

Figure 16: 1994 Macroinvertebrate Data

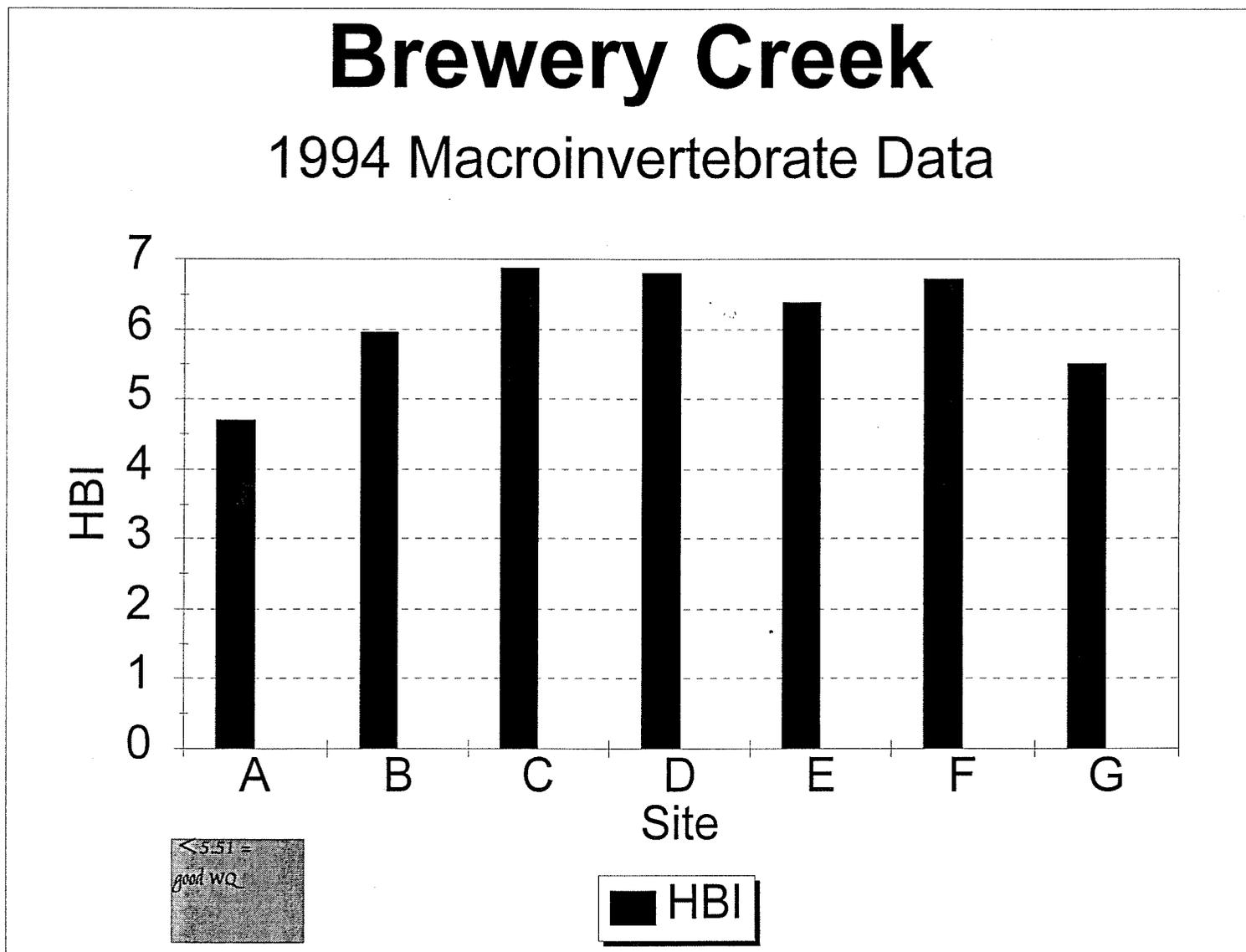


Figure 17: 1994 Macroinvertebrate Data

# Brewery Creek

## 1994 Macroinvertebrate Data

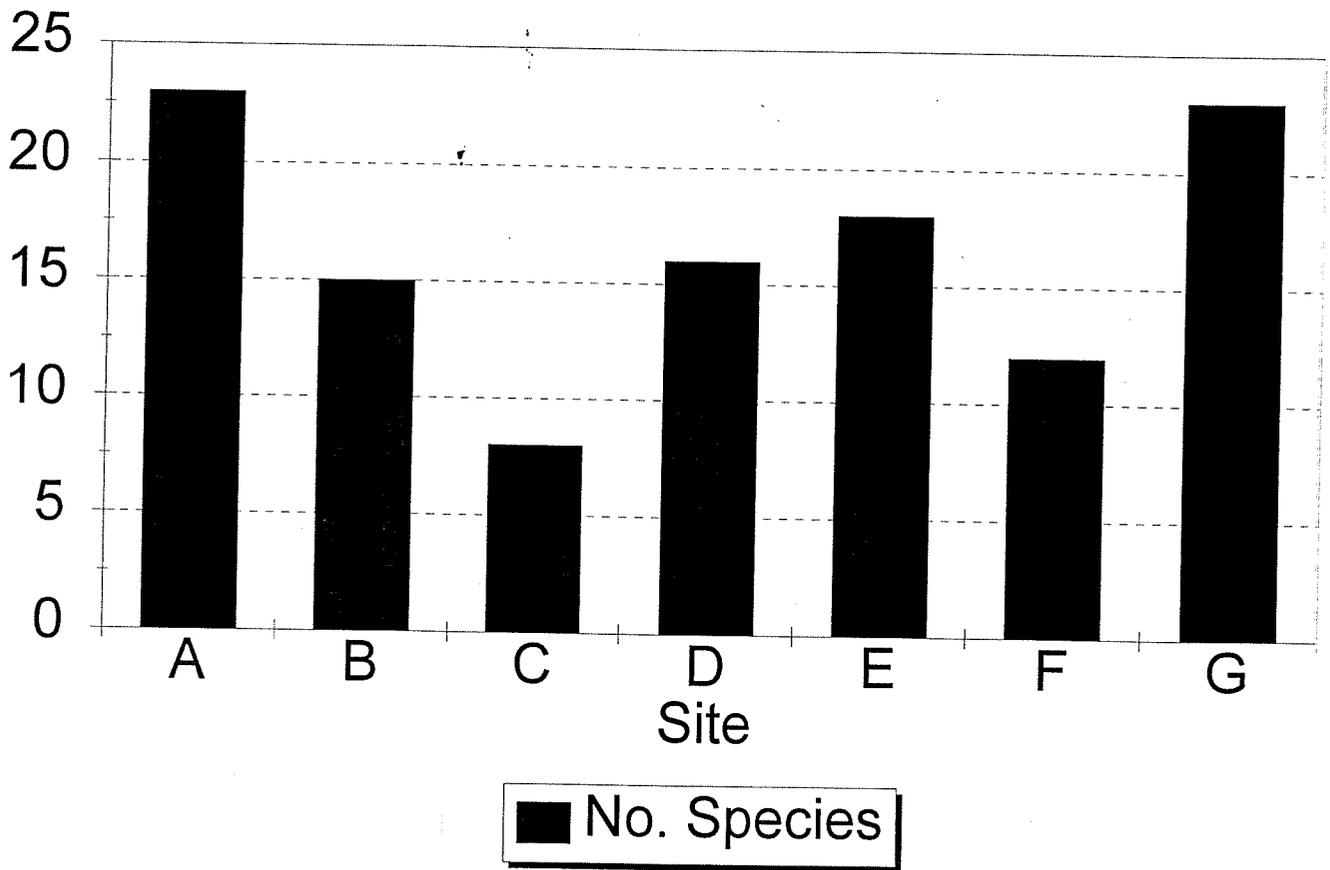
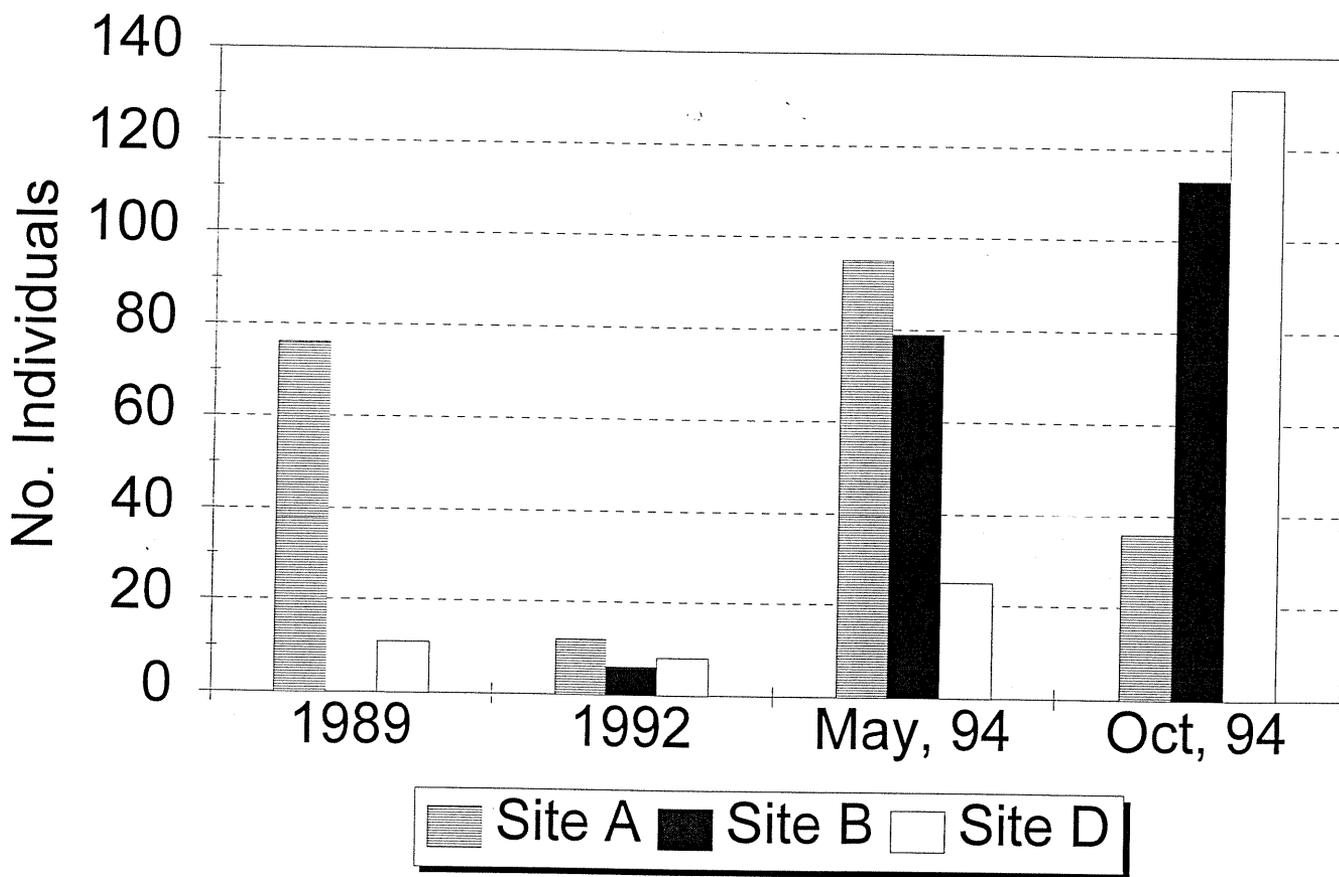


Figure 21: Brewery Creek Fisheries Data

# Brewery Creek Fisheries Data

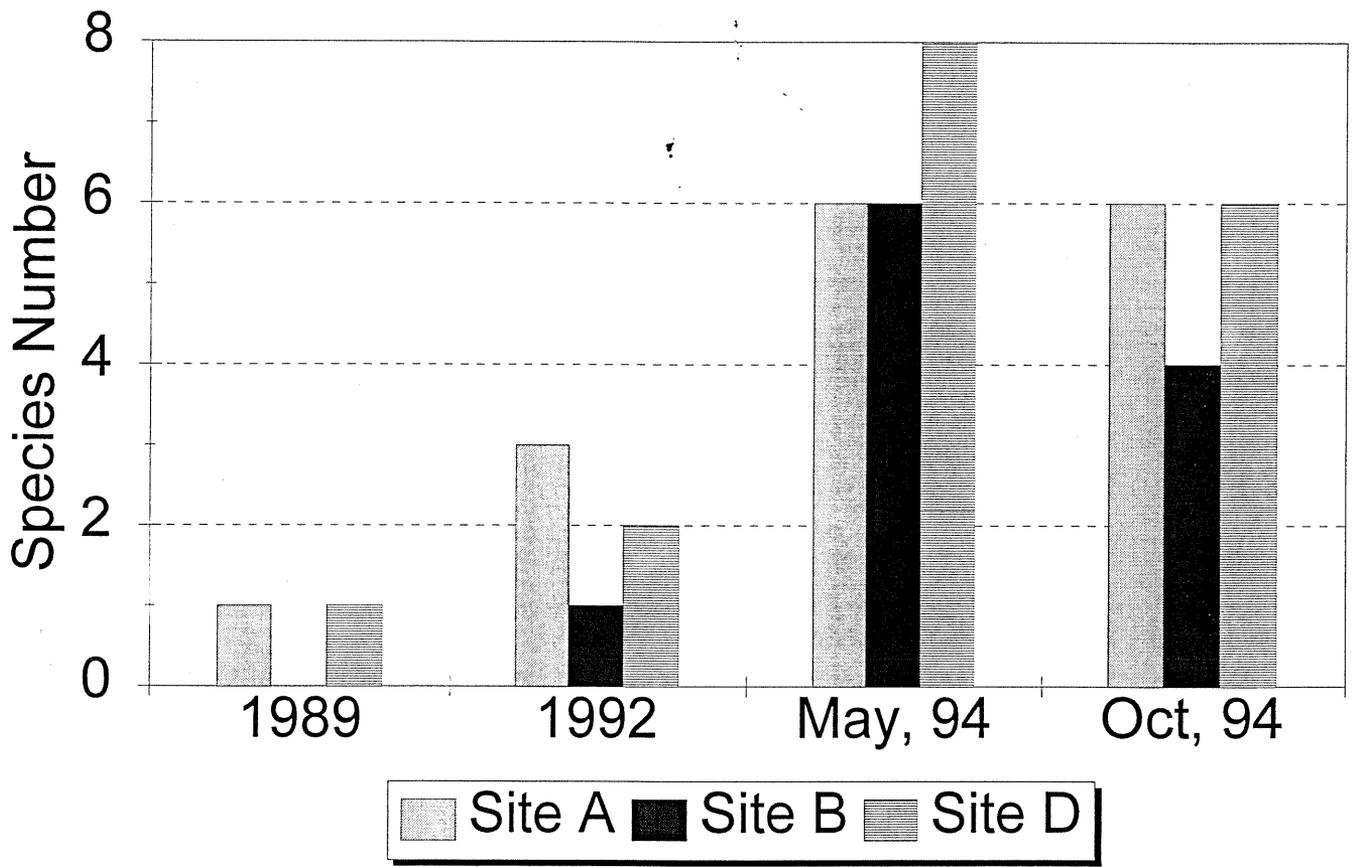


Site B was not sampled in 1989.

Figure 20: Brewery Creek Fisheries Data

# Brewery Creek

## Fisheries Data



Site B was not sampled in 1989.

**Table 1: Brewery Creek Water Column Metals Before and After Rehabilitation**

Before					After				
Cd	Cu	Fe*	Pb	Zn	Cd	Cu	Fe*	Pb	Zn
<b>Site A</b>									
0.1	2	0.3	8	90	0.15	4	0.52	7	120
0.1	5	0.24	10	14.1	0.1	5	0.47	9	120
0.1	4	0.34	15	94	0.2	6	0.43	8	93
0.1			8	82	0.16	2.4	0.56	10	110
0.1					0.13	11	0.27	9	76
					0.2	8	0.71	15	110
					0.1	7	0.85	22	86
					0.1	2.9	0.36	14	84
					0.13		0.26	7.4	87
					0.2		0.5	8	
					0.2			7	
<b>Before Site B</b>					<b>After</b>				
1.6	12	22	16	2550	0.15	4	1.5	9	230
1.5	10	11.02	12	1220	0.18	6	1.4	7	200
1.5	8	15	18	1800	0.19	2.1	1.1	8.4	160
1.6			15	1600	0.2	6	1.5	14	190
				1600	0.2	7	1.5	25	170
					0.4	7	1.2	13	210
					0.26	4.1	1.1	6.6	240
					0.3	5	1.5	5	250
					0.5		1.6	7	280
<b>Before Site D</b>					<b>After</b>				
4.1	12	16	8	3210	0.8	5	2.3	9	640
0.7	20	9.58	21	2090	0.7	3	2.5	7	710
4.3	17	23	17	3700	0.9	7	2.4	7	780
4	21	22.5	18	3800	0.6	6	2.1	9	640
4.4	18	29	13	3900	0.5	6	2.6	18	620
	28	14.5		3600	0.5	4	2.3	14	670
		19		4900	0.4	8	1.7	11	510
					0.6	4	2.6	20	780
					1	4	3.3	16	910
					0.4				
					0.2				

Values expressed as ug/l except \*Fe which is mg/l.

**Table 2. Brewery Creek Fisheries Data**

Date	Site	Species	Number	Date	Site	Species	Number
1989	A	<i>creek chub</i>	76	May, 94	D	<i>creek chub</i>	6
	D	<i>creek chub</i>	11			<i>common shiner</i>	2
1992	A	<i>creek chub</i>	9			<i>redbelly dace</i>	4
		<i>redbelly dace</i>	1			<i>stoneroller</i>	4
		<i>stoneroller</i>	2			<i>white sucker</i>	1
	B	<i>white sucker</i>	6			<i>brook stickleback</i>	2
	D	<i>creek chub</i>	7			<i>orange spot sunfi</i>	1
		<i>redbelly dace</i>	1			<i>brook trout juv.</i>	1
May, 94	A	<i>creek chub</i>	25			<i>brook trout</i>	4
		<i>stoneroller</i>	21	Oct, 94	A	<i>creek chub</i>	12
		<i>white sucker</i>	16			<i>common shiner</i>	1
		<i>green sunfish</i>	3			<i>stoneroller</i>	1
		<i>sunfish hybrid</i>	3			<i>white sucker</i>	18
		<i>brook trout juv.</i>	21			<i>fantail darter</i>	2
		<i>brook trout</i>	5			<i>brook trout</i>	1
	B	<i>creek chub</i>	32		B	<i>creek chub</i>	100
		<i>stoneroller</i>	12			<i>white sucker</i>	10
		<i>white sucker</i>	7			<i>johnny darter</i>	2
		<i>green sunfish</i>	1			<i>brook trout juv.</i>	1
		<i>johnny darter</i>	1		D	<i>creek chub</i>	67
		<i>brook trout juv.</i>	22			<i>common shiner</i>	16
		<i>brook trout</i>	5			<i>stoneroller</i>	34
						<i>white sucker</i>	12
						<i>fantail darter</i>	2
						<i>brook trout</i>	11

Brook trout were stocked.

BREWERY CREEK

AT MINERAL POINT

TRIENNIAL STANDARDS REVIEW

MINERAL POINT WWT

February, 1988

Roger Schlessor, SD

Bureau of Water Resources Management

Wisconsin Department of Natural Resources

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## **SUMMARY**

Brewery Creek below the Mineral Point WWTP was originally classified as marginal surface waters (E) due to significant nonpoint source problems, i.e., mine waste runoff. This review indicates the existing classification is correct and should remain the same until significant nonpoint source problems can be corrected.

## **INTRODUCTION**

This paper presents the results of an evaluation of the stream classification for Brewery Creek which is the receiving stream for the Mineral Point Municipal WWTP. The evaluation was conducted as part of the Triennial Standards Review.

The sites being reviewed are listed in NR104.05 (Appendix VII). These sites received a variance due to one or more of the following criteria:

- a. The presence of in-place pollutants
- b. Low natural stream flow
- c. Natural background conditions, and
- d. Irretrievable cultural alterations.

## **GENERAL DESCRIPTION**

Brewery Creek is located in southern Iowa County and originates north of the Village of Mineral Point. It is approximately five miles in length and has a gradient of 46' per mile. Brewery Creek flows through Mineral Point where a large tributary enters it from the east and continues in a southerly direction until it meets Rock Branch where the combined waters are called Furnace Creek.

The reach included in this evaluation is a three mile stretch which extends from approximately 0.5 miles above the outfall to 1.8 miles below Ferndale Road. Land use in the study area consists of the village of Mineral Point, wooded areas, lightly pastured area, and idle land. A salvage yard is located a short distance upstream of the tributary which enters Brewery Creek within the village limits. A cheese factory within the village had been a problem in the past with a discharge of whey or wash water to a storm sewer. The factory had shut down for a year or more but has recently been sold to another cheese maker.

The major nonpoint source problem is from runoff of old mine waste piles. They are left from lead and zinc mining conducted in the late 1800's and early 1900's. Mine waste piles are located above the WWTP outfall as well as below it. Runoff contains very low pH's and high concentrations of heavy metals. The site has been submitted to EPA for consideration to the Superfund National Priority List. The site had a Hazard Ranking System score of 30.42.

The Q<sub>2</sub> is 1.2 cfs and the Q<sub>710</sub> is 0.68 cfs at the Jackson Street bridge which is located 1200' above the outfall.

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, Brewery Creek

Drainage Area <u>(mi<sup>2</sup>)</u>	Date	Discharge <u>(ft<sup>3</sup>/s)</u>
6.74	June 2, 1972	1.93
	August 10, 1972	1.53
	July 31, 1973	4.83
	October 9, 1975	2.75
	July 27, 1976	1.35
	September 14, 1976	1.06
	June 23, 1977	0.83

### **STREAM HABITAT**

In the study reach, Brewery Creek has a depth of 2.5-3.5 feet in the pools and 3" to 5" in the riffles. Most of the stream banks are well vegetated with little bank erosion. Due to the mine waste runoff the land adjacent to the stream is not heavily pastured which helps in keeping the banks well vegetated.

Stream substrate is primarily gravel-rubble with a precipitate layer of reddish-orange mine waste over the top. The water column normally has an orange color under low flow, but during surface water runoff the water column becomes a very deep reddish-orange due to the roaster piles.

Overall, stream habitat is fair to good. Rock Branch, a stream which joins Brewery Creek, has similar characteristics and is presently managed as trout water.

### **WATER QUALITY**

The major study conducted on Brewery Creek was done in 1979 (Appendix VIII). Low flow and runoff samples were taken along with waste pile cores to characterize the effects of mine waste on Brewery Creek.

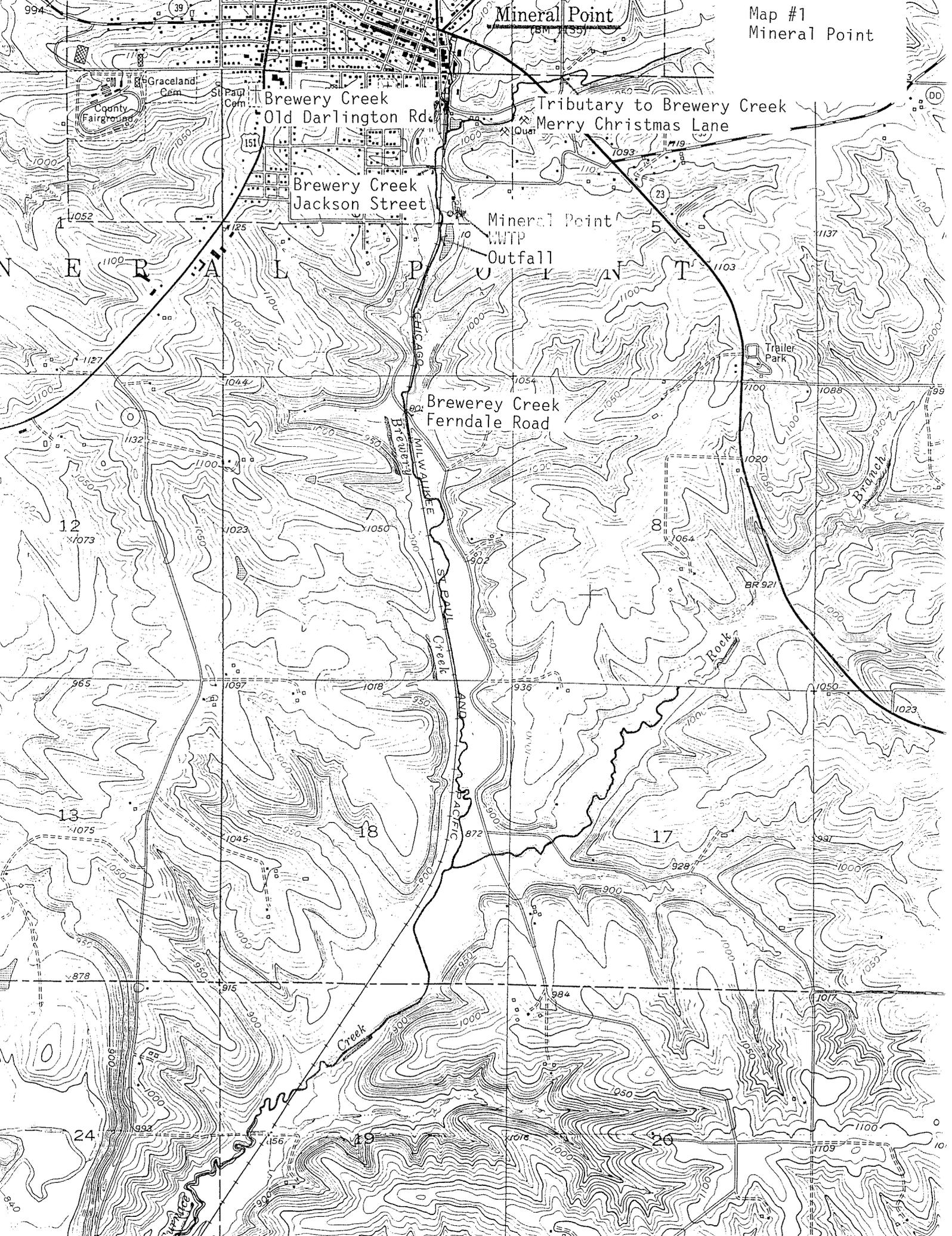
Levels of total zinc in Brewery Creek during runoff reached 6,600 ug/l. A tributary which flows to Brewery Creek was also sampled above and below the influence of a roaster pile. Total zinc above the pile during runoff was 40 ug/l and below the pile it was 44,000 ug/l.

Two surveys were conducted in 1974 (Appendix VI). A special stream study was conducted on March 26, 1974, to identify nonpoint sources and specifically sources of heavy metals. Water samples were collected and analyzed for zinc, lead, iron, and mercury as well as the usual wasteload allocation parameters. Dissolved oxygen dropped slightly below the outfall. BOD<sub>5</sub> and NH<sub>3</sub>-N were elevated from the ambient conditions. Heavy metal samples were also elevated in the stream reach impacted by the mine waste.

A wasteload allocation study was also conducted on August 29, 1974. The upstream and downstream flows were measured at 4.7 and 5.0 cfs respectively. The flow from the STP was measured at 0.4 cfs. The effluent BOD<sub>5</sub> and NH<sub>3</sub>-N was 14 mg/l and 4.2 mg/l respectively. Because of high stream flow the BOD<sub>5</sub> below the outfall remained the same as the ambient sample but the NH<sub>3</sub>-N sample was somewhat elevated. Dissolved oxygen remained high throughout the study area never falling below 7.7 mg/l.

#### BIOLOGY

Two sections of Brewery Creek were sampled with a backpack fish shocker. The first site sampled was located upstream of Ferndale Road approximately 200 ft. (Map #1). The site was surveyed in October 1987 (Table III). The only fish captured were four creek chubs. Due to the mine waste runoff the fish were in poor shape. They had a bleached coloration and the scales readily fell off during handling. Also included is data from June 1976 (Table II) which was collected for the fish distribution study. Only two species of fish were captured which were both considered tolerant. The low numbers of fish and their physical condition indicate the severe impacts on the fishery.



Brewery Creek  
Old Darlington Rd.  
Jackson Street

Tributary to Brewery Creek  
Merry Christmas Lane

Mineral Point  
WWTP  
Outfall

Brewery Creek  
Ferndale Road

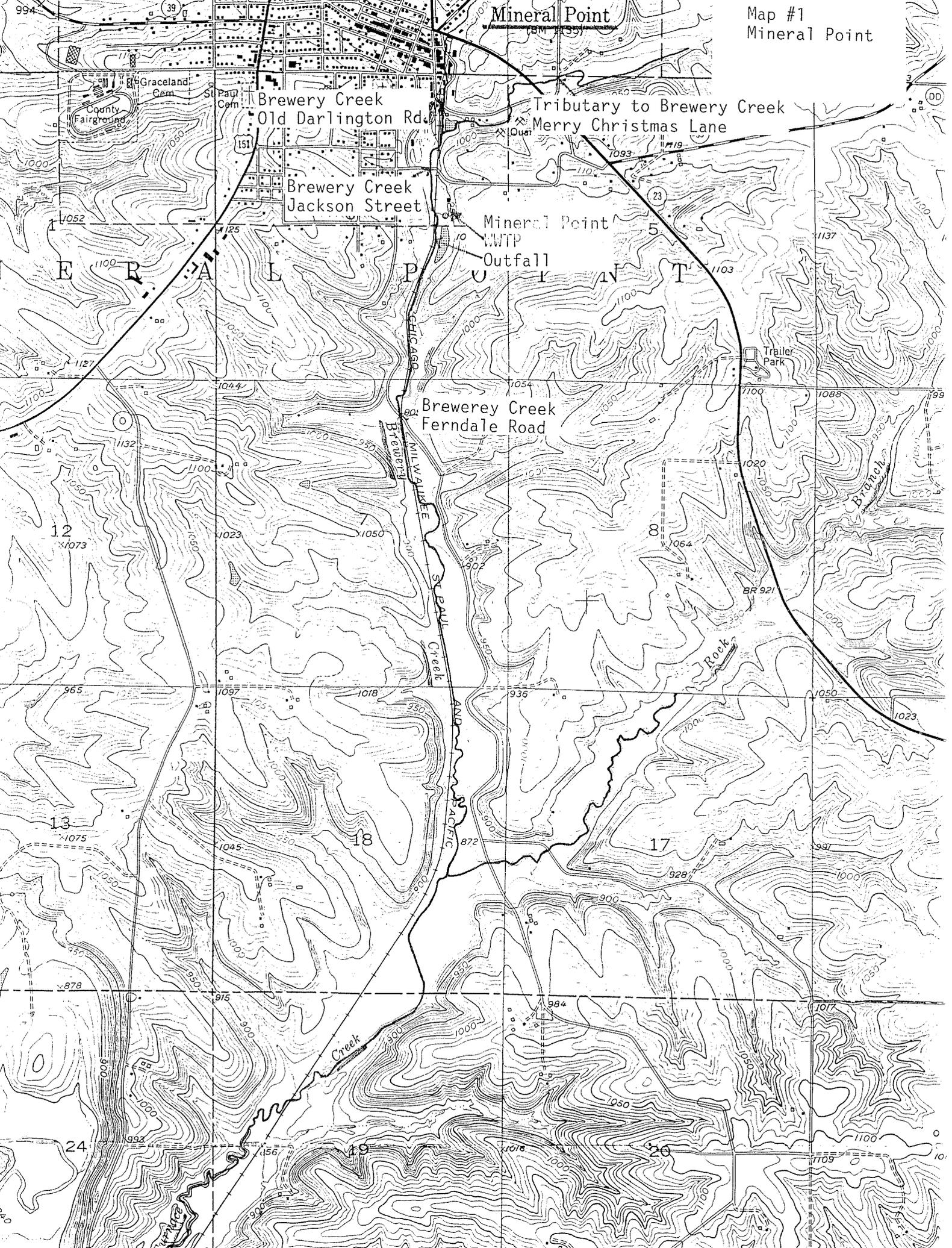
Trailer  
Park

Rock

Branch

BR 921

CHICAGO  
MILWAUKEE  
S. PAUL CREEK  
AND  
ST. LOUIS RIVERS



A macroinvertebrate sample (Table IIIA) was also collected upstream of Ferndale Road. After 15 minutes of sampling only 35 macroinvertebrates were collected. Tipula spp. has commonly showed up in streams with mine waste runoff. It was surprising to find the high number of Hydropsyche betteni at the site. Less runoff during the summer may have contributed to higher numbers. Low diversity and low numbers indicate the water quality problems at the site.

The second site sampled for fish was located upstream of Old Darlington Road (Table IV), with 100 ft. of stream thread being surveyed. This site was also sampled for macroinvertebrates. It is located within the village boundaries and receives runoff from streets and residences via storm sewers or by direct runoff. This site is located above the influence of the roaster piles and the WWTP.

The only fish captured were creek chubs which are considered a tolerant fish. There were a high number of creek chubs present considering the small stream size and short distance surveyed.

The macroinvertebrate sample had an HBI of 6.038 which is indicative of fair water quality (Table IVA). Both the fishery and macroinvertebrates indicate the stream is impacted by some pollutant load.

In June, 1976 a fish survey was conducted for the fish distribution study on a tributary to Brewery Creek (Table V). This tributary ultimately joins Brewery Creek a short distance below Old Darlington Road. This site is located in a watershed which has much less runoff and is not impacted by pollutants normally associated with street and residential runoff. There was a good diversity of

fish which ranged from intolerant to tolerant species. The fish captured at this site is more indicative of what you would expect to find in a stream of this size and type in southwestern Wisconsin.

#### **WWTP**

Appendix II contains the 1987 DMR monthly averages for flow, BOD, and TSS. The Mineral Point WWTP according to the DMR's is well below their monthly permit limits of 20 BOD and 20 TSS. Only during the month of March were they close to the monthly limits when the BOD was 16 mg/l and TSS were 14 mg/l.

#### **CLASSIFICATION**

Based on this review of available chemical, physical, and biological data, Brewery Creek is properly classified as marginal surface waters (E) from the outfall downstream. If the severe nonpoint source problem is rectified, the classification should be reviewed and most likely changed to full fish and aquatic life. This section of stream has sufficient flow and habitat to maintain a balanced fish and aquatic life community.

TABLE: II List of fish for sampling site: Ferndale Road

DATE: 6/18/76

Twn 4N Rng 3E Sec. 7 1/4 1/4 NWNE

STREAM: Brewery Creek

Station mileage: 1.38

County: 25

SOURCE OF DATA: 11

GEAR: B

EFFORT: 06

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M20	GOLDEN SHINER	CYPRINIDAE	Notemigonus crysoleucas	1	Tolerant
N09	WHITE SUCKER	CATOSTOMIDAE	Catostomus commersoni	5	Tolerant

TABLE: III List of fish for sampling site: Ferndale Road

DATE: 10/1/87 Twn 4N Rng 3E Sec. 7 1/4 1/4 NWNE STREAM: Brewery Creek

Station mileage: 1.8E County: 25

SOURCE OF DATA: WQ GEAR: 3 EFFORT: 04

CODE COMMON NAME FAMILY GENUS/SPECIES # FISH TOLERANCE LEVEL

---

M50 CREEK CHUB CYPRINIDAE *Semotilus atromaculatus* 4 Tolerant

Table IIIA  
SOUTHERN District Biotic Index Report

HBI 5.600 Rep1      Rep2      Rep3       
 Sample ID # 871001-25-01 Waterbody Name BREWERY CR.  
 Water Temp (Celsius)      Dissolved Oxygen (mg/l)       
 Sample Location: NW NE S 7 T 4N R 3E Master Waterbody #       
 Project Name TRIENNIAL STANDARDS REVIEW Street Station #       
 Ave. Stream Width (Ft.) at Site 5.5 Ave. Stream Depth (Ft.) at Site 0.3  
 Collector SCHLESSER, R. Field # 01 Rep 1  
 Measured Velocity (fps)       
 Est. Velocity (fps)       
 Sorter RUST, P. Est. % of sample sorted 100      Moderate (0.5-1.5)  
 Taxonomist DIMICK, J. Sampled Habitat       
 Location Description UPS. FERNDALE RD. 1. Riffle

Est. Time Spent Sampling (Min.) 15

Sampling Device 1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	15.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	75.0 Gravel	10.0 Silt	0.0 Detritus	0.0 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 0 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ Poor )

Not	Insig-	Sig-	
Present	nificant	nificant	Comments

Turbidity		3	HEAVY MINE WASTE DRAINAGE
Chlorine or Toxic Scour	1		
Macrophytes	1		
Filamentous Algae	1		
Planktonic Algae	1		
Slimes	1		
Iron Bacteria		3	ORANGE PRECIPITATE ON BOTTOM

Factors Which May Be Affecting Habitat Quality

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

Pollutant Sources

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

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

SAMPLE ID# 871001-25-01

PAGE 2

***	TAXA	***	TAXONOMIC	TOL	ORGANISM	ORGANISM			
		SPECIES	KEY	VAL	ID	COUNT	REP1	REP2	REP3
			USED						
TRICHOPTERA									
HYDROPSYCHIDAE									
HYDROPSYCHE		BETTENI	*1	6.00	04040201	27	0	0	0
COLEOPTERA									
ELMIDAE									
OPTIOSERVUS		FASTIDITUS	*2	4.00	07020501	1	0	0	0
STENELMIS		CRENATA	*3	5.00	07020601	2	0	0	0
DIPTERA									
TIPULIDAE									
TIPULA			*2	4.00	08141200	5	0	0	0
*** TOTALS: ***						35			
							0		
*** BIOTIC INDEX: ***						5.600			

Taxonomic Key Code References

- \*1 HILSENHOFF 1981,86
- \*2 HILSENHOFF 1981,82
- \*3 HILSENHOFF 1981,85

TABLE: IV List of fish for sampling site: Old Darlington Road

DATE: 10/1/87 TwN 4N Rng 3E Sec. 6 1/4 1/4 NENE STREAM: Brewery Creek

Station mileage: 2.9E County: 25

SOURCE OF DATA: WQ GEAR: 3 EFFORT: 02

CODE COMMON NAME FAMILY GENUS/SPECIES # FISH TOLERANCE LEVEL

M50 CREEK CHUB CYPRINIDAE *Semotilus atromaculatus* 33 Tolerant

SOUTHERN District Biotic Index Report

HBI \_6.038 Rep1 \_ Rep2 \_ Rep3 \_

Sample ID # \_871001-25-02 Waterbody Name \_BREWERY CR.  
 Water Temp (Celsius) \_ Dissolved Oxygen (mg/l) \_  
 Sample Location: NE NE S 6 T 4N R 3E\_ Master Waterbody # \_  
 Project Name \_TRIENNIAL STANDARDS REVIEW Storet Station # \_  
 Ave. Stream Width (Ft.) at Site \_3.5 Ave. Stream Depth (Ft.) at Site \_0.2  
 Collector \_SCHLESSER, R. Field # 02 Rep 1\_

Sorter \_RUST, P. Measured Velocity (fps) \_  
 Est. Velocity (fps) \_  
 Est % of sample sorted \_100 \_Moderate (0.5-1.5)  
 Taxonomist \_DIMICK, J. Sampled Habitat  
 Location Description \_UPS. OLD DARLINGTON RD. \_1. Riffle

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

Sampling Device \_1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	10.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	70.0 Gravel	10.0 Silt	0.0 Detritus	10.0 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 8 % 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	1			
Filamentous Algae		2		
Planktonic Algae	1			
Slimes	1			
Iron Bacteria	1			

Factors Which May Be Affecting Habitat Quality

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

Pollutant Sources

Livestock Pasturing	1		
Barnyard Runoff	1		
Cropland Runoff	1		
Tile Drains			
Septic Systems			
Stream Bank Erosion		2	
Urban Runoff			3
Construction Runoff			
Point Source (Specify Type)			
Other (Specify)			

SAMPLE ID# 871001-25-02

PAGE 2

TAXA	SPECIES	TAXONOMIC KEY USED	TOL VAL	ORGANISM ID	ORGANISM COUNT		
					REP1	REP2	REP3
ODONATA							
AESHNIDAE							
BOYERIA	VINOSA	*1	2.00	03010401	1	0	0
TRICHOPTERA							
BRACHYCENTRIDAE							
BRACHYCENTRUS	OCCIDENTALIS	*2	1.00	04010104	4	0	0
HYDROPSYCHIDAE							
HYDROPSYCHE	BETTENI	*3	6.00	04040201	6	0	0
LIMNEPHILIDAE							
**POOR SPECIMEN**		*3		04082100	1	0	0
COLEOPTERA							
ELMIDAE							
OPTIOSERVUS		*3	4.00	07020500	5	0	0
DIPTERA							
CHIRONOMIDAE							
BRILLIA		*4	5.00	08050300	2	0	0
CHAETOCLADIUS	SP.A	*4	5.00	08050503	2	0	0
CRICOTOPUS	NR.BICINCTUS	*4	6.00	08051301	3	0	0
EUKIEFFERIELLA	SP.B	*4	5.00	08052302	1	0	0
ORTHOCLADIUS	SP.A	*4	6.00	08054001	2	0	0
	SP.D	*4	5.00	08054004	4	0	0
	SP.E	*4	8.00	08054005	3	0	0
	**POOR SPECIMEN**	*4	6.00	08054006	1	0	0
THIENEMANNIMYIA		*4		08057000	5	0	0
TIPULIDAE							
HEXATOMA		*4	2.00	08140600	1	0	0
TIPULA		*4	4.00	08141200	11	0	0
ISOPODA							
ASELLIDAE							
ASELLUS	INTERMEDIUS	*5	8.00	10010101	33	0	0
*** TOTALS: ***					85	0	0
*** BIOTIC INDEX: ***					6.038		

Taxonomic Key Code References

- \*1 WALKER 1953
- \*2 HILSENHOFF 1985
- \*3 HILSENHOFF 1981,86
- \*4 HILSENHOFF 1981,85
- \*5 WILLIAMS 1972

TABLE: V List of fish for sampling site: Merry Christmas Lane

DATE: 6/18/76

Twn 4N Rng 3E Sec. 5 1/4 1/4 NWNW

STREAM: Brewery Creek

Station mileage: 0.6E

County: 25

SOURCE OF DATA: 11

GEAR: B

EFFORT: 06

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M05	STONEROLLERS	CYPRINIDAE	Campostoma spp.	99	Intolerant
M06	CENTRAL STONEROLLER	CYPRINIDAE	Campostoma anomalum	4	Intolerant
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	1	Intolerant
M45	BLUNTNOSE MINNOW	CYPRINIDAE	Pimephales notatus	4	Tolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	94	Tolerant
N09	WHITE SUCKER	CATOSTOMIDAE	Catostomus commersoni	93	Tolerant
U01	BROOK STICKLEBACK	GASTEROSTEIDAE	Culaea inconstans	14	Tolerant
X10	FANTAIL DARTER	PERCIDAE	Etheostoma flabellare	99	Intolerant
X12	JOHNNY DARTER	PERCIDAE	Etheostoma nigrum	5	Tolerant



(Brewery Creek)

Upstream of old Darlington  
Road and mine waste runoff.



(Brewery Creek)

Upstream of Old Darlington  
Road and mine waste runoff.

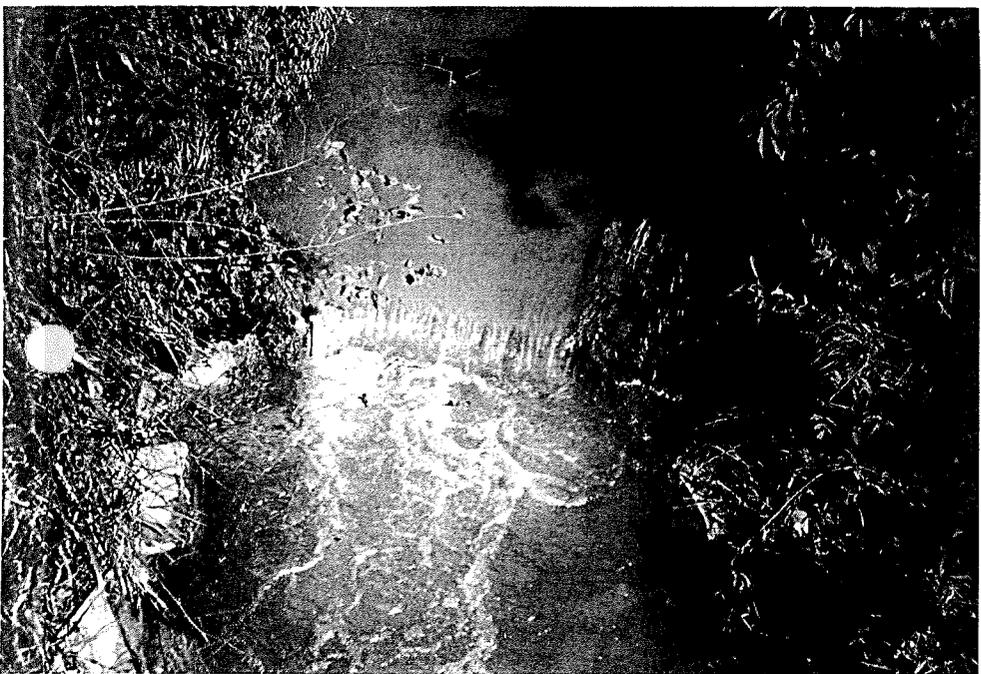


(Brewery Creek)

Upstream of Old Darlington  
Road and mine waste runoff.



(Brewery Creek)  
Upstream of Jackson Street  
and Mineral Point WWTP.



(Brewery Creek)  
Upstream of Jackson Street  
and Mineral Point WWTP.



(Brewery Creek)  
Upstream of Jackson Street  
and Mineral Point WWTP.



(Brewery Creek)

Downstream of Jackson Street  
and upstream of Mineral  
Point WWTP.



(Brewery Creek)

Downstream of Mineral Point  
WWTP, roaster waste pile  
located along stream.



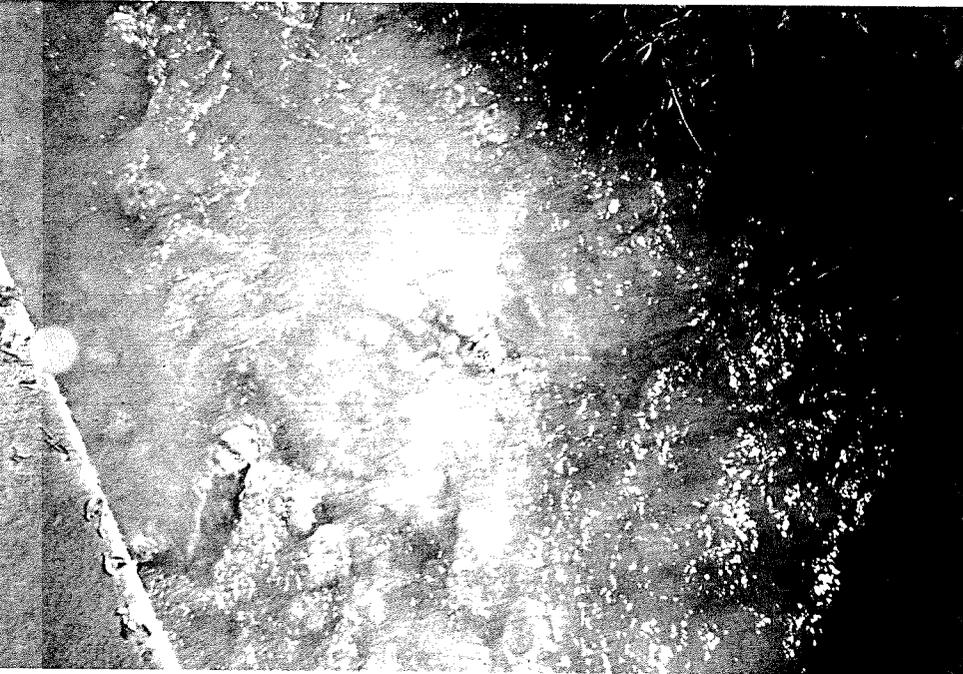
(Brewery Creek)

Upstream of Ferndale Road,  
downstream of Mineral Point  
WWTP, fish sampling area.



(Brewery Creek)

Upstream of Ferndale Road,  
downstream of Mineral Point  
WWTP.



(Brewery Creek)

Upstream of Ferndale Road,  
downstream of Mineral Point  
WWTP, macroinvertebrate  
sampling site.



(Brewery Creek)

Downstream of Ferndale Road  
and Mineral Point WWTP.

APPENDIX I

Stream Brewery Reach Location Ferndale Rd. Reach Score/Rating 129  
 County Iowa Date 10/1/87 Evaluator R. Schlessler Classification Marginal\*

\*Due to the presence of in place pollutants

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. 8	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion. 10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion. 14	Heavy erosion evident. Probable erosion from any run off. 16
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 8	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). 14	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 4	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 16	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system. 6	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flow contained. W/D ratio <7. 8	Adequate. Overbank flows rare. W/D ratio 8-15. 10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25. 14	Inadequate, overbank flow common. W/D ratio >25. 16
Lower Bank Deposition	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 18
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition. 4	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30-50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. 12	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20
Bottom Substrate/ Available Cover	Greater than 50% rubble, gravel or other stable habitat. 2	30-50% rubble, gravel or other stable habitat. Adequate habitat. 7	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable. 17	Less than 10% rubble gravel or other stable habitat. Lack of habitat is obvious. 22
Avg. Depth Riffles and Runs	Cold >1'	0 6" to 1'	6 3" to 6"	18 10" to 3"
	Warm >1.5'	0 10" to 1.5'	6 6" to 10"	18 10" to 6"
Avg. Depth of Pools	Cold >4'	0 3' to 4'	6 2' to 3'	18 10" to 2'
	Warm >5'	0 4' to 5'	6 3' to 4'	18 10" to 3'
Flow, at Rep. Low Flow	Cold >2 cfs	0 1-2 cfs	6 .5-1 cfs	18 <.5 cfs
	Warm >5 cfs	0 2-5 cfs	6 1-2 cfs	18 <1 cfs
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width)	5-7. Variety of habitat. Deep riffles and pools. 4	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 16	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured corridor. 8	High natural beauty. Trees, historic site. Some development may be visible. 10	Common setting, not offensive. Developed but uncluttered area. 14	Stream does not enhance aesthetics. Condition of stream is offensive. 16
Column Totals:	<u>0</u>	<u>43</u>	<u>54</u>	<u>32</u>

Column Scores E 0 +G 43 +F 54 +P 32 = 129 = Score

<70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 = Poor

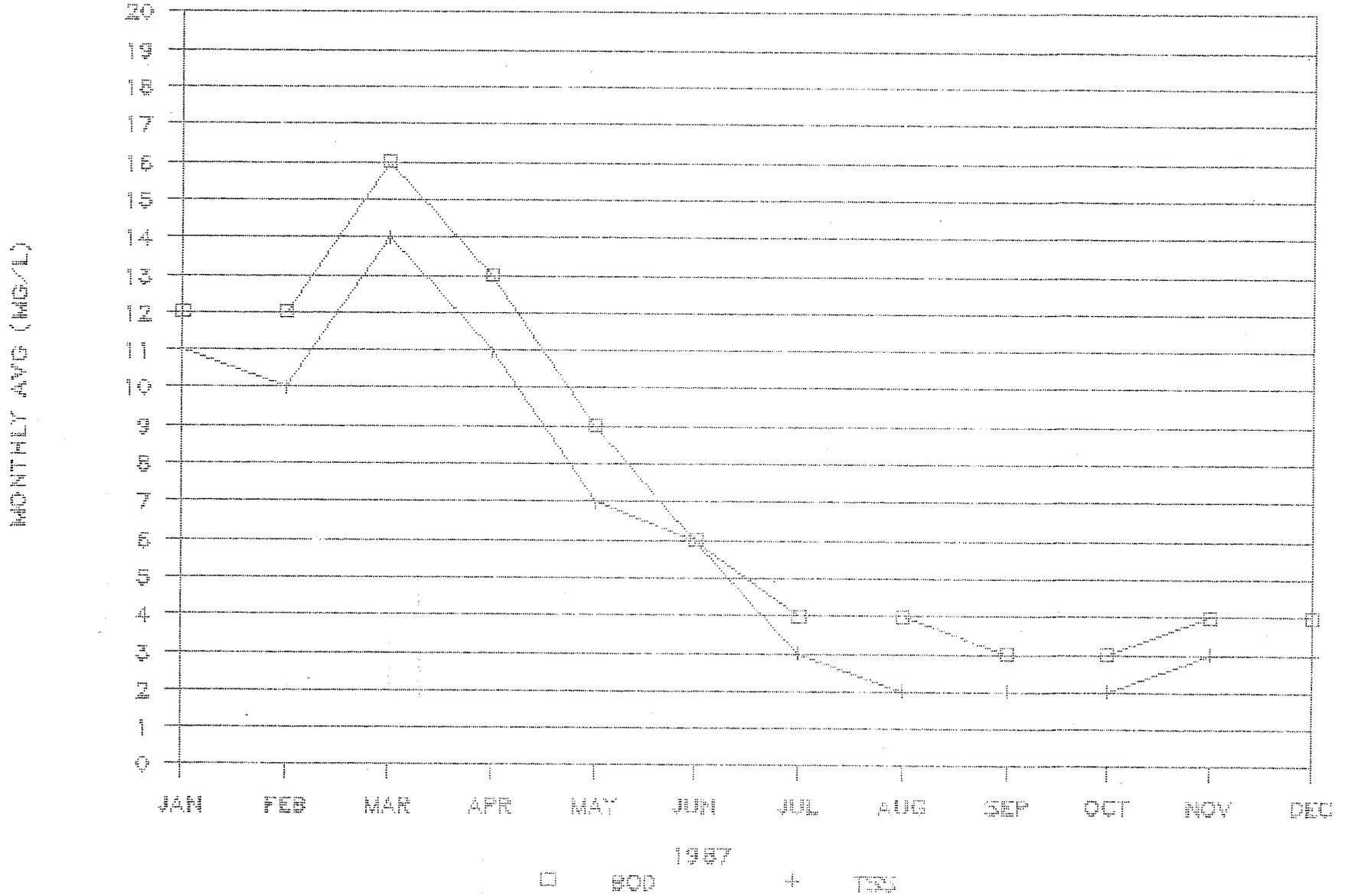
APPENDIX II

MINERAL POINT SEWAGE TREATMENT PLANT  
EFFLUENT QUALITY 1987

	FLOW (MGD)	BOD (MG/L)	TSS (MG/L)	NH3-N (MG/L)	pH (MIN)	pH (MAX)
JAN	0.358	12	11			
FEB	0.385	12	10			
MAR	0.442	16	14			
APR	0.450	13	11			
MAY	0.403	9	7			
JUN	0.280	6	6			
JUL	0.296	4	3			
AUG	0.439	4	2			
SEP	0.322	3	2			
OCT	0.256	3	2			
NOV	0.263	4	3			
DEC	0.293	4	3			

# MINERAL POINT WWTP

EFFLUENT QUALITY 1987



APPENDIX III

MINERAL POINT  
IOWA COUNTY

July 15, 1975

The Mineral Point waste water treatment plant discharges to Brewery Creek, a tributary of the Pecatonica River. The 7Q10 on Brewery Creek above the treatment plant outfall is .23 cfs. Brewery Creek has two branches which form its headwaters on the near northeast side of Mineral Point. Both of these branches had been subjected to occasional non point sources of pollution of short duration in the past. The ambient water quality is very good and the branches contain small minnows and forage fish as well as an adequate benthic community. These two branches meet roughly 50 yards above the railroad tracks bridge, which is about 100 yards above the Market Street Bridge. At and below the railroad bridge, the stream comes in contact with large piles of mine tailings deposited there in the early 1900's. The stream from this point has a distinct red color <sup>with</sup> ~~except~~ heavy loads of suspended solids and heavy metals. The stream changes from one of high quality to one sterile of any kind of life. The non point sources of pollution present a very serious degradation of the water quality of the stream. Brewery Creek could have trout stream potential were it not for this degradation taking place. Brewery Creek flows through agricultural land with portions of the stream bank being semi-wooded and marshy.

RECOMMENDATIONS

Brewery Creek should be classified continuous fish and aquatic life for its entire length. However, it is economically unfeasible to require the Town of Mineral Point to design for tertiary treatment if the non point sources of pollution cannot be remedied to an equal degree compatible to continuous fish and aquatic life standards. The mine waste debris appears to be the main issue and a study should be conducted to determine a feasible solution if any exist. If there exists no alternative method to remedy this problem, then Brewery Creek should be classified under the agricultural classification and allowed to discharge at those limits. The above recommendations represent a concurrence of opinion of the stream classification team who are as follows:

Bob Bate, District Engineer; Gene Van Dyck, Area Fish Manager; and Tom Bainbridge, Stream Classification Coordinator.

  
Tom Bainbridge  
Stream Classification Coordinator

TB:lg

APPENDIX IV



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

L. P. Voigt  
Secretary

BOX 450  
MADISON, WISCONSIN 53701

April 21, 1975

IN REPLY REFER TO: 3420

Mr. Max Koletzke  
Lakeland Engineers, Inc.  
125 W. Doty Street  
Madison, Wisconsin 53703

Dear Mr. Koletzke:

We have received a recommendation from our Water Quality Evaluation Section concerning the level of treatment to be provided at the upgraded Mineral Point sewage treatment plant. After review, we concur with that recommendation.

Accordingly, you should complete facilities planning and prepare plans and specifications based on achieving an effluent containing a maximum carbonaceous BOD<sub>5</sub> of 30 mg/l and a minimum dissolved oxygen content of 6.0 mg/l.

If you have any questions, please contact me.

Very truly yours,  
Bureau of Water Quality

Robert M. Krill, P.E., Chief  
Municipal Wastewater Section

RMK:bh

cc: Southern District  
Dick Wedepohl

APPENDIX V

B. FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting until March 31, 1987 the permittee is authorized to discharge from outfall serial number 001.

Samples taken in compliance with the monitoring requirements specified below shall be taken at the polishing pond discharge.<sup>3</sup>

There shall be no discharge of visible or floating solids in other than trace amounts.

During any 30 consecutive days, the average effluent concentrations of BOD<sub>5</sub> and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively.

EFFLUENT PARAMETERS	EFFLUENT LIMITATIONS					MONITORING REQUIREMENTS	
	Quantity-kg/day(lbs/day)		Other Limitations (Specify Units)			Sample Frequency	Sample Type
	Average	Maximum	Minimum	Average	Maximum		
BOD <sub>5</sub> (monthly)	21(46.4)	-	-	20 mg/l	-	3xWeekly	Grab
BOD <sub>5</sub> (weekly)	31.6(69.6)	-	-	30 mg/l	-	3xWeekly	Grab
Suspended Solids (monthly)	21(46.4)	-	-	20 mg/l	-	3xWeekly	Grab
Suspended Solids (weekly)	31.6(69.6)	-	-	30 mg/l	-	3xWeekly	Grab
pH (daily)	-	-	6.0	-	9.0	Daily	Grab
Dissolved Oxygen(daily) <sup>2</sup>	-	-	4.0 mg/l	-	-	3xWeekly	Grab
Residual Chlorine (daily) <sup>2</sup>	-	-	-	-	0.5 mg/l	Daily	Grab
Fecal Coliform (monthly) <sup>2</sup>	-	-	-	#/100 ml	-	1xWeekly	Grab

<sup>1</sup>Based on a design flow of 0.278 MGD.

<sup>2</sup>At such time as effluent limitations for fecal coliforms and chlorine residual are finally promulgated in the Wisconsin Administrative Code, this permit may be modified to incorporate either the final limitations or interim limitations and a compliance schedule to achieve the final limitations. In the interim, continuous disinfection shall be provided.

<sup>3</sup>At times of the year when algae problems are high, permittee may bypass the polishing pond and 24-hour composite samples for BOD<sub>5</sub> and suspended solids should be taken at the filter discharge.