerant
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	1	Intolerant
M45	BLUNTNOSE MINNOW	CYPRINIDAE	Pimephales notatus	9	Tolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	36	Tolerant
N09	WHITE SUCKER	CATOSTOMIDAE	Catostomus commersoni	4	Tolerant
J01	BROOK STICKLEBACK	GASTEROSTEIDAE	Culaea inconstans	5	Tolerant
X10	FANTAIL DARTER	PERCIDAE	Etheostoma flabellare	2	Intolerant

CLASSIFICATION

Based on this review of available chemical, physical, and biological data, the tributary to Indian Creek is properly classified as marginal (E). From the entrance of this tributary until a short distance below Indian Creek Road the classification of Indian Creek should remain as intermediate (D). A section of this was under consideration to be upgraded. But due to the Q_{710} of <0.01 cfs, flash flooding, unstable habitat (stream bed), and the HBI indicating "fairly poor water quality" along with only a few species being present indicative of a stable environment it was decided to leave the classification as intermediate. But the lower 1.3 miles of Indian Creek has less gradient, develops more pools and begins to meander more. Sport fish are present at least part of the year along with other species which probably use the stream for spawning during the spring. A tributary also adds additional flow to Indian Creek in the upper end of this section. This 1.3 mile stretch from the tributary to the mouth of Indian Creek should be upgraded to full fish and aquatic life (B).

Tributary to Indian
Creek

Above Dickeyville WWTP
outfall.



Tributary to Indian
Creek.

At Dickeyville WWTP
outfall.



Tributary to Indian
Creek.



Indian Creek

Upstream of private
drive.



Indian Creek Upstream
of Private Drive

Fish and
macroinvertebrate
sampling site.



Indian Creek

Downstream of Indian
Creek Road, note width
of flood channel vs. low
flow channel.

Indian Creek

Downstream of
Indian Creek Road.

