

Wilson Park Creek Stream Classification
Kinnickinnic River Watershed
October 1984
by Richard Randall

Introduction

Wilson Park Creek is a major tributary of the Kinnickinnic River with a drainage area of 11.2 sq. miles or 45 percent of the Kinnickinnic River watershed. The stream originates in Sec. 27, T6N, R22E in the city of Cudahy and flows northwest for 6.0 miles. The stream drains the medium hub airport General Mitchell Field, undeveloped county park lands, high density residential, industrial, and commercial areas. Tributaries to Wilson Park Creek include Cherokee Park Creek, Villa Mann Creek, Holmes Avenue Creek, and an extensive drainage system through Mitchell Field. There are 43 known storm sewer outfalls, 7 industrial outfalls, and 8 sanitary sewer flow relief devices in the watershed. Frequent spills have been reported for Wilson Park Creek especially in the headwaters area of the airport and Holmes Creek subwatershed. Spilled materials include aviation fuel, aircraft de-icer, detergents and ink.

Habitat Evaluation

The Wilson Park Creek channel has been extensively modified to reduce flooding in the watershed. The natural stream channel has been replaced by a concrete channel for 1.6 miles from 13th St. upstream to the airport. There is 1.5 miles of enclosed conduit including a 0.9 mile section in the airport and a 0.3 mile section above the confluence with the Kinnickinnic River. The remaining 2.9 miles of stream are channelized with natural bottom substrates. No Q7,10 data is available, however the stream flows continuously.

The areas with natural substrates upstream of the airport and downstream of 13th St. provide the most suitable habitat for aquatic life. Above the airport the average width is 5 feet and the average depth is 0.3 feet. Downstream of the concrete channel from 13th St. to 27th St. the average width increases to about 15 feet and the average depth is 0.3-0.7 feet. Where the stream flows through a section of Wilson Park depths increase to about 1.6 feet. From the conduit outlet at Morgan Avenue to the conduit inlet at the Kinnickinnic River, the stream width is about 25 feet and depths vary from 0.1 feet in the riffles to about 1.5 feet behind a small dam at the conduit inlet.

Substrates in the natural areas are dominated by gravel, sand and silt with areas of significant deposition. There are a few riffle areas located primarily in the lower stream reaches, however a majority of the stream is a shallow run and the channel

probably changes yearly due to scouring and deposition. Filamentous algae and Elodea spp. growths immediately below 13th St. and above the airport also provide habitat and cover for aquatic life.

Habitat in the concrete channel is limiting to aquatic life due to lack of cover. Deposition of sand and silt in the channel provide some habitat but this is usually temporary due to scouring of the channel during storm events. Temporary growths of filamentous algae and Elodea spp. also occur in the concrete channel where these silt and sand deposits occur. Stream widths vary in the concrete channel from 3-15 feet and depths vary from 0.1 to 1.5 feet. Fish can utilize sections of the concrete channel and move upstream into the areas with natural substrates.

Bank erosion is severe in several sections of the natural stream channel due to overbank flows and high velocities during storm events. These sections occur primarily in the lower stream reaches where the dominant cover is cut grass. Grass and sedge growths along the lower bank during the summer help stabilize the banks, however this is usually temporary due to scouring of the channel. Bank erosion is less severe in sections of Wilson Park where the dominant cover is shrubs and trees, and upstream of the airport where the bank cover is grass and sedge.

Overall stream habitat is rated poor using the Stream System Habitat Rating form due to the major channel modifications, bank erosion, scouring, deposition, and urban runoff.

Biological

Benthic macroinvertebrate samples were collected May 1, 1984 in Wilson Park Creek downstream of the concrete channel in riffle areas at 20th St. and above confluence with the Kinnickinnic River. Both samples were dominated by Oligochaeta spp. and were low in diversity which indicate very poor water quality. The most dominant arthropod collected at both sites for calculating the Hilsenhoff Biotic Index was Cricotopus spp. The resulting index values of 3.93 and 3.73 at 20th St. and above the confluence respectively, indicate poor water quality. These results are similar to a sample collected in October 1975 which also was dominated by Oligochaeta spp.

No fish were collected in Wilson Park Creek during shocking surveys in May 1984 adjacent to Wilson Park and in September 1984 above the confluence with the Kinnickinnic River. Only small minnow fry and crayfish were observed in the stream. In 1975 the Bureau of Research captured only one goldfish in the stream adjacent to Wilson Park. Fish collections reported by Greene in 1924 included brook stickleback, bluntnose minnows, creek chubs, fathead minnows, and johnny darters.

Although significant fish populations have not been documented

from Wilson Park Creek, the available habitat is capable of supporting tolerant fish species. Urban nonpoint sources, industrial discharges, sanitary bypasses, and toxic spills currently limit the biological community. Past discharges or toxic spills probably eliminated any significant fish populations and chronic exposures continue to prevent the re-establishment of fish populations. In addition, a dam near the mouth of Wilson Park Creek limits fish from migrating upstream.

Water Quality

The most recent water quality information for Wilson Park Creek was collected for the 1975-1977 Milwaukee County Rivers Basin Report and General Mitchell Field nonpoint source study. The data indicated that airport runoff, urban non point sources, and petroleum spills at the airport limited water quality in the stream. State water quality standards and EPA recommended criteria for nutrients, solids, and heavy metals were routinely exceeded during storm events. Sediments in the stream were found to be polluted primarily with heavy metals and PCB's.

Water quality during non event flows generally met state and federal standards and criteria, however industrial discharges contributed 80% of the pollutant load to the stream. Currently a majority of the effluents are non-contact cooling water, but discharges of oil and grease are routinely observed from a few storm sewer outfalls.

Conclusions and Recommendations

Habitat in Wilson Park Creek is limited by concrete channels, bank erosion, deposition, and scouring of the bottom channel. Water quality and the bottom sediments are severely limited by urban non point sources, airport runoff, industrial discharges, possible sanitary discharges, and toxic spills. No significant fish populations have been reported in the stream and the dominant macroinvertebrate is *Oligocheata* spp. The available habitat is capable of supporting tolerant fish populations, however the implementation of spill prevention programs, storm water management, elimination of toxic discharges, and bank stabilization will be necessary to improve water quality.

Because Wilson Park Creek has the potential to support a limited fish population with an improvement in water quality it is recommended that the stream be classified intermediate or use Class D, which are streams capable of supporting small populations of intolerant or very tolerant fish.

References

Ball, Joseph, 1982. Stream Classification Guidelines for Wisconsin. WDNR Technical Bulletin

Fago, Donald M., 1981. Data for Fish Distribution Study. WDNR Bureau of Fish Research.

Hilsenhoff, William L., 1982. Using a Biotic Index to Evaluate Water Quality in Streams. WDNR Technical Bulletin No. 132

SEWRPC 1978. A Comprehensive Plan for the Kinnickinnic River Watershed. Planning Report No. 32

WDNR 1977. Milwaukee County Rivers Basin Report. and General Mitchell Field Nonpoint Source Study.



MACROINVERTEBRATE FIELD SAMPLING DATA

Form 3200-52 4-81

BASIN: _____

STREAM: Wilson Park Trl. County Wisconsin

SAMPLE NO. _____

PRIMARY STATION NO. _____

LOCATION: N 1/4, N W 1/4, S 1 2, T 06 N, R 22 E WATERSHED _____

DATE: 05/01/84
mo day yr.

COMPOSITE - 40 FT DOWNSTREAM 20th ST BIOTIC INDEX: _____

Chemical Sample? yes (no)

AND ~ 1000 FT UPSTREAM @ WALK BRIDGE

11:00 TIME (24 hr)

AT SAMPLE SITE: 12.0 AVG. WIDTH (ft)

@ WALK UPSTREAM
10.0 ft width

DO (mg/l)

.50 AVG. DEPTH (ft)

1.5 ft * 2.0

7.0 TEMP (°C)

AVG. VELOCITY (measured fps)

.4 fps

pH (s.u.)

EST. VELOCITY (fps) 1. very slow (.2); 2. slow

CONDUCTIVITY (umhos)

(.2-.5); 3. moderate (5-1.5); 4. fast (1.5)

SAMPLED HABITAT: 1. Riffle 2. Run 3. Pool

SAMPLER: 1. D Frame Net 2. Artificial Substrate 3. Other _____

SUBSTRATE AT SITE LOCATION (%): @ RIFFLE NEAR 20th

Bedrock _____ Rubble (2 1/2 - 10" dia.) 30 Sand 10 Clay 5 Muck _____
Boulders (10" dia.) _____ Gravel (1/10 - 2 1/2" dia.) 50 Silt 5 Detritus _____ Debris & Vegetation _____

SUBSTRATE SAMPLED (%): SAME AS ABOVE OR/ @ WALK BRIDGE (Pool-Run)

Bedrock _____ Rubble (2/12 - 10" dia.) 10 Sand 10 Clay _____ Muck _____
Boulders (10" dia.) _____ Gravel (1/10 - 2 1/2" dia.) 40 Silt 30 Detritus _____ Debris & Vegetation _____

AQUATIC VEGETATION: _____ % of Total Stream Channel at Sample Site

OBSERVED INSTREAM CONDITIONS AT SAMPLING SITE LIMITING W.Q.

	not present	slight	moderate	significant	Comments
Sludge Deposits	<u>n</u>	sl	m	s	<u>SCOUR FROM HEAVY RAINS PREVIOUS 2 DAYS > 1.0"</u>
Silt & Sediment Deposits	n	sl	<u>m</u>	s	
Turbidity	n	sl	<u>m</u>	s	
Chlorine or Toxic Scour	n	<u>sl</u> ?	m	s	
Macrophytes	<u>n</u>	sl	m	s	
Filamentous Algae	n	sl	<u>m</u>	s	
Planktonic Algae	<u>n</u>	sl	m	s	
Slimes	<u>n</u> ?	sl	m	s	
Iron Bacteria	<u>n</u>	sl	m	s	

FACTORS WHICH MAY BE AFFECTING SAMPLING SITE

degree of influence:	General Watershed			At Site	Comments
	not present	possible	important	direct impact	
Livestock Pasturing	<u>np</u>	pos	imp	di	
Barnyard Runoff	<u>np</u>	pos	imp	di	
Cropland Runoff	<u>np</u>	pos	imp	di	
Tile Drains	<u>np</u>	pos	imp	di	
Septic Systems	<u>np</u>	pos	imp	di	
Streambank Erosion	np	pos	<u>imp</u>	<u>di</u>	<u>GRAND CANYON</u>
Channel Ditching & Straightening	np	pos	<u>imp</u>	<u>di</u>	
Downstream Impoundment	<u>np</u>	pos	imp	di	
Upstream Impoundment	<u>np</u>	pos	imp	di	
Low Flow	np	pos	imp	<u>di</u>	
Wetlands	<u>np</u>	pos	imp	di	
Urban Runoff	np	pos	<u>imp</u>	<u>di</u>	<u>AIRPORT</u>
Construction Runoff	np	<u>pos</u>	imp	di	
Point Source (specify type) _____	np	pos	imp	di ?	<u>STORM SEWERS</u>
Other (specify) _____	np	pos	imp	di	

PERCEIVED WATER QUALITY: 1. Excellent 2. Good 3. Fair 4. Poor 5. Very Poor

SAMPLE TRACKING INFORMATION

Time Spent Collecting Sample (minutes) 20 Replicate #'s _____ Dates Artificial Sampler In _____ Out _____
Sampler Collector R. RANDELL Sorter R. RANDELL Identifier _____
Date 5-1-84 Date 5-15-84 Date _____

MACROINVERTEBRATE FIELD SAMPLING DATA

Form 3200-52 4-81

BASIN: _____

STREAM: Wilson Park Trls COUNTY WILKINSON

SAMPLE NO. _____

PRIMARY STATION NO. _____

LOCATION: NE 1/4, NE 1/4, S 13, T 06N, R 21E WATERSHED _____

DATE: 05/01/84
mo day yr.

200 FT UPSTREAM UNDERGROUND SECTION

BIOTIC INDEX: _____

Chemical Sample? yes (no)

ABOVE EUCLID ST

09:40 TIME (24 hr)

AT SAMPLE 15.0 AVG. WIDTH (ft)

DO (mg/l)

SITE: 0.75 AVG. DEPTH (ft)

7.0 TEMP (°C)

0.70 AVG. VELOCITY (measured fps)

pH (s.u.)

or
 _____ EST. VELOCITY (fps) 1. very slow (.2); 2. slow

CONDUCTIVITY (umhos)

(.2-.5); 3. moderate (.5-1.5); 4. fast (1.5)

SAMPLED HABITAT: 1. Riffle 2. Run 3. Pool

SAMPLER: 1. D Frame Net 2. Artificial Substrate _____ 3. Other _____

SUBSTRATE AT SITE LOCATION (%):

Bedrock _____ Rubble (2 1/2 - 10" dia.) 10 Sand 20 Clay _____ Muck _____
 Boulders (10" dia.) _____ Gravel (1/10 - 2 1/2" dia.) 50 Silt 20 Detritus _____ Debris & Vegetation _____

SUBSTRATE SAMPLED (%): SAME AS ABOVE OR/ SIGNIFICANT SILT DEPOSITION IS SLOWER REACHES

Bedrock _____ Rubble (2/12 - 10" dia.) _____ Sand _____ Clay _____ Muck _____
 Boulders (10" dia.) _____ Gravel (1/10 - 2 1/2" dia.) _____ Silt _____ Detritus _____ Debris & Vegetation _____

AQUATIC VEGETATION: _____ % of Total Stream Channel at Sample Site

OBSERVED INSTREAM CONDITIONS AT SAMPLING SITE LIMITING W.Q.

	not present	slight	moderate	significant	Comments
Sludge Deposits	(n)	sl	m	s	
Silt & Sediment Deposits	n	sl	(m)	s	
Turbidity	n	sl	m	(s)	
Chlorine or Toxic Scour	n	(sl) ?	m	s	SOME SCOUR FROM HEAVY RAINS 2 DAY PREVIOUS
Macrophytes	(n)	sl	m	s	
Filamentous Algae	n	(sl)	m	s	
Planktonic Algae	(n)	sl	m	s	
Slimes	(n)	sl	m	s	
Iron Bacteria	(n)	sl	m	s	

FACTORS WHICH MAY BE AFFECTING SAMPLING SITE

degree of influence:	General Watershed			At Site	Comments
	not present	possible	important	direct impact	
Livestock Pasturing	(np)	pos	imp	di	
Barnyard Runoff	(np)	pos	imp	di	
Cropland Runoff	(np)	pos	imp	di	
Tile Drains	(np)	pos	imp	di	
Septic Systems	(np)	pos	imp	di	
Streambank Erosion	np	pos	(imp)	(di)	
Channel Ditching & Straightening	np	pos	(imp)	(di)	
Downstream Impoundment	(np)	pos	imp	di	
Upstream Impoundment	(np)	pos	imp	di	
Low Flow	np	pos	(imp)	di	
Wetlands	(np)	pos	imp	di	
Urban Runoff	np	pos	(imp)	(di)	VERY SIGNIFICANT
Construction Runoff	np	(pos)	imp	di	
Point Source (specify type)	np	pos	(imp)	(di)	SSO, STORM SEWERS
Other (specify)	np	pos	imp	di	

PERCEIVED WATER QUALITY: 1. Excellent 2. Good 3. Fair 4. Poor 5. Very Poor

SAMPLE TRACKING INFORMATION

Dates Artificial Sampler In _____

Time Spent Collecting Sample (minutes) 15 Replicate #'s _____

Out _____

Sampler Collector R. RANDALL

Sorter B. Wakeman

Identifier B. Wakeman

Date 5-1-84

Date 5-16-84

Date 5-22-84

MACROINVERTEBRATE IDENTIFICATION

Surface Water: Wilson Pk Trib Site No.: Sample No.:
 Site Location: Upstr. Euclid St. ≈ 200' upstr. dam County: Missaukee
 Sample Collected By: R.R Date: 5-1-84 Sample Type: D-NET
 Sample Sorted By: B.W Date: 5-16-84 Identified By: BW Date: 5-17-84
 Chironomidae Mounted By: W. Wankovics Date: 7-10-84 Identified By: P. Rando Date: 7-13-84
 Oligochaeta Mounted By: Date: Identified By: Date:
HBE Subsample Mesh size N/A 30 Chironomidae Mounted: 4 slides

Taxa	Stage*	Count	Total No.	Biotic Index	Taxa	Stage*	Count	Total No.	Biotic Index
Chironomidae			(66)		Plecoptera				
<i>Thienemannimyia</i> spp	L	16		3					
<i>Natarsia</i> spp		5		3					
<i>Cricotopus</i>		42		4	Odonata				
					Coleoptera				
					Oligochaeta				
Other Diptera									
					Isopoda				
					<i>Aeschna intermedia</i>		3		5
					Gastropoda				
Trichoptera									
					Amphipoda				
					Gastropoda				
					Lepidoptera				
Ephemeroptera									
					Other				

Total No. of Organisms 66 Total No. Per Sq. Ft.
 *L - Larval; P - Pupal; A - Adult; I - Early Instar
 Checked by: Date: Site HBI 373

Team Wilson Park TRIS Reach Location Natural Section Below Wilson Park Reach Score/Rating 241 / Poor

County Miss Date 8-10-84 Evaluator Randall J. Wagoner Classification D

Rating Item	Category			
	Excellent	Good	Fair	Poor
<i>Applicable</i> 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 runoff. 18
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problems. 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). 18
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problems. 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. 12	Many eroded areas. "Raw" areas frequent along straight sections and bends. 18
Bank Vegetative Protection	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root systems. 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 flows 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. 18
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. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 18
Bottom Substrate	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. 18
Avg. Depth of Riffles and Runs	Cold > 1 ft 0	6" to 1 ft 6	3" to 6" 12	Less than 3" 18
Avg. Depth of Pools	Warm > 1.5 ft 0	10" to 1.5 ft 6	6" to 10" 12	Less than 6" 18
Flow, at Rep. Low Flow	Cold > 4 ft 0	3' to 4' 6	2' to 3' 12	Less than 2' 18
Flow, at Rep. Low Flow	Warm > 5 ft 0	4' to 5' 6	3' to 4' 12	Less than 3' 18
Flow, at Rep. Low Flow	Warm water > 5 cfs. Cold water > 2 cfs. 0	Warm water 2-5 cfs. Cold water 1-2 cfs. 6	Warm water 0.5-2 cfs. Cold water 0.5-1 cfs. Continuous flow. 18	Less than 0.5 cfs. Stream may cease to flow in very dry years. 18
Pool/Riffle, Run/Bend Ratio	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 riffles. Poor habitat. 18
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpaired corridor. 8	High natural beauty. Trees, historic sites. 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. 18

Column Totals: 0 10 45 18

Column Scores: 0 + 10 + 45 + 184 = 239 = Reach Score

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

SEDIMENT DATA FROM THE SOUTHEAST DISTRICT
 WISCONSIN DEPT OF NAT RESOURCES - PARAMETER VALUES ARE IN PPM

10/11/83

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	KINNIC R
	SAMPLE LOC. -->	12 WILSON PK	SAMPLE DATE -->	11/19/80	LAB ID ----->	HYG
	LAB NUMBER -->	37422	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
	TIME ----->	15:00	DEPTH ----->			
ORGANICS:	PCB ----->	000.15	DIELDRIN ----->	<00.01	HEPTACHLOR ---->	
	MIREX ----->		OP,DDE ----->	<00.01	PP,DDE ----->	<00.01
	OP,DDD ----->	<00.01	PP,DDD ----->	000.02	OP,DDT ----->	<00.01
	PP,DDT ----->	<00.01	CISCLODN ----->	<00.01	TRNCLODN ----->	<00.01
	CISNONCL ----->	<00.01	TRANONCL ----->	<00.01		

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	KINNIC R
	SAMPLE LOC. -->	15 JACKSON PK	SAMPLE DATE -->	11/24/80	LAB ID ----->	HYG
	LAB NUMBER -->	37423	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
	TIME ----->	10:00	DEPTH ----->			
ORGANICS:	PCB ----->	001.10	DIELDRIN ----->	<00.01	HEPTACHLOR ---->	
	MIREX ----->		OP,DDE ----->	<00.01	PP,DDE ----->	<00.02
	OP,DDD ----->	<00.01	PP,DDD ----->	000.09	OP,DDT ----->	<00.01
	PP,DDT ----->	000.04	CISCLODN ----->	<00.01	TRNCLODN ----->	<00.01
	CISNONCL ----->	<00.01	TRANONCL ----->	<00.01		

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	KINNIC R
	SAMPLE LOC. -->	05 KINNIC AVE	SAMPLE DATE -->	05/17/82	LAB ID ----->	HYG
	LAB NUMBER -->	72635	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
	TIME ----->	15:45	DEPTH ----->			
ORGANICS:	PCB ----->	003.50	DIELDRIN ----->	<00.01	HEPTACHLOR ---->	
	MIREX ----->		OP,DDE ----->	<00.01	PP,DDE ----->	000.01
	OP,DDD ----->	<00.01	PP,DDD ----->	000.09	OP,DDT ----->	<00.01
	PP,DDT ----->	<00.01	CISCLODN ----->	<00.01	TRNCLODN ----->	<00.01
	CISNONCL ----->	<00.01	TRANONCL ----->	<00.01		

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	KINNIC R
	SAMPLE LOC. -->	11 CHASE AVE	SAMPLE DATE -->	05/17/82	LAB ID ----->	HYG
	LAB NUMBER -->	72634	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
	TIME ----->	15:10	DEPTH ----->			
ORGANICS:	PCB ----->	001.10	DIELDRIN ----->	<00.01	HEPTACHLOR ---->	
	MIREX ----->		OP,DDE ----->	<00.01	PP,DDE ----->	000.05
	OP,DDD ----->	000.01	PP,DDD ----->	000.05	OP,DDT ----->	<00.01
	PP,DDT ----->	<00.01	CISCLODN ----->	<00.01	TRNCLODN ----->	000.01
	CISNONCL ----->	<00.01	TRANONCL ----->	<00.01		

SEDIMENT DATA FROM THE SOUTHEAST DISTRICT
 WISCONSIN DEPT OF NAT RESOURCES - PARAMETER VALUES ARE IN PPM

10/11/83

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	MEMMONEE
	SAMPLE LOC. -->	05 27TH ST	SAMPLE DATE -->	12/10/80	LAB ID ----->	HYG
	LAB NUMBER -->	40514	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
	TIME ----->	13:40	DEPTH ----->			
ORGANICS:	PCB ----->	000.20	DIELDRIN ----->	<00.01	HEPTACHLOR ---->	
	MIREX ----->		OP,DDE ----->	<00.01	PP,DDE ----->	

TABLE 3.16

SEDIMENT RESULTS (mg/kg) FOR THE KINNICKINNIC RIVER BASINWILSON PARK TRIB.
SEDIMENT

Sampling Site	Land Use	Date	PCB	Cd	Cr	Cu	Pb	Ni	Zn	Hg	EPA Pollutional Classification
WMD-1S	Industry Residential	Feb. 10, 1976	2.7	3.5	22	MP 49	HP 670	15	HP 750	0.31	Heavily Polluted
KR-1CS	Residential	May 8, 1975	1.1								Insufficient Data
<u>WPC-2CS</u>	Residential Transportation	Feb. 2, 1976	0.11	1.25	16	MP 36	HP 375	12	HP 250	0.25	Heavily Polluted
KR-2CS	Residential	Feb. 10, 1976	P 11.0	3.5	MP 37.5	HP 78	HP 650	MP 25	HP 825	0.34	Heavily Polluted
KR-3S	Residential	May 8, 1975	3.6								Insufficient Data
KR-3CS	Residential Transportation	May 8, 1975	5.5								Insufficient Data
	Residential Transportation	Feb. 10, 1976	9.7	HP 11.2	HP 530	HP 118	MP 670	MP 32	HP 850	0.55	Heavily Polluted

P-Polluted

MP-Moderately polluted

HP-Heavily polluted

FIGURE 3.6
WATER QUALITY AND SEDIMENT SAMPLING STATIONS IN THE KINNICKINNIC
RIVER BASIN

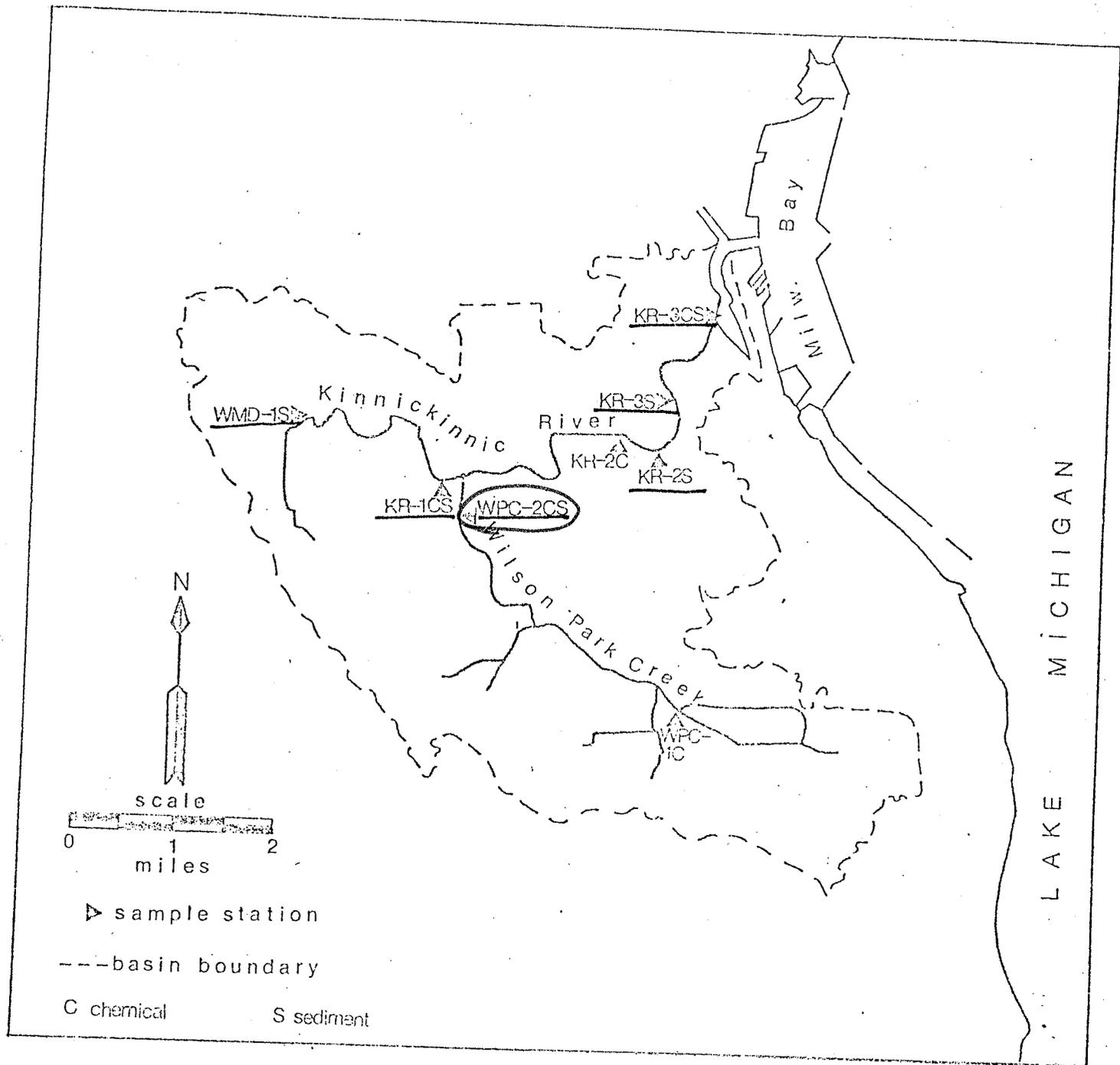
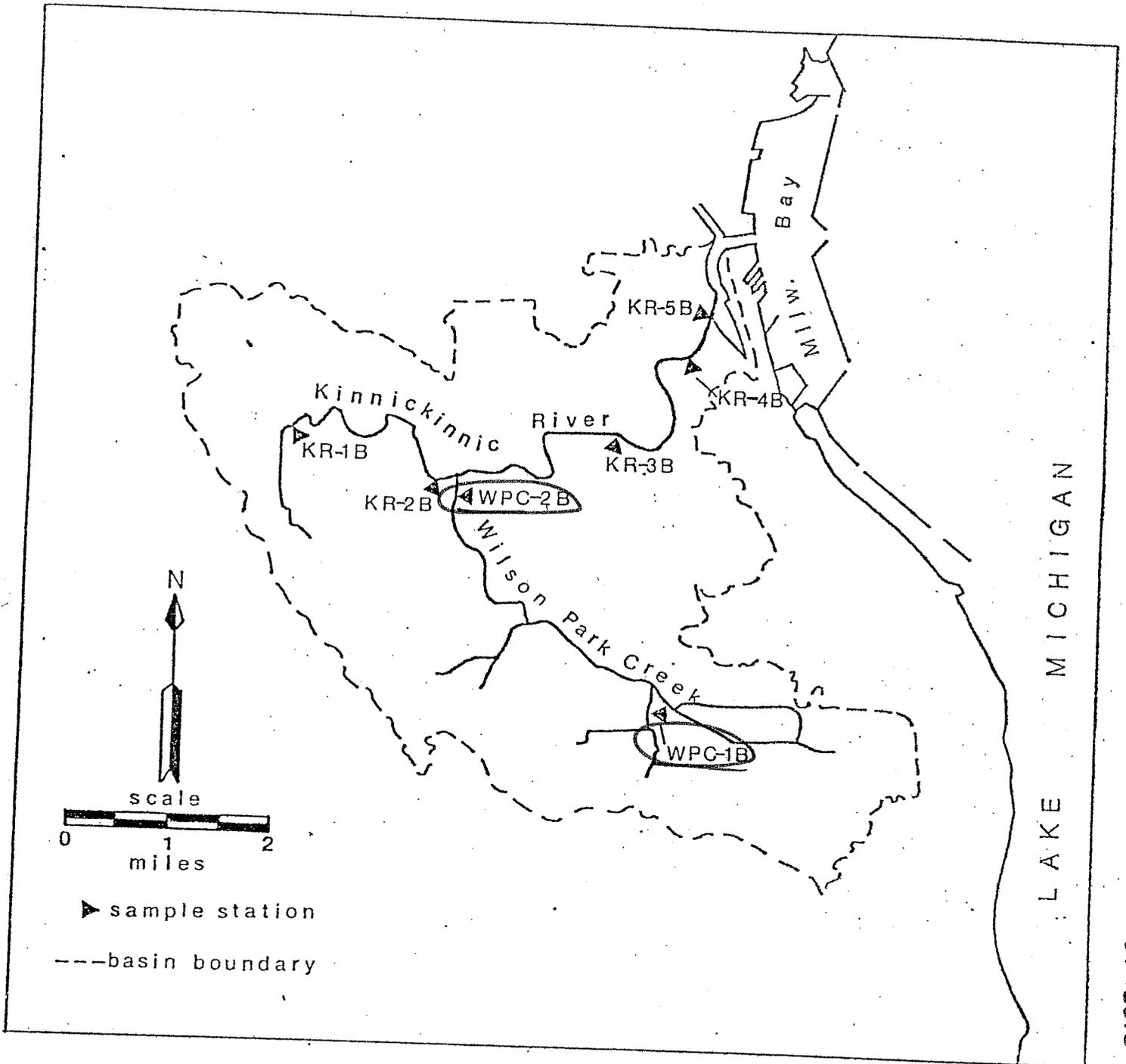


Fig. 2.23 - Location of fecal coliform sampling stations in the Kinnickinnic River Basin



WILSON PARK TRAILS
Bacteria

Indian Creek

IC-1B	Bradley Road	0.15	WDNR
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Kinnickinnic River

KR-1B	South 60th Street	8.05	MHD
KR-2B	South 35th Street	5.45	WDNR
KR-3B	South 6th Street	2.82	WDNR
KR-4B	South 1st Street	1.43	MHD
KR-5B	Chicago and Northwestern Railroad Trestle	1.35	WDNR

Wilson Park Creek *in 1976 L. MILW. R. Basin Assessment*

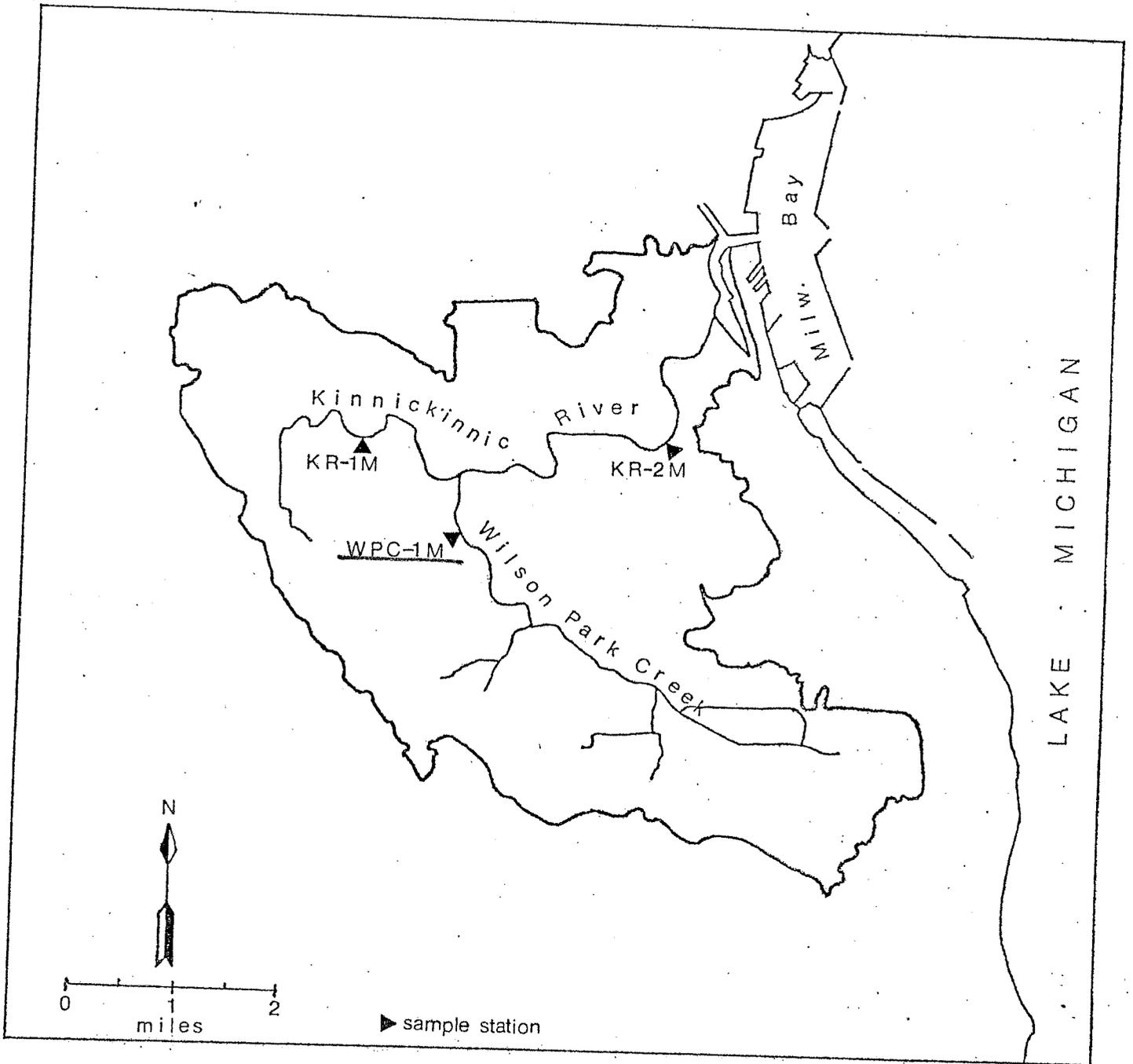
WPC-1B	Howell Avenue at Layton	3.51	WDNR
WPC-2B	Oklahoma Avenue at 30th Street	0.15	WDNR

Oak Creek

OC-1B	Pennsylvania Avenue	4.9	WDNR
OC-2B	Oak Creek Parkway	0.72	WDNR
nOC-1B	Marquette Avenue	3.08	
nOC-2B	Puetz Road	0.94	WDNR

¹WDNR - Wisconsin Department of Natural Resources, Southeast District Office
MHD - Milwaukee Health Department

Fig. 2.3 - Location of macroinvertebrate sample stations in the Kinnickinnic River Basin



Wilson Park Creek
1975
Benthos

Fig. 2.1b - Location of biological sample stations in the Kinnickinnic River Basin

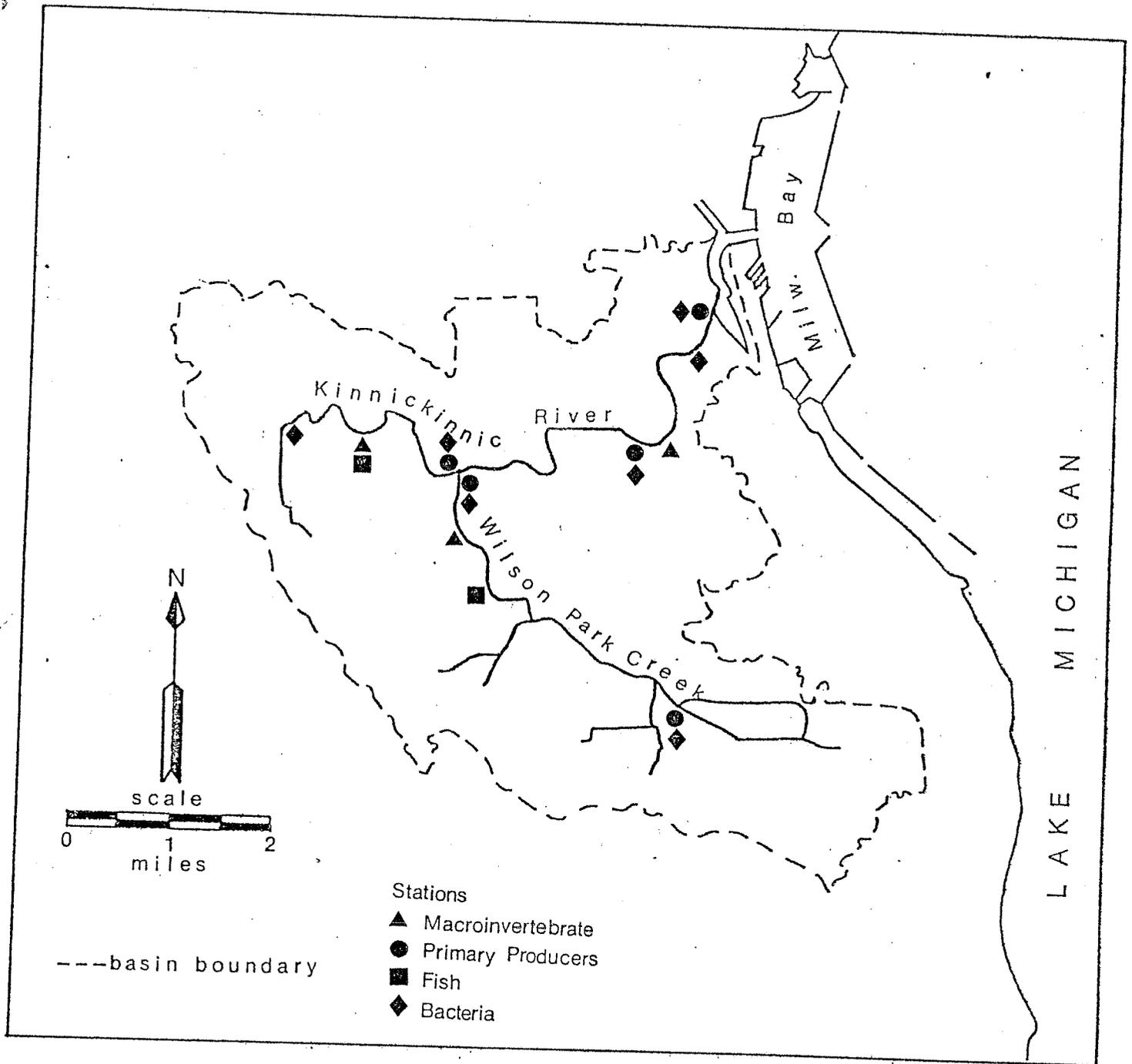


Table 2.2 - Station descriptions for macroinvertebrate sample stations
in the Kinnickinnic River Basin

<u>Station</u>	<u>Stream Miles</u>	<u>Station Location</u>	<u>Collection Date</u>	<u>Current</u>	<u>Substrate</u>	<u>Comments</u>
<u>Kinnickinnic River</u>						
KR-1M	6.68	300 yards upstream of South 43rd Street	October 28, 1975	Riffle	0.1 rock, 0.6 gravel, 0.3 sand	Leaves abundant on substrate.
KR-2M	2.55	South 4th Street	October 27, 1975	Riffle	0.8 rock, 0.1 gravel, 0.1 sand	Salmon swimming upstream. Rocks covered with green slime and tar-like material.
<u>Wilson Park Creek</u>						
WPC-1M	0.64	100 yards downstream of Morgan Avenue bridge	October 28, 1975	Riffle	0.6 rock, 0.3 gravel, 0.1 sand	Abundant filamentous algae on rock substrates. Substrate oil laden. Oil on water surface.

APPENDIX 2.2

Macroinvertebrate Taxa (Mean No./Sq. Ft.) Collected in the Kinnickinnic River Basin and Their Corresponding Tolerance Classifications

	Tolerancy ¹	Biotic Index	KR-1M			KR-2M			WPC-1M		
			\bar{X}	SD	Qual. 2	\bar{X}	SD	Qual.	\bar{X}	SD	Qual.
<i>Baetis</i>	I	3	-	-	R, P	-	-	R	-	-	
<i>Enallagma</i>	I	4	-	-				V			P, V
Empididae	T	*	0.4	1.3		-	-		-	-	
<i>Palpomyia</i>	T	3	0.4	1.3		-	-		-	-	
<i>Simulium</i>	V	4	-	-		1.6	3.9		1.6	3.4	
<i>Chironomus</i>	V	5	0.4	1.3		-	-		5.1	16.2	
<i>Conchapelopia</i>	T	4	12.9	11.1	R, P	0.4	1.3		16.2	18.4	
<i>Cricotopus</i>	T	4	52.0	50.0		17.0	22.1		74.0	63.4	
<i>Dicrotendipes</i>	T	3	-	-		0.8	2.5		-	-	
<i>Polypedilum</i>	T	3	-	-		0.8	2.5		-	-	
<i>Zavrelimyia</i>	T	4	-	-		-	-		1.1	3.5	
<i>Haliphus</i>	I	*	-	-	V	-	-		-	-	
<i>Peltodytes</i>	I	*	-	-		-	-	V	-	-	
<i>Belostoma</i>	V	*	-	-		-	-		-	-	V
<i>Ranatra</i>	*	*	-	-		-	-		-	-	V

	Tolerancy ¹	Biotic Index	KR-1M			KR-2M			WPC-1M		
			\bar{X}	SD	Qual. ²	\bar{X}	SD	Qual.	\bar{X}	SD	Qual.
<i>Sigara</i>	*	*	-	-	P	-	-	V	-	-	
<i>Hyallela</i>	T	4	2.8	6.0	P	0.4	1.3		-	-	
Hirudinea	*	*	-	-		4.0	6.2	R, P V	-	-	
Planariidae	T	*	-	-		0.4	1.3		0.8	2.5	
<i>Asellus</i>	V	5	-	-	V	-	-		-	-	
<i>Crangonyx</i>	T	4	35.2	51.2	R, V	-	-		-	-	
<i>Ferrisia</i>	V	*	-	-		-	-		4.8	10.8	
<i>Physa</i>	V	*	2.0	2.8	R, V	45.6	52.0	R, P, V	-	-	V
<i>Sphaerium</i>	T	*	-	-		-	-		3.2	6.7	
<i>Aulodrilus</i>	V	*	41.4	44.6	V	-	-		7.7	24.3	
<i>Ilyodrilus</i>	V	*	-	-		8.4	13.0		23.5	27.7	
<i>Limnodrilus</i>	V	*	62.8	65.9	R	40.6	47.5	P	68.9	36.0	R
<i>Nais</i>	V	*	6.7	14.3		45.7	20.1		202.0	169.0	
<i>Pelosclex</i>	V	*	-	-		-	-		-	-	R
<i>Pristina</i>	V	*	24.1	36.4		-	-		16.6	29.1	
<i>Tubifex</i>	V	*	10.6	24.0		10.4	12.7		-	-	P

	Tolerancy ¹	Biotic Index	KR-1M		KR-2M		WPC-1M				
			\bar{X}	SD	Qual.	\bar{X}	SD	Qual.			
Oligochaeta w/chaetae	V	8	67.1	64.4	R	21.9	14.4	79.0	50.9		
Oligochaeta w/o chaetae	V	*	166.2	132.4	R	38.3	33.6	P	540.9	363.0	P

¹Intolerant (I); Tolerant (T); Very Tolerant (V); Unclassified (*)

²Qualitative sample areas - Riffle (R); Pool (P); Submerged Vegetation (V); Backwater (B)
 Mean (X); Standard Deviation (SD)

APPENDIX 2.5Community Structure of Macroinvertebrates
in the Kinnickinnic River Basin

	<u>KR-1M</u>	<u>KR-2M</u>	<u>WPC-1M</u>
Number of Individuals (\bar{X}) ¹	485.0	236.3	1045.4
Total Taxa	15	14	14
Intolerant Number (\bar{X}) ¹	0.00	0.00	0.00
Intolerant Taxa	0	0	0
Tolerant Number (\bar{X}) ¹	103.7	19.8	95.3
Tolerant Taxa	6	6	5
Very Tolerant Number (\bar{X}) ¹	381.3	212.5	950.1
Very Tolerant Taxa	9	7	9
Unclassified Number (\bar{X}) ¹	0.0	4.0	0.0
Unclassified Taxa	0	1	0
<hr/>			
Community Diversity	2.00	2.04	1.55
Intolerant Diversity	0.00	0.00	0.00
Tolerant Diversity	0.24	0.05	0.06
Very Tolerant Diversity	1.25	1.62	1.18
Unclassified Diversity	0.00	0.00	0.00
Diversity of Tolerance Groups	0.52	0.37	0.31
Biotic Index	4.00	3.92	4.05
No. of Taxa Included in Biotic Index	6	5	4

Simpson's Similarity Index

	<u>KR-2M</u>	<u>WPC-1M</u>
<u>KR-1M</u>	0.63	0.86
<u>KR-2M</u>	-	0.67

S.D. 1 GEAR 3 EFFORT .10

UP _____

DOWN _____

MO. 05 DAY 24 YR. 84

1
M.B.

020
M.B.

M.B. MILE

FIRST ORDER MILE

SECOND

THIRD

FOURTH

FIFTH

SIXTH

SEVENTH

EIGHTH

NINTH

TENTH

ELEVENTH

STATION MILE

120.00

SPECIES NO.

98 00

No FISH CAPTURED

LOCATION

Wilson Park Creek @ Wilson Park Walk

BRIDGE UPSTREAM W.W. RR

JAR 2 WTC 06 TOWN 22E RANGE 19 SEC. SW NE 41
1/16 1/4 CO.

WIDTH

BOTTOM TYPE

STREAM BANK VEGETATION

L _____

CONCRETE A _____

CULTIVATED A _____

M _____

BEDROCK B _____

FALLOW B _____

U _____

HARDPAN C _____

UPLAND PASTURE C _____

DEPTH

BOULDER D _____

UPLAND MEADOW D _____

L _____

RUBBLE E _____

UPLAND HARDWOOD E _____

M _____

GRAVEL F _____

UPLAND CONIFER F _____

U _____

SAND G _____

UPLAND SHRUB G _____

VELOCITY

SILT & MUCK H _____

LOWLAND PASTURE H _____

CLAY I _____

LOWLAND HARDWOOD I _____

WATER TEMP.

MARL J _____

LOWLAND CONIFER J _____

_____ °F

DETRITUS K _____

LOWLAND SHRUB K _____

CONDUCTIVITY
µmhos

RUBBISH L _____

OPEN MARSH L _____

PEAT M _____

CUT GRASSES M _____

TURBIDITY

AQUATIC VEG.

BEACH N _____

PH

EMERGENT _____

LOWLAND MEADOW O _____

SUBMERGENT _____

OPEN WATER P _____

DUCKWEED _____

ALGAE (ATT) _____

ALGAE (FF) _____

DATE: May 14, 2003

FILE REF: WIBC 15200

TO: Wilson Park Creek (WIBC 15200) and Unnamed Tributary (Edgerton Channel) File

FROM: Will Wawrzyn SER

SUBJECT: Addendum to the Stream Classification and Stream Appraisal Report for Wilson Park Creek / Edgerton Channel

Purpose

The purpose of this memorandum is to re-evaluate previously assigned Stream Classification recommendations for the Wilson Park Creek and an unnamed tributary of Wilson Park Creek known locally as the Edgerton Channel ¹.

Location of Waterbodies

Wilson Park Creek (WIBC 15200) is a tributary to the Kinnickinnic River (WIBC 15100), Kinnickinnic River Watershed, Milwaukee River Basin in Milwaukee County. Wilson Park Creek discharges to the Kinnickinnic River in the SE1/4 of the SE1/4, Section 6, T7N, R21E. Previous planning reports by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) referred to this later headwaters reach of Wilson Park Creek as the Edgerton Channel extending for approximately 1.0 miles from the the NW1/4 of the NW1/4, Section 26, T6N, R22E to the SE1/4 of the NW1/4, Section 27, T6N, R22E. The purpose for this unique division by the SEWRPC is unknown and it does not appear to be a result of any uniquely different hydrological divisions or differences. Rather, it appears that the unique stream designations were based on political boundaries. The Department of Natural Resources current Register of Waterbodies does not make a distinction between the two waterbodies and only recognizes the Wilson Park Creek. Hereafter, the conclusions and recommendations contained in this report shall be for the Wilson Park Creek, inclusive of the locally named Edgerton Channel.

Discussion

Habitat in Wilson Park Creek is limited by extensive hydrological modifications including concrete lining of its bed and banks, and lesser amounts of enclosure. Approximately 3 miles (60%) of stream channel have been modified in this manner. Wilson Park Creek was previously classified according on a reach by reach basis, with the hardened-engineered channels being classified as a Limited Aquatic Life Community. Stream reaches still contained in a natural alluvial channel were classified as a Limited Forage Fish Community. The attainability analysis concluded that the hydrological modifications were more or less irreversible.

Since completion of the 1993 Stream Classification Report for the Wilson Park Creek, in-stream and watershed conditions have not changed dramatically to the extent that they would necessitate revising the current reach by reach biological use classification. However, changes in local flood management policy and recent completion of flood management projects in other watershed contained in the Milwaukee River Basin does necessitate re-consideration of the longer term attainability analysis for Wilson Park Creek.

¹ Wilson Park Creek Stream Classification. 1993. Revision to the Wilson Park Creek Stream Classification, Wisconsin Department of Natural Resources, Southeast District, March 1993.



The Milwaukee Metropolitan Sewerage District (MMSD) is the agency charged with flood management throughout Milwaukee County. Since the mid-1960's the MMSD routinely practiced channelization, concrete lining and enclosure as the means for managing flood flows. More recently, it has been the MMSD's new found policy to consider removal of these structures whenever the concrete structures deteriorate to the point of needing major repairs or where removal can have a mitigating effect on flooding. Recent projects have been completed by the MMSD that involved the removal of over 4-miles of concrete invert lining in Lincoln Creek and lesser amounts to the bed and banks of the Menomonee River. These events allow one to conclude that removal of engineered linings from the bed of these streams or "day lighting" enclosures are technically and financially feasible alternatives to managing flood impacts, and restoring some degree of habitat to urban streams.

Recommendations

It is recommended that the current mixed reach-specific biological use classification for Wilson Creek be changed from a *Limited Aquatic Life Community* and *Warmwater Forage Fish Community* to ***Warmwater Forage Fish Community*** throughout its entire course, regardless of the existing channel condition. Recent local initiatives that reconsider traditional flood control practices in lieu of more comprehensive approaches that include restoring and managing streams in their natural alluvial beds have been shown to be technically and financially feasible. The revised use classification will allow for a comprehensive water resource management strategy that protects the stream for the highest existing downstream uses.

ROW Detailed Information

Click [here](#) for Metadata regarding this page.

WBIC: 15200

Waterbody Name: WILSON PARK CREEK

Local Name:

Waterbody Type: River/Stream

Basin: Milwaukee River

County: Milwaukee

Location Data at Mouth

TOWN	RANGE	SEC	Q SEC	QQ SEC	QQQ SEC	QQQQ SEC
06	21E	12	SE	SE		

Size For Total Waterbody

STREAM LENGTH MILES	LAKE ACRES	SHORELINE LENGTH mi
4.1	0	0

Other Data

1st Dwnstrm WBIC	1st Dwnstrm Name	USGS Hydro Code	Landlocked	Status
		4040003		Exist

County info comes from County Surface Water Publications. The following is county characteristic data, it applies to the county segment of the waterbody.

County: Milwaukee

Location at County Border

TOWN	RANGE	RANGE DIR	SEC	Q SEC	QQ SEC
06	21	E	12	SE	SE

Size of Waterbody for County Segment

MAX DEPTH FT	% BELOW 20 FT	% ABOVE 3 FT	SHORELINE LENGTH mi
1	0	99	8.2

County Segment Characteristic Data

WATERSHED AREA mi2	OUTLET FLOW cfs	PUBLIC FRONTAGE mi	DRAINAGE AREA mi2	ADJOINING WETLANDS acres	% GRAV EL	% ROC K	% MUC K	% SAN D	% DRAINAGE WILD
10	100	0	4	0	40	10	40	10	0

Wilson Park Creek

W. Wawtynn (9/30/08)

Basin / Watershed	Stream	Location	Stream Class Comments
			<p>contact cooling water discharges (ref. J. Gottlieb, SED)</p> <p>Reivse #9, p.41 in current NR 104 SED list.</p>
Milwaukee River Watershed	<p>Unnamed Tributary to Lake Michigan in Ozaukee County</p> <p>(Solvay Animal Health, Inc.)</p> <p>ADDITION</p>	From the WWTP outfall in the SE NW T10N R22E S28 to Lake Michigan	<p>Limited Aquatic Life</p> <p>Facility is proposing to cease operation and discharge (ref. J. Gottlieb, SED)</p> <p>Addition to current NR 104 SED list.</p>
Kinnickinnic River Watershed	Kinnickinnic River in Milwaukee County	Upstream of 6th Street in the City of Milwaukee to the headwaters	<p>Limited Aquatic Life (Standards Review 1984 and Appraisal 1993)</p> <p>Revise #8, p.41 in current NR 104 SED list.</p>
Kinnickinnic River Watershed	<p>Unnamed Tributary of the Kinnickinnic River in Milwaukee County (<u>Wilson Park Creek</u>)</p> <p>(St. Lukes Hospital; Milwaukee Metropolitan Sewerage District combined sewer overflows downstream of 13th Street; Milwaukee County General Mitchell Field; additional groundwater remediation discharges)</p>	<p>A. All existing concrete lined or enclosed reaches from the confluence with the Edgerton Channel in the SE NW T6N R22E S27 to 6th Street in the SE SW T6N R22E S20</p> <p>B. All natural or earth lined reaches between 6th Street in the SE SW T6N R22E S20 to 20th Street in the NW SE T6E R22E</p> <p>C. All existing concrete lined or enclosed reaches from 20th Street in the NW SE T6E R22E to the confluence</p>	<p>(Standards Review 1984 and Appraisal 1993)</p> <p>Limited Aquatic Life</p> <p>Milwaukee County's General Mitchell has a specific stormwater discharge permit (ref. J. Gottlieb, SED)</p> <p>Limited Forage Fish</p> <p>Limited Aquatic Life</p> <p>St. Luke Hospital is a non-</p>

Basin / Watershed	Stream	Location	Stream Com
		with the Kinnickinnic River in SE SE T6N R21E S12	<p>contact cooling water discharge and General Permit (ref. J. Gottlieb, SED)</p> <p>Addition to current NR 104 SED list.</p>
Kinnickinnic River Watershed	<p>Unnamed tributary in Milwaukee County (Edgerton Channel)</p> <p>(2 Dischargers: Ladish Company, Inc., Cudahy; 2 ADDITIONS)</p>	Upstream of the confluence with Wilson Park Creek in the SE NW T6N R22E S27 to the headwaters at Nicholson Road in the NE SE T6N R22E S27	<p>Limited Aquatic Life (Appraisal 1993)</p> <p>Addition to current NR 104 SED list.</p>
Kinnickinnic River Watershed	<p>Unnamed tributary of the Kinnickinnic River in Milwaukee County (43rd Street Ditch)</p> <p>(5 Dischargers: Briggs and Stratton, 68th Street West Allis; Froedert Malting Co.; General Electric Co., Medical Systems Group; Pressed Steel Tank Co.; Unit Drop Forge Co.) 5 ADDITIONS</p>	Upstream of the confluence with the Kinnickinnic River in the SE NE T6N R21E S12 to the headwaters in the NW SE T6N R21E S2	<p>Limited Aquatic Life (Standards Review 1984 and Appraisal 1993)</p> <p>Addition to current NR 104 SED list.</p>

Date 12/13/2001

Facility Name MILWAUKEE DUCTILE IRON; FROEDERT MALTING CO;
PRESSED STEEL TANK CO.

Receiving Water UN TRIBUTARY TO KINNICKINNIC R.
(43RD ST. DITCH)

Evaluated by WAWAZYN, WILLIAM

This stream classification is not included in the revised code because (select one):

The discharger is no longer at this location.

A new classification has resulted in a full fish and aquatic life designation.
New survey date _____ Please provide copy of new classification report.

This receiving water should be added to the database and to the code. Specify information, as it should be included in code.

REUSE
"UPSTREAM OF THE CONFLUENCE WITH THE KINNICKINNIC
RIVER IN THE SE NW T6N R21E S12 TO THE
HEADWATERS IN NW SE T6N R21E S2

Other (please explain)

Wilson Park Creek Stream Classification
Kinnickinnic River Watershed
from Richard Randall, 1984
Water Resource Management
Southeast District
revised March, 1993

Introduction

Wilson Park Creek is a major tributary of the Kinnickinnic River with a drainage area of 11.2 sq. miles or 45 percent of the Kinnickinnic River watershed. The stream originates in Sec. 27, T6N, R22E in the city of Cudahy and flows north west for 6.0 miles. The stream drains the medium hub airport General Mitchell Field, undeveloped county park lands, high density residential, industrial, and commercial areas. Tributaries to Wilson Park Creek include Cherokee Park Creek, Villa Mann Creek, Holmes Avenue Creek, and an extensive drainage system through Mitchell Field. There are 43 known storm sewer outfalls, 7 industrial outfalls, and 8 sanitary sewer flow relief devices in the watershed. Frequent spills have been reported for Wilson Park Creek especially in the headwaters area of the airport and Holmes Creek subwatershed. Spilled materials include aviation fuel, aircraft de-icer, detergents and ink. Wilson Park Creek was previously classified as Marginal Use, class E.

Habitat Evaluation

The Wilson Park Creek channel has been extensively modified to reduce flooding in the watershed. A channelized earthen stream channel exists along a 0.5 mile reach upstream and downstream of the I-94 overpass, and the "Edgerton Channel" reach upstream of the airport. A short spur of concrete invert exists below the overpass. There are 1.5 miles of enclosed conduit including a 0.9 mile section in the airport and a 0.3 mile section above the confluence with the Kinnickinnic River. The remainder of the stream is located in a concrete invert. No Q7,10 data is available, however the stream flows continuously.

The areas with natural substrates upstream of the airport and approximately 1/2 mile upstream and downstream of I-94 provide the most suitable habitat for aquatic life. Above the airport the average width is 5 feet and the average depth is 0.3 feet. Substrate includes silt, clay, sand and lesser amounts of gravel and cobble. Cobble and small boulder are the dominant substrate along the reaches upstream and downstream of the I-94 overpass. Much of the interstitial space between the coarse substrate is filled with silt and sand. Bottom channel widths are approximately 15 feet and the average depth is 0.3-0.7 feet. Where the stream flows through a section of Wilson Park maximum depths increase to about 1.6 feet. During base flow conditions, this reach resembles a continuous and broad shallow riffle area. Besides the coarse substrate, filamentous algae and Elodea spp. also provide cover through this reach. The lower and upper bank is maintained

as mowed grass. Bank erosion is less severe in sections of Wilson Park where the dominant cover is shrubs and trees, and upstream of the airport where the bank cover is grass and sedge.

From the conduit outlet at Morgan Avenue to the conduit inlet at the Kinnickinnic River, the stream width is about 25 feet and depths vary from 0.1 feet in the riffles to about 1.5 feet behind a small dam at the conduit inlet.

Habitat in the concrete channel is limiting to aquatic life due to lack of cover and shallow water depths. Deposition of sand and silt in the channel provide some habitat but this is usually transient material to scouring of the channel during storm events. Temporary growths of filamentous algae and *Elodea* sp. are present in the concrete channel where these silt and sand deposits occur and scour is not as frequent. Grass and sedge growths temporarily stabilize these deposits until hydraulic scour removes them. Stream widths vary in the concrete channel from 3-15 feet and depths vary from 0.1 to 0.5 feet. Overall stream habitat is rated poor using the Stream System Habitat Rating as a result of concrete channelization.

Biological

Benthic macroinvertebrate samples were collected in May of 1984 in Wilson Park Creek downstream of the concrete channel in riffle areas at 20th St. and above confluence with the Kinnickinnic River. Both samples were dominated by *Oligochaeta* spp. and were low in diversity which indicate very poor water quality. The most dominant arthropod collected at both sites for calculating the Hilsenhoff Biotic Index was *Cricotopus* spp. The resulting index values of 3.93 and 3.73 at 20th St. and above the confluence respectively, indicate poor water quality. These results are similar to a sample collected in October 1975 which also was dominated by *Oligochaeta* spp.

No fish were collected in Wilson Park Creek despite shocking long reaches in May of 1984 adjacent to Wilson Park and in September 1984 above the confluence with the Kinnickinnic River. Only small minnow fry and crayfish were observed in the stream. In 1975 the Bureau of Research captured only one goldfish in the stream adjacent to Wilson Park. Fish collections reported by Greene in 1924 included brook stickleback, bluntnose minnows, creek chubs, fathead minnows, and johnny darters. Although significant fish populations have not been documented from Wilson Park Creek, the available habitat along earthen channel reaches are capable of supporting tolerant fish species. The lack of fish is likely a result of chronic water quality problems and migration barriers. Water quality problems include urban nonpoint sources, sanitary bypasses, and spills.

Water Quality

The most recent water quality information for Wilson Park Creek was

collected for the 1975-1977 Milwaukee County Rivers Basin Report and General Mitchell Field nonpoint source study. The data indicated that airport runoff, other urban nonpoint sources, and petroleum and other spills at the airport limited water quality in the stream. State water quality standards and EPA recommended criteria for nutrients, solids, and heavy metals were routinely exceeded during storm events. Sediments in the stream were found to be polluted primarily with heavy metals and PCBs. Water quality during non-event flows generally met state and federal standards and criteria.

Currently a majority of the industrial effluent discharged to the stream are non-contact cooling water, but unknown sources of petroleum based material are routinely observed.

Conclusions and Recommendations

Habitat in Wilson Park Creek is limited by concrete channels, deposition, and scouring of the bottom channel. Water quality and the bottom sediments are limited by urban nonpoint sources, spills and sanitary sewer discharges. The absence of a viable fish population and the presence of a very tolerant macroinvertebrate community support this conclusion. Habitat along earthen channel reaches is however, capable of supporting a limited forage fish community more tolerant of degraded environmental conditions. Abatement of these limiting factors would be expected to improve environmental quality conditions along earthen stream reaches, the Kinnickinnic River and estuary.

It is recommended that the remaining natural segments of Wilson Park Creek upstream and downstream of the I-94 overpass, and upstream of the airport (locally referred to as Edgerton Channel) be re-classified from Marginal Use, Class E to a **Limited Forage Fish Community** per NR 102 and NR 104 capable of supporting a limited community of forage fish and macroinvertebrates. It is further recommended that all concrete lined and enclosed reaches of Wilson Park Creek be classified as **Limited Aquatic Life** per NR 102 and NR 104 capable of supporting a limited and very tolerant population of macroinvertebrates and an occasional fish.

References

Ball, Joseph, 1982. Stream Classification Guidelines for Wisconsin. WDNR Technical Bulletin.

Fago, Donald M., 1981. Data for Fish Distribution Study. WDNR Bureau of Fish Research.

Hilsenhoff, William L., 1982. Using a Biotic Index to Evaluate Water Quality in Streams.

WDNR Technical Bulletin No. 132.

SEWRPC 1978. A Comprehensive Plan for the Kinnickinnic River Watershed. Planning Report No. 32.

WDNR 1977. Milwaukee County Rivers Basin Report and General Mitchell Field Nonpoint Source Study.

Wilson Park Creek Stream Classification
Kinnickinnic River Watershed
July, 1985 (Revised: February 11, 1986)
by Richard Randall

Introduction

Wilson Park Creek is a major tributary of the Kinnickinnic River with a drainage area of 11.2 sq. miles or 45 percent of the Kinnickinnic River watershed. The stream originates in Sec.27, T6N, R22E in the City of Cudahy and flows northwest for 6.0 miles. The stream drains the medium hub airport General Mitchell Field, undeveloped county park lands, high density residential, industrial, and commercial areas. Tributaries to Wilson Park Creek include Cherokee Park Creek, Villa Mann Creek, Holmes Avenue Creek, and an extensive drainage system through Mitchell Field. There are 43 known storm sewer outfalls, 7 industrial outfalls, and 8 sanitary sewer flow relief devices in the watershed. Frequent spills have been reported for Wilson Park Creek especially in the headwaters area of the airport and Holmes Creek subwatershed. Spilled materials include aviation fuel, aircraft deicer, detergents and ink.

Habitat Evaluation

The Wilson Park Creek channel has been extensively modified to reduce flooding in the watershed. The natural stream channel has been replaced by a concrete channel for 1.6 miles from 13th St. upstream to the airport. An additional 1.3 miles of natural channel from Euclid Avenue downstream to 20th Street has been channelized and placed in a concrete invert since fall of 1985. There are 1.5 miles of enclosed conduit including a 0.9 mile section in the airport and a 0.3 mile section above the confluence with the Kinnickinnic River. The remaining 2.0 miles of stream are channelized with natural bottom substrates. No Q_{7,10} data are available, however, the stream flows continuously.

The areas with natural substrates upstream of the airport and downstream of 20th St. provide the most suitable habitat for aquatic life. Above the airport the average width is 5 feet and the average depth is 0.3 feet. Downstream of the concrete channel from 13th St. to 20th St. the average width increases to about 15 feet and the average depth is 0.3-0.7 feet. Where the stream flows through a section of Wilson Park depths increase to about 1.6 feet.

Substrates in the natural areas are dominated by gravel, sand and silt with areas of significant deposition. There are a few riffle areas located primarily in the lower stream reaches, however, a majority of the stream is a shallow run and the channel probably changes yearly due to scouring and deposition. Filamentous algae and Elodea spp. growths immediately below 13th St. and above the airport also provide habitat and cover for aquatic life.

Habitat in the concrete channel is limiting to aquatic life due to lack of cover. Deposition of sand and silt in the channel provide some habitat but this is usually temporary due to scouring of the channel during storm events. Temporary growths of filamentous algae and Elodea spp. also occur in the

concrete channel where these silt and sand deposits occur. Stream widths vary in the concrete channel from 3-15 feet and depths vary from 0.1 to 1.5 feet. Fish can utilize sections of the concrete channel and move upstream into the areas with natural substrates.

Bank erosion is considered to be moderate in sections of Wilson Park, and upstream of the airport due to overbank flows and high velocities during storm events. Ground cover is dominated by shrubs and trees while grasses and sedges cover the banks upstream of the airport.

Overall stream habitat is rated poor using the Stream System Habitat Rating form due to the major channel modifications, bank erosion, scouring, deposition, and urban runoff (Table 1).

Biological

Benthic macroinvertebrate samples were collected May 1, 1984, in Wilson Park Creek downstream of the concrete channel in riffle areas at 20th St. and above confluence with the Kinnickinnic River. Both samples were dominated by *Oligochaeta* spp. and were low in diversity which indicate very poor water quality. The most dominant arthropod collected at both sites for calculating the Hilsenhoff Biotic Index was *Cricotopus* spp. The resulting index values of 3.93 and 3.73 at 20th St. and above the confluence respectively, indicate poor water quality. These results are similar to a sample collected in October, 1975, which also was dominated by *Oligochaeta* spp. (Table 2).

No fish were collected in Wilson Park Creek during shocking surveys in May, 1984, adjacent to Wilson Park and in September, 1984, above the confluence with the Kinnickinnic River. Only small minnow fry and crayfish were observed in the stream. In 1975, the Bureau of Research captured only one goldfish in the stream adjacent to Wilson Park. Fish collections reported by Greene in 1924 included brook stickle back, bluntnose minnows, creek chubs, fathead minnows, and johnny darters.

Although significant fish populations have not been documented from Wilson Park Creek, the available habitat is capable of supporting tolerant fish species. Urban nonpoint sources, industrial discharges, sanitary bypasses, and toxic spills currently limit the biological community. Past discharges or toxic spills probably eliminated any significant fish populations and chronic exposures continue to prevent the reestablishment of fish populations. In addition, a dam near the mouth of Wilson Park Creek limits fish from migrating upstream.

Water Quality

The most recent water quality information for Wilson Park Creek was collected for the 1975-1977 Milwaukee County Rivers Basin Report and General Mitchell Field nonpoint source study. The data indicated that airport runoff, urban nonpoint sources, and petroleum spills at the airport limited water quality in the stream. State water quality standards and EPA recommended criteria for nutrients, solids, and heavy metals were routinely exceeded during storm events. Sediments in the stream were found to be polluted primarily with heavy metals and PCB's (Table 3).

Water quality during nonevent flows generally met state and federal standards and criteria, however, industrial discharges contributed 80% of the pollutant load to the stream. Currently a majority of the effluents are noncontact cooling water, but discharges of oil and grease are routinely observed from a few storm sewer outfalls.

Recreational Use

Although there is no continuous flow data available for Wilson Park Creek, the entire stream is considered navigable as a result of reoccurring high flow periods.

Wilson Park Creek is easily accessed as it flows through residential, commercial and industrial areas. However, because of the degree of concrete channel modification and it's effects on severely limiting the existing and potential biological community and aesthetic of the stream, the recreational value of Wilson Park Creek has been almost eliminated. High flows are routinely experienced as a result of wet weather events. During these high flow periods, water quality is very limited and access to the stream is dangerous due to high channel velocities. The creek is expected to be used for incidental or accidental wading. Therefore, it is recommended that Wilson Park Creek recreational use be classified as partial body contact.

Conclusions and Recommendations

Habitat in Wilson Park Creek is limited by concrete channels, bank erosion, deposition, and scouring of the bottom channel. Water quality and the bottom sediments are severely limited by urban nonpoint sources, airport runoff, industrial discharges, possible sanitary discharges, and toxic spills. No significant fish populations have been reported in the stream and the dominant macroinvertebrate is *Oligochaeta* spp. The available habitat is capable of supporting tolerant fish populations, however, the implementation of spill prevention programs, storm water management, elimination of toxic discharges, and bank stabilization will be necessary to improve water quality.

The remaining natural segments of Wilson Park Creek have the potential to support a limited fish population with an improvement in water quality. Insufficient instream habitat remain in the entire stream to support a balanced fish and aquatic life community. Therefore, it is recommended that the stream be classified marginal or use Class E, which are streams capable of supporting small populations of very tolerant macroinvertebrates or no aquatic life. (See Appendix I for pictorial presentation.)

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References

- Ball, Joseph, 1982. Stream Classification Guidelines for Wisconsin. WDNR Technical Bulletin.
- Fago, Donald M., 1981. Data for Fish Distribution Study. WDNR Bureau of Fish Research.
- Hilsenhoff, William L., 1982. Using a Biotic Index to Evaluate Water Quality in Streams. WDNR Technical Bulletin No. 132.
- SEWRPC, 1978. A Comprehensive Plan for the Kinnickinnic River Watershed. Planning Report No. 32.
- WDNR, 1977. Milwaukee County Rivers Basin Report and General Mitchell Field Nonpoint Source Study.

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Table 1

Stream WILSON PARK TRIBE Reach Location NATURAL SECTION BELOW WILSON PARK Reach Score/Rating 241 / 100

County MIW Date 3-10-84 Evaluator RANDALL / WATKINSON Classification E

Rating Item	Category			
	Excellent	Good	Fair	Poor
<i>APPLICABLE</i> Watershed Erosion	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion.	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion.	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion.	Heavy erosion evident. Probable erosion from runoff.
Watershed Nonpoint Source	No evidences of significant source. Little potential for future problems.	Some potential sources. (roads, urban area, farm fields).	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture).	Obvious sources. (Major wetland drainage, high urban or industrial areas, feed lots, impoundment).
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problems.	Infrequent, small areas, mostly healed over. Some potential in extreme floods.	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow.	Many eroded areas. "Raw" areas frequent along straight sections and bends.
Bank Vegetative Protection	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system.	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy.	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding.	<50% density. Many bare areas. Thin grass, few trees and shrubs.
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows contained. W/D ratio <7.	Adequate. Overbank flows rare. W/D ratio 8-13.	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25.	Inadequate, overbank flows common. W/D ratio >25.
Lower Bank Deposition	Little or no enlargement of channel or point bars.	Some new increase in bar formation, mostly from coarse gravel.	Moderate deposition of new gravel and coarse sand on old and some new bars.	Heavy deposits of fine material, increased by development.
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	30-50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools.	More than 50% of the bottom changing nearly yearly. Pools almost absent due to deposition.
Bottom Substrate	Greater than 50% rubble, gravel or other stable habitat.	30-50% rubble, gravel or other stable habitat. Adequate habitat.	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable.	Less than 10% rubble, gravel or other stable habitat. Lack of habitat obvious.
Avg. Depth of Pools	Cold > 16T Warm > 1.56T	0 6" to 16T	6 3" to 6"	18 Less than 3"
Riffles and Runs	Cold > 46T Warm > 56T	0 10" to 1.56T	6 6" to 10"	18 Less than 6"
Avg. Depth of Pools	Cold > 46T Warm > 56T	0 3' to 4'	6 2' to 3'	18 Less than 2'
Flow, at Reg. Low Flow	Warm water > 8 cfs. Cold water > 2 cfs.	0 Warm water 2-8 cfs. Cold water 1-2 cfs.	6 Warm water 0.5-2 cfs. Cold water 0.5-1 cfs. Continuous flow.	18 Less than 0.5 cfs. Streams may cease to flow in very dry years.
Pool/Riffle, Run/Bend Ratio	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.	18 >25. Essentially a stream. Generally all water or shallow fls. Poor habitat.
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpaired corridor.	8 High natural beauty. Trees, historic sites. Some development may be visible.	10 Common setting, not offensive. Developed but uncluttered area.	14 Stream does not inhibit aesthetics. Condition of stream is offensive.

Column Totals: 0 10 45 10 45

Column Score: $3 \times 0 + 6 \times 10 + 9 \times 45 + 7 \times 10 = 239$ = Reach Score

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

Table 2

MACROINVERTEBRATE FIELD SAMPLING A

Form 3200-52 4-81

BASIN: _____

STREAM: Wilson Park Trail COUNTY Wauwaesa

SAMPLE NO. _____

PRIMARY STATION NO. _____

LOCATION: N 5/4, N W 1/4, S 1 9, T 0 6 N, R 2 2 E WATERSHED _____

DATE: 05/01/84
mo day yr.

COMPOSITE - 40 FT DOWNSTREAM 20TH ST BIOTIC INDEX: _____

Chemical Sample? yes (no)

AND ~ 1000 FT UPSTREAM @ WALK BRIDGE

11:00 TIME (24 hr)

AT SAMPLE SITE: 18.0 AVG. WIDTH (ft)

@ WALK UPSTREAM
10.0 FT

DO (mg/l)

.50 AVG. DEPTH (ft)

1.5 FT - 2

7.0 TEMP (°C)

AVG. VELOCITY (measured fps)

.4 FPS

pH (s.u.)

EST. VELOCITY (fps) 1. very slow (.2); 2. slow

CONDUCTIVITY (umhos)

(.2-.5); 3. moderate (5-1.5); 4. fast (1.5)

SAMPLED HABITAT: 1. Riffle 2. Run 3. Pool

SAMPLER: 1. D Frame Net 2. Artificial Substrate 3. Other _____

SUBSTRATE AT SITE LOCATION (%): @ RIFFLE NEAR 20TH

Bedrock 30 Rubble (2 1/2 - 10" dia.) 10 Sand 5 Clay 5 Muck
Boulders (10" dia.) 50 Gravel (1/10 - 2 1/2" dia.) 5 Silt 5 Detritus 5 Debris & Vegetation

SUBSTRATE SAMPLED (%): SAME AS ABOVE OR

@ WALK BRIDGE (POOL)

Bedrock Rubble (2/12 - 10" dia.) 10 Sand 10 Clay 5 Muck
Boulders (10" dia.) 40 Gravel (1/10 - 2 1/2" dia.) 30 Silt 5 Detritus 5 Debris & Vegetation

AQUATIC VEGETATION: _____ % of Total Stream Channel at Sample Site

OBSERVED INSTREAM CONDITIONS AT SAMPLING SITE LIMITING W.Q.

	not present	slight	moderate	significant	Comments
Sludge Deposits	<u>n</u>	sl	m	s	<u>SCOUR FROM HEAVY</u> <u>PREVIOUS 2 DAYS</u>
Silt & Sediment Deposits	n	sl	<u>m</u>	s	
Turbidity	n	sl	<u>m</u>	s	
Chlorine or Toxic Scour	n	<u>sl</u> ?	m	s	
Macrophytes	<u>n</u>	sl	m	s	
Filamentous Algae	n	sl	<u>m</u>	s	
Planktonic Algae	<u>n</u>	sl	m	s	
Slimes	<u>n</u>	sl	m	s	
Iron Bacteria	<u>n</u>	sl	m	s	

FACTORS WHICH MAY BE AFFECTING SAMPLING SITE

degree of influence:	General Watershed			At Site	Comments
	not present	possible	important	direct impact	
Livestock Pasturing	<u>np</u>	pos	imp	di	<u>GRAND CANYON</u>
Barnyard Runoff	<u>np</u>	pos	imp	di	
Cropland Runoff	<u>np</u>	pos	imp	di	
Tile Drains	<u>np</u>	pos	imp	di	
Septic Systems	<u>np</u>	pos	imp	di	
Streambank Erosion	np	pos	<u>imp</u>	<u>di</u>	
Channel Ditching & Straightening	np	pos	<u>imp</u>	<u>di</u>	
Downstream Impoundment	<u>np</u>	pos	imp	di	
Upstream Impoundment	<u>np</u>	pos	imp	di	
Low Flow	np	pos	imp	di	
Wetlands	<u>np</u>	pos	imp	di	<u>AIRPORT</u>
Urban Runoff	np	pos	<u>imp</u>	<u>di</u>	<u>STORM SEWERS</u>
Construction Runoff	np	<u>pos</u>	imp	di ?	
Point Source (specify type)	np	pos	imp	di	
Other (specify)	np	pos	imp	di	

PERCEIVED WATER QUALITY: 1. Excellent 2. Good 3. Fair 4. Poor 5. Very Poor

SAMPLE TRACKING INFORMATION

Dates Artificial Sampler In _____

Time Spent Collecting Sample (minutes) 20 Replicate #'s _____

Out _____

Sampler Collector R. RANDALL

Sorter R. RANDALL

Identifier _____

Date 5-1-84

Date 5-15-84

Date _____

BASIN: _____

STREAM: Wilson Park Trls COUNTY WILSON

SAMPLE NO. _____

PRIMARY STATION NO. _____

LOCATION: NE 1/4, NE 1/4, S 13, T 06N, R 21E WATERSHED _____

DATE: 05/01/84
 mo day yr.
 Chemical Sample? yes

200 FT UPSTREAM UNDERGROUND SECTION BIOTIC INDEX: _____
ABOVE EULLIO ST

09:40 TIME (24 hr)

AT SAMPLE 15.0 AVG. WIDTH (ft)
 SITE:

--- DO (mg/l)

0.75 AVG. DEPTH (ft)

7.0 TEMP (°C)

0.70 AVG. VELOCITY (measured fps)

--- pH (s.u.)

EST. VELOCITY (fps) 1. very slow (.2); 2. slow
 or
 (.2-.5); 3. moderate (.5-1.5); 4. fast (1.5)

--- CONDUCTIVITY (umhos)

SAMPLED HABITAT: 1. Riffle Run 3. Pool

SAMPLER: 1. U Frame Net 2. Artificial Substrate _____ 3. Other _____

SUBSTRATE AT SITE LOCATION (%):

--- Bedrock 10 Rubble (2 1/2 - 10" dia.) 20 Sand --- Clay --- Muck
--- Boulders (10" dia.) 30 Gravel (1/10 - 2 1/2" dia.) 20 Silt --- Detritus --- Debris & Vegetation

SUBSTRATE SAMPLED (%): SAME AS ABOVE OR/ SIGNIFICANT SILT DEPOSITION IN SLOWER REACHES

--- Bedrock --- Rubble (2/12 - 10" dia.) --- Sand --- Clay --- Muck
--- Boulders (10" dia.) --- Gravel (1/10 - 2 1/2" dia.) --- Silt --- Detritus --- Debris & Vegetation

AQUATIC VEGETATION: --- % of Total Stream Channel at Sample Site

OBSERVED INSTREAM CONDITIONS AT SAMPLING SITE LIMITING W.Q.

	not present	slight	moderate	significant	Comments
Sludge Deposits	<input checked="" type="radio"/>	sl	m	s	<u>SOME SCOUR FROM HEAVY RAINS 2 DAY PREVIOUS</u>
Silt & Sediment Deposits	n	sl	<input checked="" type="radio"/>	s	
Turbidity	n	sl	m	<input checked="" type="radio"/>	
Chlorine or Toxic Scour	n	<input checked="" type="radio"/>	m	s	
Macrophytes	<input checked="" type="radio"/>	sl	m	s	
Filamentous Algae	n	<input checked="" type="radio"/>	m	s	
Planktonic Algae	<input checked="" type="radio"/>	sl	m	s	
Slimes	<input checked="" type="radio"/>	sl	m	s	
Iron Bacteria	<input checked="" type="radio"/>	sl	m	s	

FACTORS WHICH MAY BE AFFECTING SAMPLING SITE

degree of influence:	General Watershed			At Site	Comments
	not present	possible	important	direct impact	
Livestock Pasturing	<input checked="" type="radio"/>	pos	imp	di	
Barnyard Runoff	<input checked="" type="radio"/>	pos	imp	di	
Cropland Runoff	<input checked="" type="radio"/>	pos	imp	di	
Tile Drains	<input checked="" type="radio"/>	pos	imp	di	
Septic Systems	<input checked="" type="radio"/>	pos	imp	di	
Streambank Erosion	np	pos	<input checked="" type="radio"/>	<input checked="" type="radio"/>	
Channel Ditching & Straightening	np	pos	<input checked="" type="radio"/>	<input checked="" type="radio"/>	
Downstream Impoundment	<input checked="" type="radio"/>	pos	imp	di	
Upstream Impoundment	<input checked="" type="radio"/>	pos	imp	di	
Low Flow	np	pos	<input checked="" type="radio"/>	di	
Wetlands	<input checked="" type="radio"/>	pos	imp	di	<u>VERY SIGNIFICANT</u>
Urban Runoff	np	pos	<input checked="" type="radio"/>	di	
Construction Runoff	np	<input checked="" type="radio"/>	imp	di	<u>SSD, STORM SEWERS</u>
Point Source (specify type)	np	pos	<input checked="" type="radio"/>	di	
Other (specify)	np	pos	imp	di	

PERCEIVED WATER QUALITY: 1. Excellent 2. Good 3. Fair 4. Poor 5. Very Poor

SAMPLE TRACKING INFORMATION

Dates Artificial Sampler In _____

Time Spent Collecting Sample (minutes) 15 Replicate #'s ---

Out _____

Sampler Collector R. RANDELL

Sorter B. Wakeman

Identifier B. Wakeman

Date 5-1-84

Date 5-16-84

Date 5-22-84

MACROINVERTEBRATE IDENTIFICATION

Surface Water: Wilson Park Trib Site No.: _____ Sample No.: _____
 Site Location: COMPOSITE ~ 40' DOWNSTREAM OF 2015 ST. AND 1000' UPSTREAM OF WALK BRIDGE County: MILWAUKEE
 Sample Collected By: R. RANDALL Date: 5-1-84 Sample Type: HBI - Kick
 Sample Sorted By: R. RANDALL Date: 5-15-84 Identified By: R. RANDALL Date: 6-26-84
 Chironomidae Mounted By: B. WAGMAN Date: 7-6-84 Identified By: W. WAURCY Date: 7-13-84
 Oligochaeta Mounted By: _____ Date: _____ Identified By: _____ Date: _____
 _____ Subsample Mesh size 30 Chironomidae Mounted: 75

Taxa	Stage*	Count	Total No.	Biotic Index	Taxa	Stage*	Count	Total No.	Biotic Index
Chironomidae					Plecoptera				
<i>THIENEBAUMI</i> sp.	L		28	3					
<i>CRICOTOPUS</i> sp.	L		45	4					
<i>OLIGOCLARIUS</i> sp.	L		1	3	Odonata				
<i>CHIRONOMUS</i> sp.	L		1	5	<i>ENALLAGA</i> sp.			1	3
					Coleoptera				
					Oligochaeta				
<i>D-SLUGS</i>									
Other Diptera					Isopoda				
					<i>ASSELLUS INTERMEDIUS</i>			22	5
					Gastropoda				
Trichoptera									
					Amphipoda				
					Gastropoda				
					Lepidoptera				
Ephemeroptera									
					Other				

Total No. of Organisms 98 Total No. Per Sq. Ft. _____
 *L - Larval; P - Pupal; A - Adult; I - Early Instar
 Checked by: _____ Date: _____ Site HBI 3.93

	<u>Tolerancy</u> ¹	<u>Biotic Index</u>	<u>KR-1M</u>			<u>KR-2M</u>			<u>WPC-1M</u>		
			<u>X̄</u>	<u>SD</u>	<u>Qual.</u> ²	<u>X̄</u>	<u>SD</u>	<u>Qual.</u>	<u>X̄</u>	<u>SD</u>	<u>Qual.</u>
Oligochaeta w/chaetae	V	8	67.1	64.4	R	21.9	14.4		79.0	50.9	
Oligochaeta w/o chaetae	V	*	166.2	132.4	R	38.3	33.6	P	540.9	363.0	P

¹Intolerant (I); Tolerant (T); Very Tolerant (V); Unclassified (*)

²Qualitative sample areas - Riffle (R); Pool (P); Submerged Vegetation (V); Backwater (B)
Mean (X̄); Standard Deviation (SD)

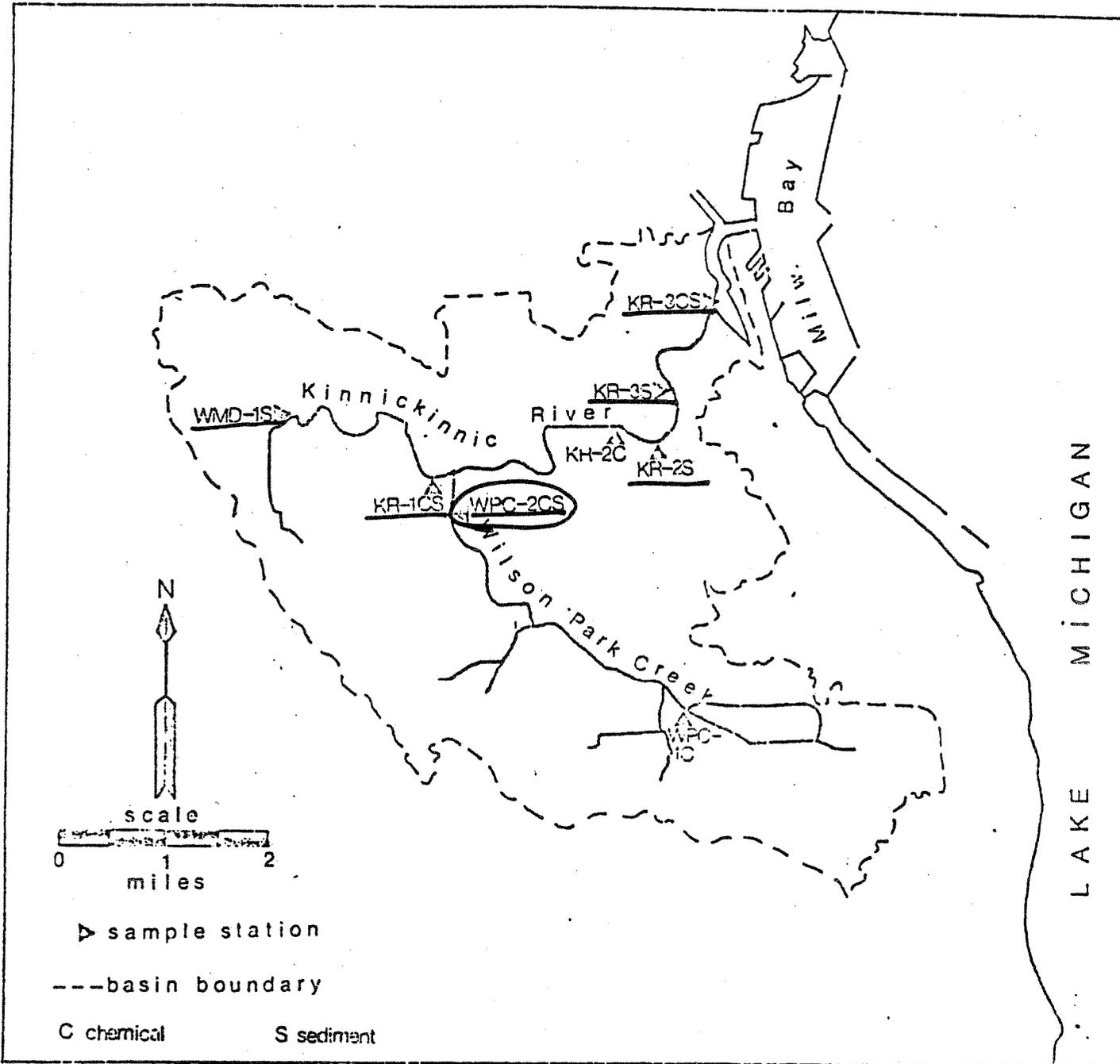
APPENDIX 2.5Community Structure of Macroinvertebrates
in the Kinnickinnic River Basin

	<u>KR-1M</u>	<u>KR-2M</u>	<u>WPC-1M</u>
Number of Individuals (\bar{X}) ¹	485.0	236.3	1045.4
Total Taxa	15	14	14
Intolerant Number (\bar{X}) ¹	0.00	0.00	0.00
Intolerant Taxa	0	0	0
Tolerant Number (\bar{X}) ¹	103.7	19.8	95.3
Tolerant Taxa	6	6	5
Very Tolerant Number (\bar{X}) ¹	381.3	212.5	950.1
Very Tolerant Taxa	9	7	9
Unclassified Number (\bar{X}) ¹	0.0	4.0	0.0
Unclassified Taxa	0	1	0
<hr/>			
Community Diversity	2.00	2.04	1.55
Intolerant Diversity	0.00	0.00	0.00
Tolerant Diversity	0.24	0.05	0.06
Very Tolerant Diversity	1.25	1.62	1.18
Unclassified Diversity	0.00	0.00	0.00
Diversity of Tolerance Groups	0.52	0.37	0.31
Biotic Index	4.00	3.92	4.05
No. of Taxa Included in Biotic Index	6	5	4

Simpson's Similarity Index

	<u>KR-2M</u>	<u>WPC-1M</u>
<u>KR-1M</u>	0.63	0.86
<u>KR-2M</u>	-	0.67

WATER QUALITY AND SEDIMENT SAMPLING STATIONS IN THE KINNICKINNIC RIVER BASIN



PAGE 2

SEDIMENT DATA FROM THE SOUTHEAST DISTRICT
WISCONSIN DEPT OF NAT RESOURCES - PARAMETER VALUES ARE IN PPM

10/11/83

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	KINNIC R <i>WILSON PARK</i>
	SAMPLE LOC. -->	12 WILSON PK	SAMPLE DATE -->	11/19/80	LAB ID ----->	4YG
	LAB NUMBER -->	37622	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC <i>TRIB</i>
ORGANICS:	TIME ----->	15:00	DEPTH ----->		HEPTACHLOR -->	
	PCB ----->	000.15	DIELDRIN ----->	<00.01	PP,DDE ----->	<00.01
	MIREX ----->		OP,DDE ----->	<00.01	OP,DDT ----->	<00.01
	OP,DDD ----->	<00.01	PP,DDD ----->	000.02	TRNCLODN ----->	<00.01
	PP,DDT ----->	<00.01	CISCLODN ----->	<00.01		
	CISNONCL ----->	<00.01	TRANONCL ----->	<00.01		

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	KINNIC R
	SAMPLE LOC. -->	15 JACKSON PK	SAMPLE DATE -->	11/24/80	LAB ID ----->	HYG
	LAB NUMBER -->	37421	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
ORGANICS:	TIME ----->	10:00	DEPTH ----->		HEPTACHLOR -->	
	PCB ----->	001.10	DIELDRIN ----->	<00.01	PP,DDE ----->	<00.02
	MIREX ----->		OP,DDE ----->	<00.01	OP,DDT ----->	<00.01
	OP,DDD ----->	<00.01	PP,DDD ----->	000.02	TRNCLODN ----->	<00.01
	PP,DDT ----->	000.04	CISCLODN ----->	<00.01		
	CISNONCL ----->	<00.01	TRANONCL ----->	<00.01		

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	KINNIC R
	SAMPLE LOC. -->	05 KINNIC AVE	SAMPLE DATE -->	05/17/82	LAB ID ----->	HYG
	LAB NUMBER -->	72635	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
ORGANICS:	TIME ----->	15:45	DEPTH ----->		HEPTACHLOR -->	
	PCB ----->	003.50	DIELDRIN ----->	<00.01	PP,DDE ----->	000.01
	MIREX ----->		OP,DDE ----->	<00.01	OP,DDT ----->	<00.01
	OP,DDD ----->	<00.01	PP,DDD ----->	000.02	TRNCLODN ----->	<00.01
	PP,DDT ----->	<00.01	CISCLODN ----->	<00.01		
	CISNONCL ----->	<00.01	TRANONCL ----->	<00.01		

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	KINNIC R
	SAMPLE LOC. -->	11 CHASE AVE	SAMPLE DATE -->	05/17/82	LAB ID ----->	HYG
	LAB NUMBER -->	72634	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
ORGANICS:	TIME ----->	15:10	DEPTH ----->		HEPTACHLOR -->	
	PCB ----->	001.10	DIELDRIN ----->	<00.01	PP,DDE ----->	000.05
	MIREX ----->		OP,DDE ----->	<00.01	OP,DDT ----->	<00.01
	OP,DDD ----->	000.01	PP,DDD ----->	000.05	TRNCLODN ----->	000.01
	PP,DDT ----->	<00.01	CISCLODN ----->	<00.01		
	CISNONCL ----->	<00.01	TRANONCL ----->	<00.01		

PAGE 3

SEDIMENT DATA FROM THE SOUTHEAST DISTRICT
WISCONSIN DEPT OF NAT RESOURCES - PARAMETER VALUES ARE IN PPM

10/11/83

GENERAL DATA:	BASIN ----->	052	COUNTY ----->	41	WATER BODY ---->	WENONNEE
	SAMPLE LOC. -->	05 27TH ST	SAMPLE DATE -->	12/11/80	LAB ID ----->	4YG
	LAB NUMBER -->	40514	SAMPLE TYPE -->	SEDIMENT	STATION NO. -->	41MISC
ORGANICS:	TIME ----->	13:40	DEPTH ----->		HEPTACHLOR -->	
	PCB ----->	000.20	DIELDRIN ----->	<00.01		

TABLE 16

SEDIMENT RESULTS (mg/kg) FOR THE KINNICKINNIC RIVER BASIN

Sampling Site	Land Use	Date	PCB	Cd	Cr	Cu	Pb	Ni	Zn	Hg	EPA Pollutional Classification
WMD-1S	Industry Residential	Feb. 10, 1976	2.7	3.5	22	MP 49	HP 670	15	HP 750	0.31	Heavily Polluted
KR-1CS	Residential	May 8, 1975	1.1								Insufficient Data
<u>WPC-2CS</u>	Residential Transportation	Feb. 2, 1976	0.11	1.25	16	MP 36	HP 375	12	HP 250	0.25	<u>Heavily Polluted</u>
KR-2CS	Residential	Feb. 10, 1976	P 11.0	3.5	MP 37.5	HP 78	HP 650	MP 25	HP 825	0.34	Heavily Polluted
KR-3S	Residential	May 8, 1975	3.6								Insufficient Data
KR-3CS	Residential Transportation	May 8, 1975	5.5								Insufficient Data
	Residential Transportation	Feb. 10, 1976	9.7	HP 11.2	HP 530	HP 118	MP 670	MP 32	HP 850	0.55	Heavily Polluted

olluted
Moderately polluted
Heavily polluted

Appendix I

(Pictorial Presentation)

Villa Mann Creek

Stream Classification: Limited Aquatic Life

Limiting Factors: Water quality and quantity
 Loss of habitat
 Aesthetics and recreational use
 Limited fish, aquatic life and wildlife communities

Sources: Urban nonpoint sources of pollution
 Channelization and enclosure

While the biological use and recreational use is very limited for these waterbodies, consideration must be given to protecting and enhancing these uses in downstream reaches of the watershed and basin, specifically the Milwaukee Harbor Estuary and Lake Michigan. As such, the development of future water resource management objectives need to consider those already adopted or proposed for the Estuary and Lake Michigan.