CLEAR TECHNICAL REPORT NO. 234

(LAKE ERIE TAT CONTRIBUTION NO. 9)

LAKE ERIE INTENSIVE STUDY: WATER QUALITY VIOLATIONS-- DETROIT RIVER TO HURON, OHIO

Prepared by

Charles E. Herdendorf
and
Laura A. Fay

Prepared for

U.S. Environmental Protection Agency
Great Lakes National Program Office
Region V - Chicago, Illinois
Grant No. R005516001

THE OHIO STATE UNIVERSITY
CENTER FOR LAKE ERIE AREA RESEARCH
COLUMBUS, OHIO

DECEMBER 1981

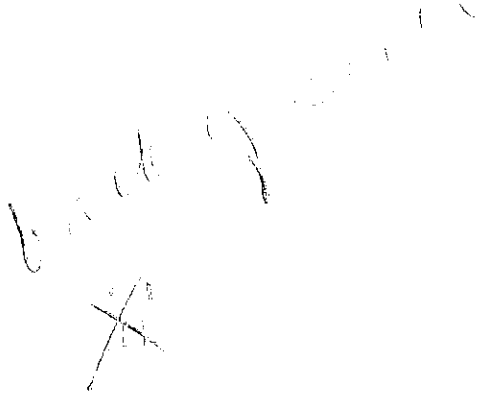

TABLE OF CONTENTS

LIST OF TABLES

NEARSHORE WATER QUALITY PROBLEM AREAS

Introduction

This chapter documents those areas along the Michigan and Ohio shorelines of western Lake Erie that have persistent water quality problems violating water quality objectives or standards established by the International Joint Commission (IJC) or by the States of Ohio and Michigan in cooperation with the U. S. Environmental Protection Agency. Violations of Federal Drug Administration (FDA) action levels in fish and IJC objectives for fish are also considered (Western Lake Erie). Water quality objectives and standards for non-organic contaminants are listed in Table 1 and limits for organic contaminants in water are given in Tables 2, 3 and 4, and in fish in Table 5.

Results

Data from the eight cruises (1978-1979) indicate that water quality objectives and/or standards for 23 parameters were violated in the nearshore waters of western Lake Erie:

PARAMETERS FOR WHICH VIOLATIONS OF WATER QUALITY OBJECTIVES OR STANDARDS WERE OBSERVED IN THE NEARSHORE WATERS OF WESTERN LAKE ERIE 1978-1979

1. Dissolved Oxygen
2. pH
3. Ammonia
4. Conductivity
5. Phosphorus
6. Chloride
7. Sulfate
8. Fecal Coliforms
9. Cadmium
10. Chromium
11. Copper
12. Iron
13. Manganese
14. Nickel
15. Zinc
16. Mercury
17. Selenium
18. Lead
19. Aldrin
20. Dieldrin
21. DDT
22. Endosulfan
23. Phthalic Acid Esters

Tables 6 and 7 contain a summary of the violations grouped by water quality parameters for 1978 and 1979, respectively. A detailed listing by station, date and measured value for each water quality violation is presented in Appendix 1. Organic contaminants in water and fish are presented in Appendices U and V, respectively.

Of the inorganic, non-metal parameters only five showed violations in 1% or more of the samples:

Parameter	1978	1979
pH	23.6%	23.5%
Conductivity	19.8%	25.2%
Dissolved oxygen	5.1%	3.5%
Ammonia	1.7%	1.9%
Total phosphorus	1.4%	0.1%

Metals showed a somewhat higher degree of violations with eight metals in the 1% or more category:

Parameter	1978	1979
Iron	77.7%	87.5%
Zinc	35.3%	N.A.
Copper	33.3%	N.A.
Cadmium	22.2%	N.A.
Nickel	20.3%	32.7%
Manganese	12.6%	11.9%
Chromium	9.7%	4.3%
Lead	2.3%	0.7%

Organic contaminants, plus the microbiological indicator of sewage, fecal coliform, demonstrated violations in greater than 1% of the samples for the following six parameters for the period 1978-1979:

Parameter	IJC	MDNR	OEPA
Fecal coliforms	---	6.9%	8.8%
Aldrin/Dieldrin	3.4%	---	5.2%
DDT and Metabolites	1.7%	---	1.7%
Endosulfan	---	---	4.2%
Phthalate Esters			
a. dibutyl phthalate	6.8%	13.3%	---
b. di(2-ethyl hexyl) phthalate	77.3%	53.3%	---
c. others	46.3%	42.2%	---

Considering the variability typical of Lake Erie nearshore waters, the percentage of samples in violation remained relatively stable over the two-year period (Table 8). Eight inorganic parameters showed decreases while five parameters increased in the percentage of violations. The most notable improvements were phosphorus, lead, chromium, dissolved oxygen and sulfate, whereas conductivity, iron, and nickel were observed as violations in more samples the second year. Considering that only two years comprise the data base, no trends are apparent other than the observation that conditions were generally similar for each year.

Inspection of the two-year data indicates that seven areas exist within the western Lake Erie study area which exhibit persistent water quality problems:

Problem Area	Station within Problem Area
1. Pointe Mouillee to Stony Point, Michigan	M-1 to M-11
2. River Raisin Mouth/Monroe, Michigan	M-12 to M-17
3. Maumee River Mouth/Maumee Bay, Michigan and Ohio	M-23 to M-27 and 0-1 to 0-11
4. Toussaint River Mouth/Locust Point, Ohio	0-15 to 0-21
5. Portage River Mouth/Port Clinton, Ohio	0-22 to 0-26
6. Sandusky River Mouth/Sandusky Bay, Ohio	0-29 to 0-40
7. Huron River Mouth/Huron, Ohio	0-43 to 0-50

Parameters in violation within each of these problem areas, including the number of cruises with violations and extreme values, are presented for 1978 and 1979 in Tables 9 through 15. These tables identify the persistent violations at each area and specify the magnitude of the problem. The following section discussses the individual problem areas in more detail.

Discussion

Pointe Mouillee to Stony Point. This portion of the Michigan shoreline lies immediately south of the Detroit River mouth. It is shallow and characterized by low shores and extensive wetlands. Biological productivity is high, often resulting in pH values in excess of 9.0. Decay of organic material contributes to the dissolved oxygen depression and possibly the release of ammonia. Tributary waters and high industrial loading from the Detroit area are reflected in the elevated conductivity ($\geq$ 600 µmhos) and concentrations of several metals (Table 9).

River Raisin Mouth/Monroe. This section of the Michigan shore receives flow from the west side of the Detroit River in addition to discharge from the River Raisin. The same type of problems exist at Monroe that were identified for Pointe Mouillee with the exception of ammonia. Metals continue to be high in this area but generally not as high or as frequent as those found to the north, close to the Detroit River mouth (Table 10). However, organic contaminants, such as phthalate esters in water samples and mirex and PCB's in fish samples, were found at this area (Appendices B and C).

Maumee River Mouth/Maumee Bay. The area in the vicinity of Toledo, Ohio appears to be the most heavily impacted area in western Lake Erie. Most water quality parameters are degraded to a greater degree in Maumee Bay than the six other problem areas. Oxygen is at times below 2.0 mg/l, ammonia above 1700 µg/l, fecal coliform at 10,000 cell/100 ml, and nine metals were found to be above acceptable limits (Table 11). In addition, organic contaminants, including aldrin, dieldrin, chlordane, DDT, endosulfan, and phthalate esters in water and mirex and PCB's in fish, were found in samples from near the

Maumee River mouth. This river is the largest tributary to Lake Erie (excluding the Detroit River) and flows through a rich agricultural and industrial region which apparently accounts for the wide array of contaminants associated with the lake's nearshore water in the region of its mouth.

Toussaint River Mouth/Locust Point. This area is located on the south shore of western Lake Erie about 15 miles east of Maumee Bay and includes the discharge area of the Davis-Besse Nuclear Power Station. Most water quality parameters are within acceptable limits except for seven metals (Table 12). Most metals were lower than those observed in the Toledo area with the exception of nickel. It appears likely that nearshore flow of water masses from the Maumee Bay may account for these elevated readings but discharge from the power plant may also be a factor. PCB contamination was observed in fish samples from this area. Relative to the other six problem areas, the Locust Point area is the least impacted.

Portage River Mouth/Port Clinton. This area is located about 10 miles east of Locust Point and exhibited much the same kind of metals problem. Nine metals exceeded the IJC objective, often during the same cruises that the high values were recorded in Maumee Bay and Locust Point (Table 13). This suggests the Toledo area may be the source of contaminated water that flows eastward along the Ohio shore. In addition to metals, high fecal coliforms were also observed near Port Clinton, indicative of contamination from domestic sewage. PCB contamination was observed in fish samples from this area.

Sandusky River Mouth/Sandusky Bay. This area is a productive, shallow Lake Erie embayment, connected to the lake by a narrow channel near Sandusky Harbor. During the summer cruises dissolved oxygen decreased to less than 2 mg/l and pH increased to 10. The mineralized Sandusky River delivered water to the bay with conductivity over 600 µmhos/cm and total phosphorus concentration of nearly 1,000 µg/l. In addition, nine metals exceeded the IJC objective, but none of them, except iron, were extremely high (Table 14). Fecal coliforms indicated the presence of untreated domestic sewage, but only during one cruise each year. Organic contaminants included DDT, mirex and PCB's in fish samples, while dieldrin, and phthalate esters were found in water samples.

Huron River Mouth/Huron. Two factors contribute to the violations observed in this area, the offshore stratified zone, and the Huron River mouth. The offshore waters in this region represent the southern and westernmost edge of the central basin hypolimnion. Very low oxygen levels (0.1 mg/l) were observed in the hypolimnion. Sewage contamination from Huron probably accounts for the high ammonia, phosphorus and fecal coliform concentrations (Table 15). In addition, seven metals yielded values above IJC objectives but none of them were exceptionally high or occurred consistently with the exception of iron. No organic contaminants in water or fish samples were recorded for this harbor.

Conclusion

The nearshore zone of western Lake Erie represents the region where the greatest interaction between water quality and water users takes place. These waters are the major source for the public and industrial water supply. It is the site of virtually all recreational use and it is the most important area for the propagation and support of all aquatic life forms. With the exception of that portion of atmospheric deposition falling on the main body of the lake, the nearshore zone is the recipient of most waste input. For this reason, these waters are the first to show signs of degradation and conversely will be the first indicators of progress in abating pollution.

The Toledo, Ohio area in the vicinity of the Maumee River mouth and Maumee Bay is the most heavily impacted nearshore area in western Lake Erie. High concentrations of many parameters in Maumee Bay, particularly metals, may be the main source of the moderately high levels measured to the east at Locust Point and Port Clinton. Pointe Mouillee, Michigan, lying immediately south of the Detroit River mouth also show highly elevated metals concentrations. The Monroe Michigan area has similar problems with metals, due to the heavily industrialized banks of the River Raisin. The Sandusky area is nearly equal to the southeast shore of Michigan as the second most impacted area after Toledo. To the east, Huron has a moderate metals and domestic sewage problem.

TABLES

TABLE 1

WATER QUALITY OBJECTIVES AND STANDARDS

FOR NON-ORGANIC CONTAMINANTS

IN WESTERN LAKE ERIE

Parameter	IJC (1978) WATER QUALITY Objectives	OHIO EPA (1978) WATER QUALITY STANDARDS Lake Erie	OHIO EPA (1978) WATER QUALITY STANDARDS Excepted Areas	MICHIGAN DNR (1973) WATER QUALITY STANDARDS Lake Erie
Dissolved Oxygen	6.0 mg/l	6.0 mg/l	4.0 mg/l	6.0 mg/l; 7 mg/l (P)
pH	6.5-9.0	6.5-9.0	6.5-9.0	6.7-8.5
Total Dissolved Solids	200 mg/l	200 mg/l	1500 mg/l	200 mg/l
Conductivity	308 µmhos/cm	320 µmhos/cm	2400 µmhos/cm	-
Total Phosphorus	0.5 mg/l (1)	1 mg/l (1)	1 mg/l (1)	-
Total Ammonia	500 µg/l (NH_3)	6.5 mg/l (N)	13 mg/l (N)	-
Nitrate	-	10 mg/l	-	-
Nitrite	-	} 100 mg/l	} 100 mg/l	-
Chloride	-	250 mg/l	-	50 mg/l (2)
Fluoride	1200 µg/l	1800 µg/l	2000 µg/l	-
Sulfate	-	250 µg/l	-	-
Cadmium (Total)	0.2 µg/l	1.2 µg/l	12 µg/l	12 µg/l (P)
Chromium (Total)	50 µg/l	50 µg/l	100 µg/l	100 µg/l (P)
Copper (Total)	5 µg/l	5 µg/l	10 µg/l	-
Iron (Total)	300 µg/l	300 µg/l (dissol.) 1000 µg/l	1000 µg/l	300 µg/l (P)
Lead (Total)	25 µg/l	30 µg/l	30 µg/l	30 µg/l (P)
Manganese	-	50 µg/l	-	-
Nickel (Total)	25 µg/l	25 µg/l	200 µg/l	-
Zinc (Total)	30 µg/l	30 µg/l	55 µg/l	-
Arsenic	50 µg/l	50 µg/l	100 µg/l	100 µg/l (P)
Mercury (Total)	0.2 µg/l (Dissol.)	0.2 µg/l	0.2 µg/l	.05 µg/l (P)
Selenium (Total)	10 µg/l	10 µg/l	50 µg/l	-
Cyanide	-	25 µg/l	25 µg/l	5 µg/l (P)
Phenol	1 µg/l	1 µg/l	10 µg/l	-
Fecal Coliforms	-	200/100 ml	-	200/100 ml (3) 1000/100 ml (4)
PCB	0.1 mg/l (5)			

(1) point source discharges
(2) monthly average
(3) total body contact
(4) other waters
(P) proposed
(5) fish tissues

TABLE 2

IJC WATER QUALITY OBJECTIVES FOR PESTICIDES

Pesticide	In Water	% of Violations
Aldrin/Dieldrin*	0.001 µg/l	3.4
Chlordane	0.060 µg/l	0.0
DDT and Metabolites		1.7
Endrin	0.002 µg/l	0.0
Heptachlor/Heptachlor Epoxide*	0.001 µg/l	0.0
Lindane	0.010 µg/l	0.0
Methoxychlor	0.040 µg/l	0.0
Mirex	< Detection Limit	0.0
Toxaphene	0.008 µg/l	NA
Phthalic Acid Esters		
dibutyl phthalate	4.000 µg/l	6.8
di (2-ethyl hexyl) phthalate	0.600 µg/l	77.3
others	0.200 µg/l	46.3

*Objective equals the two pesticides totalled.

TABLE 3

PERMISSIBLE CONCENTRATIONS OF PESTICIDES
(µg/l) FOR MICHIGAN WATERS*

Pesticide	Permissible Concentration	% of Violation
Phthalate Esters		
dibutyl phthalate	4.0 µg/l	13.3
di (2-ethyl hexyl) phthalate	0.6 µg/l	53.3
other phthalate acid esters	0.2 µg/l	42.2
PCB's	0.001 µg/l	0.0

*Taken from Michigan Department of Natural Resources, Water Resources Commission, Proposed Standards; January 1979.

TABLE 4

PERMISSIBLE CONCENTRATIONS OF PESTICIDES
(µg/l) FOR MICHIGAN WATERS*

Pesticide	Public Water Supply	Warm-water Habitat	% of Violations
Aldrin**	1.0	0.01	0.0
Benzene Hexachloride		0.1	0.0
Chlordane	3.0	0.01	0.0
2, 4-D	100.0		0.0
DDT**	50.0	0.001	1.7
Diazinon		0.009	0.0
Dieldrin	1.0	0.005	5.2
Endosulfan		0.003	4.2
Endrin		0.002	0.0
Heptachlor**	0.1	0.001	0.0
Heptachlor Epoxide	0.1		0.0
Lindane	4.0	0.01	0.0
Malathion		0.1	NA
Methoxychlor	100.0	0.005	0.0
Mirex		0.001	0.0
Parathion		0.008	0.0

*Taken from Ohio EPA Water Quality Standards, Chapter 3745 * 1 of the Administrative Code. Only concentrations for parameters measured during the Lake Erie Intensive Study are shown here.

**Banned.

TABLE 5

ACTION LEVELS AND OBJECTIVES
FOR ORGANIC CONTAMINANTS IN FISH[1]

PARAMETER	FDA ACTION LEVEL		IJC OBJECTIVE
	Current	Proposed	
Aldrin/Dieldrin			0.3 µg/g
DDT and Metabolites	50.0 µg/g		1.0 µg/g
Endrin			1.0 µg/g
Heptachlor/Heptachlor Epoxide			0.3 µg/g
Lindane			0.3 µg/g
PCB's	5.0 µg/g[2]	2.0 µg/g[2]	0.1 µg/g[3]
Mirex			Detection Limit

[1]Wet weight

[2]Edible portion

[3]Whole fish

TABLE 6

SUMMARY OF WATER QUALITY OBJECTIVES AND STANDARDS VIOLATIONS
WESTERN LAKE ERIE NEARSHORE 1978

Parameter	Samples Processed	Total Samples w/ Violations		VIOLATIONS							
				IJC		OEPA Normal		OEPA Except.		MDNR	
		No.	%	No.	%	No.	%	No.	%	No.	%
Dissolved Oxygen	1139	58	5.1	58	5.1	45	6.0	10	5.3	13	3.4
pH	1286	304	23.6	133	10.3	64	7.5	42	16.3	240	55.7
Ammonia	1086	18	1.7	14	1.3	9	1.3	3	1.5	---	----
Conductivity	1097	217	19.8	217	19.8	133	17.7	0	0.0	---	----
Total Phosphorus	1249	18	1.4	18	1.4	1	0.1	1	0.4	---	----
Nitrate+Nitrite	1295	0	0.0	---	----	0	0.0	0	0.0	---	----
Chloride	1008	2	0.2	---	----	0	0.0	--	----	2	0.6
Fluoride	305	0	0.0	0	0.0	0	0.0	0	0.0	---	----
Sulfate	1267	5	0.4	---	----	5	0.4	--	----	---	----
Fecal Coliforms	332	26	7.8	---	----	17	8.0	--	----	9	7.5
Cadmium	306	68	22.2	68	22.2	17	8.5	3	4.1	2	1.9
Chromium	309	30	9.7	30	9.7	26	12.9	0	0.0	0	0.0
Copper	303	101	33.3	101	33.3	49	25.0	9	12.5	---	----
Iron	309	240	77.7	240	77.7	151	75.1	49	65.3	89	82.4
Manganese	309	39	12.6	---	----	39	19.4	--	----	---	----
Nickel	306	62	20.3	62	20.3	37	18.6	1	1.4	---	----
Zinc	309	109	35.3	109	35.3	63	31.3	10	13.3	---	----
Arsenic	309	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mercury	303	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Selenium	308	2	0.7	2	0.7	2	1.0	0	0.0	---	----
Lead	308	7	2.3	7	2.3	0	0.0	0	0.0	4	3.7

TABLE 7

SUMMARY OF WATER QUALITY OBJECTIVES AND STANDARDS VIOLATIONS
WESTERN LAKE ERIE NEARSHORE 1979

Parameter	Samples Processed	Total Samples w/ Violations		VIOLATIONS							
				IJC		OEPA Normal		OEPA Except.		MDNR	
		No.	%	No.	%	No.	%	No.	%	No.	%
Dissolved Oxygen	1349	47	3.5	47	3.5	44	4.8	7	2.6	3	0.7
pH	1381	325	23.5	138	10.0	82	8.8	44	15.5	243	53.9
Ammonia	1093	21	1.9	18	1.7	6	0.8	0	0.0	----	---
Conductivity	1370	345	25.2	345	25.2	215	23.7	0	0.0	----	---
Total Phosphorus	1341	1	0.1	1	0.1	0	0.0	0	0.0	----	---
Nitrate+Nitrite	1390	0	0.0	---	----	0	0.0	0	0.0	----	---
Chloride	111	0	0.0	---	----	0	0.0	---	----	0	0.0
Fluoride	0	---	----	---	----	---	----	---	----	----	---
Sulfate	112	0	0.0	---	----	0	0.0	---	----	----	---
Fecal Coliforms	449	38	8.5	---	----	29	9.6	---	----	9	6.1
Cadmium	0	----	----	---	----	---	----	---	----	----	---
Chromium	303	13	4.3	13	4.3	12	6.1	3	4.0	1	0.9
Copper	0	----	-----	---	----	---	----	---	----	----	---
Iron	304	266	87.5	266	82.5	167	84.3	48	64.0	99	93.4
Manganese	303	36	11.9	---	----	36	18.3	---	----	----	---
Nickel	303	99	32.7	99	32.7	65	32.8	1	1.3	----	---
Zinc	0	---	----	---	----	---	----	---	----	----	---
Arsenic	304	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Mercury	303	52	17.2	23	7.6	16	8.1	7	9.3	36	34.3
Selenium	0	----	----	---	----	---	----	---	----	----	---
Lead	302	2	0.7	2	0.7	0	0.0	0	0.0	2	1.9

TABLE 8

COMPARISON OF 1978 AND 1979 WATER QUALITY VIOLATIONS
WESTERN LAKE ERIE NEARSHORE

Parameter	Percent Violations		Percent Change
	1978	1979	
DO	5.1	3.5	-31.4
pH	23.6	23.5	-0.4
Ammonia	1.7	1.9	+11.8
Conductivity	19.8	25.2	+27.3
Total Phosphorus	1.4	0.1	-92.9
Nitrate+Nitrite	0.0	0.0	0.0
Chloride	0.2	0.0	-100.0
Fluoride	0.0	-------	-------
Sulfate	0.4	0.0	-100.0
Fecal Coliforms	7.8	8.5	+9.0
Cadmium	22.2	-------	-------
Chromium	9.7	4.3	-55.7
Copper	33.3	-------	-------
Iron	77.7	87.5	+12.6
Manganese	12.6	11.9	-5.6
Nickel	20.3	32.7	+61.1
Zinc	35.3	-------	-------
Arsenic	0.0	0.0	0.0
Mercury	0.0	17.2	-------
Selenium	0.7	-------	-------
Lead	2.3	0.7	-69.6

TABLE 9

POINTE MOUILLEE TO STONY POINT, MICHIGAN
(STATIONS M-1 TO M-11)

Parameters With Violations	Units	1978		1979	
		Cruises With Violations	Extreme Values	Cruises With Violations	Extreme Values
Dissolved Oxygen	mg/l	1,2,3	5.8	1,2	4.0
pH	sμ	2,3,4	9.4	2,3,4	9.2
Ammonia	μg/l	3	608.2	1	709.0
Conductivity	μmhos/cm	1,2,3	620.0	1,2,3	480.0
Chloride	mg/l	2	52.0	-------	
Fecal Coliforms	#/100 ml	3,4	720.0	1,2,3,4	1520.0
Cadmium	μg/l	2,3,4	17.3	-------	
Chromium	μg/l	2	50.1	3	136.0
Copper	μg/l	1,2,3,4	343.8	-------	
Iron	μg/l	1,2,3,4	6176.6	1,2,3,4	4031.4
Manganese	μg/l	1,2,3,4	169.1	1,2,3,4	125.1
Nickel	μg/l	1,3	86.5	1,2,3,4	333.2
Zinc	μg/l	1,2,3,4	120.4	--------	
Lead	μg/l	3	60.2	None	
Mercury	μg/l	none		1,2,3,4	0.35

Toxic Organic Compounds: (see Appendices B and C)

TABLE 10

RIVER RAISIN MOUTH/MONROE, MICHIGAN
(STATIONS M-12 TO M-17)

Parameters With Violations	Units	1978		1979	
		Cruises With Violations	Extreme Values	Cruises With Violations	Extreme Values
Dissolved Oxygen	mg/l	2,3	4.8	3	4.4
pH	su	2,3,4	9.2	2,3,4	9.2
Conductivity	µmhos/cm	1,2,3,4	535.0	1,2,3,4	572.0
Fecal Coliforms	cells/100 ml	2	250.0	4	287.0
Cadmium	µg/l	3,4	8.6	-------	
Chromium	µg/l	2,4	52.1	-------	
Copper	µg/l	1,2,3,4	2193.7	-------	
Iron	µg/l	1,2,3,4	2276.6	1,2,3,4	2931.4
Manganese	µg/l	1	79.1	1	99.1
Nickel	µg/l	1,3,4	136.5	1,2,3,4	253.2
Zinc	µg/l	1,3,4,	280.4	-------	
Lead	µg/l	3	26.2	-------	
Mercury	µg/l	none		2,3	0.09

Toxic Organic Compounds: (see Appendices B and C)

TABLE 11

MAUMEE RIVER MOUTH/MAUMEE BAY, MICHIGAN AND OHIO
(STATIONS M-23 TO M-27 AND O-1 TO O-11)

Parameters With Violations	Units	1978		1979	
		Cruises With Violations	Extreme Values	Cruises With Violations	Extreme Values
Dissolved Oxygen	mg/l	2,3	2.1	2,3	1.7
pH	su	1,2,3,4	9.4	2,3,4	9.5
Ammonia	µg/l	2,3	1231.0	1,2,3,4	1758.5
Conductivity	µmhos/cm	1,2,3,4	560.0	1,2,3,4	747.0
Total Phosphorus	µg/l	1,2,3,4	1030.4	none	
Chloride	mg/l	2	50.1	none	
Fecal Coliforms	cells/100 ml	2,3	10,000.0	1,2,3	850.0
Cadmium	µg/l	1,2,3,4	17.3	-------	
Chromium	µg/l	3	84.1	3	206.0
Copper	µg/l	1,2,3,4	123.8	-------	
Iron	µg/l	1,2,3,4	5476.6	1,2,3,4	7476.6
Manganese	µg/l	1,2,3,4	169.1	1,2,3,4	125.1
Nickel	µg/l	1,2,3,4	69.5	1,2,3,4	223.2
Zinc	µg/l	1,2,3,4	280.4	-------	
Lead	µg/l	3	40.2	3	72.0
Mercury	µg/l	none		1,3,4	5.98

Toxic Organic Compounds: (see Appendices B and C)

TABLE 12

TOUSSAINT RIVER MOUTH/LOCUST POINT, OHIO
(STATIONS O-15 TO O-21)

Parameters With Violations	Units	1978		1979	
		Cruises With Violations	Extreme Values	Cruises With Violations	Extreme Values
Dissolved Oxygen	mg/l	2	5.9	none	
pH	su	none		3,4	9.6
Ammonia	µg/l	none		none	
Conductivity	µmhos/cm	2,3	315.0	1,2	497.0
Fecal Coliforms	cells/100 ml	2	220.0	none	
Cadmium	µg/l	4	8.2	-------	
Chromium	µg/l	3,4	77.1	3	336.0
Copper	µg/l	1,2,3	203.8	-------	
Iron	µg/l	1,2,3,4	3876.6	1,2,3,4	8976.6
Manganese	µg/l	1	72.1	1	104.1
Nickel	µg/l	2	86.5	2,3,4	123.2
Zinc	µg/l	1,2	190.4	-------	
Lead	µg/l	none		none	
Mercury	µg/l	none		none	

Toxic Organic Compounds: (see Appendices B and C)

TABLE 13

PORTAGE RIVER MOUTH/POINT CLINTON, OHIO
(STATIONS O-22 TO O-26)

Parameters With Violations	Units	1978		1979	
		Cruises With Violations	Extreme Values	Cruises With Violations	Extreme Values
Dissolved Oxygen	mg/l	2	5.3	none	
pH	su	none		2,4	9.3
Conductivity	µmhos/cm	2,3	320.0	1	397.0
Fecal Coliforms	cells/100 ml	2,4	5100.0	2,3	530.0
Cadmium	µg/l	4	16.3	-------	
Chromium	µg/l	3,4	77.1	3	426.0
Copper	µg/l	1,2	153.8	-------	
Iron	µg/l	1,2,3,4	2276.6	1,2,3,4	7476.6
Manganese	µg/l	1	77.1	1	84.1
Nickel	µg/l	1,2,4	57.5	2,3,4	213.2
Zinc	µg/l	1,2,3,4	180.4	-------	
Mercury	µg/l	none		3	0.29
Selenium	µg/l	4	12.0	-------	

Toxic Organic Compounds: (see Appendices B and C)

TABLE 14

SANDUSKY RIVER MOUTH/SANDUSKY BAY, OHIO
(STATIONS 0-29 TO 0-40)

Parameters With Violations	Units	1978		1979	
		Cruises With Violations	Extreme Values	Cruises With Violations	Extreme Values
Dissolved Oxygen	mg/l	2,3	2.1	2	1.7
pH	su	2,3	9.4	2,3,4	10.0
Conductivity	µmhos/cm	1,2,3,4	590.0	1,2,3,4	605.0
Total Phosphorus	µg/l	none		4	976.5
Sulfate	µg/l	2,3	348.4	none	
Fecal Coliforms	cells/100 ml	4	240.0	1	3800.0
Cadmium	µg/l	4	15.3	-------	
Chromium	µg/l	3,4	73.1	3	116.0
Copper	µg/l	1	103.8	-------	
Iron	µg/l	1,2,3,4	1776.6	1,2,3,4	5231.4
Manganese	µg/l	1,2,3,4	209.1	1,3,4	185.1
Nickel	µg/l	1,2,3,4	216.5	2,3,4	383.2
Zinc	µg/l	2,3,4	110.4	-------	
Mercury	µg/l	none		3,4	0.25
Selenium	µg/l	4	12.0	-------	

Toxic Organic Compounds: (see Appendices B and C)

TABLE 15

HURON RIVER MOUTH/HURON, OHIO
(STATIONS 0-43 TO 0-50)

Parameters With Violations	Units	1978		1979	
		Cruises With Violations	Extreme Values	Cruises With Violations	Extreme Values
Dissolved Oxygen	mg/l	2,3	2.1	2,3	0.1
pH	su	1,3	9.1	none	
Ammonia	µg/l	2	202.2	none	
Conductivity	µmhos/cm	1,2	450.0	1,2,3,4	527.0
Total Phosphorus	µg/l	1	644.4	none	
Fecal Coliforms	cells/100 ml	3,4	23,000.0	1,2,4	2100.0
Cadmium	µg/l	4	5.8	-------	
Chromium	µg/l	none		3	176.0
Copper	µg/l	1,2,4	28.8	-------	
Iron	µg/l	1,2,3,4	2676.6	1,2,3,4	2431.4
Manganese	µg/l	1,4	129.1	none	
Nickel	µg/l	2,3	70.5	2,3,4	313.2
Lead	µg/l				
Mercury	µg/l	none		1,3	0.54

Toxic Organic Compounds: (see Appendices B and C)

APPENDIX A

VIOLATIONS, NON-ORGANIC CONTAMINANTS IN WATER

Listing of stations, dates and measured values for water quality violations in the nearshore waters of western Lake Erie for 1978 and 1979.

VIOLATIONS REPORT FOR DISSOLVED OXYGEN (mg/l).

LIMITS IN EFFECT:

IJC	<	6.00
O-EPA NORM	<	6.00
O-EPA EX	<	4.00
MICH DNR	<	6.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	118	1110	1	2	M-03	S	5.8	X			X
78	181	840	2	1	O-02	S	4.0	X	X		
78	181	840	2	1	O-02	B	2.1	X	X	X	
78	181	925	2	1	O-03	S	4.4	X	X		
78	181	925	2	1	O-03	B	3.6	X	X	X	
78	181	1130	2	1	O-06	B	5.9	X	X		
78	181	1200	2	1	O-07	B	4.2	X	X		
78	188	1038	2	1	O-17	B	5.9	X	X		
78	188	1426	2	1	O-24	B	5.3	X	X		
78	188	1510	2	1	O-25	B	5.6	X	X		
78	188	1654	2	1	O-36	B	4.7	X	X		
78	191	1705	2	1	O-44	B	4.6	X	X		
78	191	1530	2	1	O-47	B	3.4	X	X		
78	191	1455	2	1	O-50	B	4.8	X	X		
78	179	1925	2	2	M-12	B	5.4	X			X
78	182	840	2	2	O-02	S	4.5	X	X		
78	182	840	2	2	O-02	B	4.5	X	X		
78	182	915	2	2	O-03	B	5.1	X	X		
78	189	1615	2	2	O-27	B	5.4	X	X		
78	189	1450	2	2	O-36	B	4.8	X	X		
78	180	840	2	3	M-12	B	4.9	X			X
78	180	900	2	3	M-13	B	4.8	X			X
78	180	928	2	3	M-14	B	5.4	X			X
78	180	945	2	3	M-15	B	5.7	X			X
78	180	1519	2	3	M-19	B	5.6	X			X
78	183	906	2	3	O-02	S	3.7	X	X	X	
78	183	906	2	3	O-02	B	3.9	X	X	X	
78	183	1004	2	3	O-03	S	5.5	X	X		
78	193	1320	2	3	O-44	S	5.1	X	X		
78	235	1120	3	1	M-01	S	5.8	X			X
78	235	1335	3	1	M-05	B	5.4	X			X
78	235	1310	3	1	M-06	B	5.9	X			X
78	238	830	3	1	O-02	S	3.6	X	X	X	
78	238	830	3	1	O-02	B	3.7	X	X	X	
78	238	1540	3	1	O-08	S	5.8	X	X		
78	252	1020	3	1	O-39	B	2.1	X	X		
78	252	1500	3	1	O-44	B	5.4	X	X		
78	252	1417	3	1	O-46	B	1.5	X	X		
78	252	1355	3	1	O-47	B	0.5	X	X		
78	252	1320	3	1	O-50	B	2.9	X	X		
78	236	1545	3	2	M-16	S	5.7	X			X
78	239	1045	3	2	M-22	S	5.0	X			X
78	239	900	3	2	O-02	S	3.4	X	X	X	
78	239	900	3	2	O-02	B	3.4	X	X	X	
78	253	905	3	2	O-44	S	4.5	X	X		
78	253	905	3	2	O-44	B	4.4	X	X		
78	253	1210	3	2	O-46	B	2.1	X	X		
78	253	1101	3	2	O-47	B	0.3	X	X		

VIOLATIONS REPORT FOR DISSOLVED OXYGEN (mg/l).

LIMITS IN EFFECT:

IJC	<	6.00
O-EPA NORM	<	6.00
O-EPA EX	<	4.00
MICH DNR	<	6.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	253	954	3	2	O-49	B	4.4	X	X		
78	237	1255	3	3	M-05	B	5.9	X			X
78	240	900	3	3	O-02	S	2.3	X	X	X	
78	240	900	3	3	O-02	B	2.4	X	X	X	
78	251	1703	3	3	O-36	B	3.0	X	X		
78	254	1415	3	3	O-44	S	5.2	X	X		
78	254	1415	3	3	O-44	B	5.0	X	X		
78	254	1353	3	3	O-45	B	5.0	X	X		
78	254	1330	3	3	O-46	B	1.9	X	X		
78	254	1240	3	3	O-50	B	0.5	X	X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	58	1139	5.09%
OHIO-EPA NORMAL	45	752	5.98%
OHIO-EPA EXCEPTED	10	188	5.32%
MICHIGAN DNR	13	387	3.36%
TOTAL	58	1139	5.09%

VIOLATIONS REPORT FOR DISSOLVED OXYGEN (mg/l).

LIMITS IN EFFECT:

IJC	<	6.00
O-EPA NORM	<	6.00
O-EPA EX	<	4.00
MICH DNR	<	6.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	88	1720	1	1	M-03	S	4.0	X			X
79	209	927	2	1	O-02	S	1.7	X	X	X	
79	209	927	2	1	O-02	B	1.7	X	X	X	
79	212	1710	2	1	O-27	B	2.3	X	X		
79	212	1905	2	1	O-28	B	2.2	X	X		
79	212	1815	2	1	O-36	B	1.7	X	X		
79	215	1437	2	1	O-40	B	3.0	X	X		
79	215	1335	2	1	O-42	B	1.2	X	X		
79	215	945	2	1	O-44	S	5.4	X	X		
79	215	945	2	1	O-44	B	4.0	X	X		
79	215	1240	2	1	O-45	B	3.8	X	X		
79	215	1205	2	1	O-46	B	1.5	X	X		
79	215	1130	2	1	O-47	B	1.4	X	X		
79	215	1018	2	1	O-49	B	1.1	X	X		
79	215	1055	2	1	O-50	B	1.2	X	X		
79	210	938	2	2	O-02	S	2.9	X	X	X	
79	210	938	2	2	O-02	B	3.9	X	X	X	
79	213	1655	2	2	O-28	B	1.5	X	X		
79	213	1620	2	2	O-36	B	2.3	X	X		
79	216	1136	2	2	O-39	B	1.7	X	X		
79	216	1218	2	2	O-40	B	3.0	X	X		
79	216	1320	2	2	O-42	B	1.8	X	X		
79	216	1655	2	2	O-44	B	4.0	X	X		
79	216	1635	2	2	O-45	B	4.2	X	X		
79	216	1603	2	2	O-46	B	0.1	X	X		
79	216	1538	2	2	O-47	B	0.0	X	X		
79	216	1425	2	2	O-49	B	0.4	X	X		
79	216	1500	2	2	O-50	B	0.0	X	X		
79	208	1035	2	3	M-11	S	5.4	X			X
79	208	1110	2	3	M-16	S	4.4	X			X
79	211	845	2	3	O-02	S	2.2	X	X	X	
79	211	845	2	3	O-02	B	2.6	X	X	X	
79	217	1430	2	3	O-39	B	5.1	X	X		
79	217	1000	2	3	O-44	S	4.0	X	X		
79	217	1000	2	3	O-44	B	1.7	X	X	X	
79	217	1222	2	3	O-45	B	3.8	X	X		
79	217	1159	2	3	O-46	B	2.6	X	X		
79	217	1128	2	3	O-47	B	0.1	X	X		
79	217	1032	2	3	O-49	B	3.1	X	X		
79	217	1100	2	3	O-50	B	0.1	X	X		
79	260	945	3	1	O-02	S	4.7	X	X		
79	260	945	3	1	O-02	B	5.1	X	X		
79	261	910	3	2	O-02	S	4.7	X	X		
79	261	910	3	2	O-02	B	4.7	X	X		
79	253	1721	3	2	O-44	B	5.2	X	X		
79	262	1045	3	3	O-02	S	5.2	X	X		
79	262	1045	3	3	O-02	B	5.6	X	X		

VIOLATIONS REPORT FOR DISSOLVED OXYGEN (mg/l).

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	47	1349	3.48%
OHIO-EPA NORMAL	44	913	4.82%
OHIO-EPA EXCEPTED	7	274	2.55%
MICHIGAN DNR	3	436	0.69%
TOTAL	47	1349	3.48%

VIOLATIONS REPORT FOR PH (Su) .

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	118	1402	1	1	M-23	S	8.62				X
78	118	1436	1	1	M-26	S	8.56				X
78	118	1537	1	1	M-27	S	8.68				X
78	119	1228	1	2	M-22	S	8.62				X
78	113	1117	1	2	O-41	S	9.10	X	X		
78	178	1000	2	1	M-07	S	8.61				X
78	178	1320	2	1	M-09	S	8.57				X
78	178	1211	2	1	M-10	S	8.51				X
78	178	1245	2	1	M-11	S	8.56				X
78	178	2000	2	1	M-12	S	8.55				X
78	178	1925	2	1	M-13	S	8.59				X
78	178	917	2	1	M-15	S	8.61				X
78	178	1347	2	1	M-17	S	8.65				X
78	178	1635	2	1	M-19	S	8.73				X
78	178	1635	2	1	M-19	B	8.70				X
78	178	1525	2	1	M-20	S	8.73				X
78	178	1445	2	1	M-21	S	8.80				X
78	178	1545	2	1	M-22	S	8.58				X
78	178	1815	2	1	M-23	S	8.91				X
78	178	1730	2	1	M-24	S	8.65				X
78	178	1730	2	1	M-24	B	8.67				X
78	178	1808	2	1	M-25	S	8.77				X
78	178	1755	2	1	M-26	S	8.84				X
78	191	1222	2	1	O-29	S	9.24	X	X	X	
78	191	1300	2	1	O-31	S	9.17	X	X	X	
78	191	1340	2	1	O-32	S	9.02	X	X	X	
78	179	1140	2	2	M-03	S	8.54				X
78	179	1235	2	2	M-06	S	8.62				X
78	179	1250	2	2	M-07	S	8.81				X
78	179	1330	2	2	M-08	S	8.77				X
78	179	1408	2	2	M-09	S	8.88				X
78	179	1320	2	2	M-10	S	8.51				X
78	179	1310	2	2	M-11	S	8.71				X
78	179	1925	2	2	M-12	B	8.73				X
78	179	1000	2	2	M-14	S	8.59				X
78	179	1000	2	2	M-14	B	8.51				X
78	179	1040	2	2	M-15	S	8.62				X
78	179	1805	2	2	M-17	S	8.70				X
78	179	1750	2	2	M-18	S	8.75				X
78	179	1718	2	2	M-19	S	8.89				X
78	179	1718	2	2	M-19	B	8.56				X
78	179	1745	2	2	M-20	S	9.00				X
78	179	1745	2	2	M-20	B	8.60				X
78	179	1815	2	2	M-21	S	9.04	X			X
78	179	1815	2	2	M-21	B	8.60				X
78	179	1718	2	2	M-23	S	8.72				X
78	179	1600	2	2	M-24	S	8.93				X
78	179	1600	2	2	M-24	B	8.54				X

VIOLATIONS REPORT FOR PH (Su).

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	179	1630	2	2	M-25	S	8.88				X
78	179	1630	2	2	M-25	B	8.58				X
78	179	1707	2	2	M-26	S	8.77				X
78	179	1655	2	2	M-27	S	8.54				X
78	192	1235	2	2	O-29	S	9.29	X	X	X	
78	192	1250	2	2	O-31	S	9.19	X	X	X	
78	192	1313	2	2	O-32	S	9.13	X	X	X	
78	192	1350	2	2	O-34	S	9.13	X	X	X	
78	192	1415	2	2	O-35	S	9.05	X	X	X	
78	179	1125	2	3	M-02	S	8.71				X
78	180	907	2	3	M-04	S	8.57				X
78	180	1050	2	3	M-05	S	8.57				X
78	180	1158	2	3	M-08	S	8.51				X
78	180	1304	2	3	M-09	S	8.78				X
78	180	1000	2	3	M-10	S	8.94				X
78	180	840	2	3	M-12	S	8.62				X
78	180	900	2	3	M-13	S	8.60				X
78	180	928	2	3	M-14	S	8.53				X
78	180	945	2	3	M-15	S	8.69				X
78	180	1045	2	3	M-17	S	8.55				X
78	180	1325	2	3	M-18	S	8.59				X
78	180	1519	2	3	M-19	S	8.98				X
78	180	1442	2	3	M-20	S	8.77				X
78	180	1413	2	3	M-21	S	8.79				X
78	180	1413	2	3	M-21	B	8.61				X
78	180	1355	2	3	M-23	S	8.79				X
78	180	1635	2	3	M-24	S	9.00				X
78	180	1635	2	3	M-24	B	8.75				X
78	180	1555	2	3	M-25	S	9.06	X			X
78	180	1555	2	3	M-25	B	8.59				X
78	180	1407	2	3	M-26	S	8.74				X
78	193	935	2	3	O-29	S	9.04	X	X	X	
78	193	945	2	3	O-31	S	9.04	X	X	X	
78	235	1240	3	1	M-02	S	9.15	X			X
78	235	1330	3	1	M-03	S	8.90				X
78	235	1410	3	1	M-04	S	9.24	X			X
78	235	1525	3	1	M-07	S	9.33	X			X
78	235	1500	3	1	M-08	S	9.33	X			X
78	235	1230	3	1	M-09	S	9.08	X			X
78	235	1605	3	1	M-10	S	9.36	X			X
78	235	1635	3	1	M-11	S	9.24	X			X
78	235	1010	3	1	M-12	S	9.05	X			X
78	235	1010	3	1	M-12	B	9.13	X			X
78	235	1045	3	1	M-13	S	9.28	X			X
78	235	1045	3	1	M-13	B	9.04	X			X
78	235	1110	3	1	M-14	S	9.22	X			X
78	235	1110	3	1	M-14	B	9.00				X
78	235	1150	3	1	M-15	S	9.00				X
78	235	1150	3	1	M-15	B	8.91				X

VIOLATIONS REPORT FOR PH (Su).

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	235	1715	3	1	M-16	S	8.98				X
78	235	1735	3	1	M-17	S	9.10	X			X
78	235	1815	3	1	M-18	S	9.17	X			X
78	235	1610	3	1	M-19	S	9.18	X			X
78	235	1610	3	1	M-19	B	8.98				X
78	235	1635	3	1	M-20	S	9.13	X			X
78	235	1635	3	1	M-20	B	9.04	X			X
78	235	1700	3	1	M-21	S	9.13	X			X
78	235	1700	3	1	M-21	B	9.04	X			X
78	238	1135	3	1	M-22	S	9.17	X			X
78	238	1100	3	1	M-23	S	9.04	X			X
78	238	1130	3	1	M-24	S	9.22	X			X
78	238	1130	3	1	M-24	B	8.81				X
78	238	1213	3	1	M-25	S	9.15	X			X
78	238	1213	3	1	M-25	B	9.03	X			X
78	238	1025	3	1	M-26	S	9.21	X			X
78	238	930	3	1	M-27	S	9.10	X			X
78	238	845	3	1	O-01	S	9.27	X	X	X	
78	238	905	3	1	O-03	S	9.04	X	X	X	
78	238	905	3	1	O-03	B	9.12	X	X	X	
78	238	940	3	1	O-04	S	9.18	X	X	X	
78	238	940	3	1	O-04	B	9.20	X	X	X	
78	238	1010	3	1	O-05	S	9.08	X	X		
78	238	1010	3	1	O-05	B	9.20	X	X		
78	238	1043	3	1	O-06	S	9.14	X	X		
78	238	1043	3	1	O-06	B	9.18	X	X		
78	238	1320	3	1	O-07	S	9.12	X	X		
78	238	1510	3	1	O-09	S	9.35	X	X	X	
78	238	1445	3	1	O-10	S	9.36	X	X	X	
78	238	1455	3	1	O-11	S	9.06	X	X		
78	238	1425	3	1	O-13	S	9.16	X	X		
78	252	1054	3	1	O-29	S	9.17	X	X	X	
78	252	1015	3	1	O-30	S	9.07	X	X	X	
78	252	1113	3	1	O-31	S	9.48	X	X	X	
78	252	1155	3	1	O-32	S	9.40	X	X	X	
78	252	1220	3	1	O-33	S	9.09	X	X	X	
78	252	1245	3	1	O-34	S	9.05	X	X	X	
78	252	1315	3	1	O-35	S	9.26	X	X	X	
78	236	1140	3	2	M-02	S	8.87				X
78	236	1235	3	2	M-03	S	8.76				X
78	236	1300	3	2	M-04	S	8.78				X
78	236	1325	3	2	M-05	S	8.72				X
78	236	1325	3	2	M-05	B	8.55				X
78	236	1235	3	2	M-06	S	8.80				X
78	236	1235	3	2	M-06	B	8.56				X
78	236	1410	3	2	M-07	S	9.07	X			X
78	236	1415	3	2	M-08	S	9.19	X			X
78	236	1415	3	2	M-08	B	8.89				X
78	236	1218	3	2	M-09	S	8.92				X

VIOLATIONS REPORT FOR PH (Su).

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	236	1218	3	2	M-09	B	8.83				X
78	236	1450	3	2	M-10	S	9.35	X			X
78	236	1515	3	2	M-11	S	9.35	X			X
78	236	920	3	2	M-12	S	8.94				X
78	236	920	3	2	M-12	B	8.97				X
78	236	950	3	2	M-13	S	9.08	X			X
78	236	950	3	2	M-13	B	9.12	X			X
78	236	1025	3	2	M-14	S	9.00				X
78	236	1025	3	2	M-14	B	9.00				X
78	236	1050	3	2	M-15	S	9.01	X			X
78	236	1050	3	2	M-15	B	9.07	X			X
78	236	1545	3	2	M-16	S	8.85				X
78	236	1730	3	2	M-17	S	9.22	X			X
78	236	1630	3	2	M-18	S	9.17	X			X
78	236	1540	3	2	M-19	S	9.18	X			X
78	236	1540	3	2	M-19	B	9.08	X			X
78	236	1615	3	2	M-20	S	9.24	X			X
78	236	1615	3	2	M-20	B	8.92				X
78	236	1635	3	2	M-21	S	9.15	X			X
78	236	1635	3	2	M-21	B	8.96				X
78	239	1045	3	2	M-22	S	9.07	X			X
78	239	1020	3	2	M-23	S	9.35	X			X
78	239	1141	3	2	M-24	S	9.06	X			X
78	239	1141	3	2	M-24	B	8.74				X
78	239	1310	3	2	M-25	S	9.13	X			X
78	239	1310	3	2	M-25	B	8.88				X
78	239	1000	3	2	M-26	S	9.40	X			X
78	239	937	3	2	M-27	S	9.11	X			X
78	239	900	3	2	O-01	S	9.32	X	X	X	
78	239	951	3	2	O-04	S	9.13	X	X	X	
78	239	951	3	2	O-04	B	9.71	X	X	X	
78	239	1023	3	2	O-05	B	9.02	X	X		
78	239	1046	3	2	O-06	S	9.06	X	X		
78	239	1046	3	2	O-06	B	9.09	X	X		
78	239	1340	3	2	O-07	S	9.06	X	X		
78	239	1340	3	2	O-07	B	9.06	X	X		
78	239	1420	3	2	O-09	S	9.31	X	X	X	
78	239	1400	3	2	O-10	S	9.22	X	X	X	
78	239	1445	3	2	O-13	S	9.07	X	X		
78	253	1130	3	2	O-31	S	9.39	X	X	X	
78	253	1010	3	2	O-32	S	9.07	X	X	X	
78	253	1205	3	2	O-33	S	9.27	X	X	X	
78	253	1217	3	2	O-34	S	9.31	X	X	X	
78	253	1235	3	2	O-35	S	9.49	X	X	X	
78	237	1115	3	3	M-02	S	8.72				X
78	237	1215	3	3	M-04	S	8.85				X
78	237	1245	3	3	M-07	S	8.99				X
78	237	1355	3	3	M-08	S	9.00				X
78	237	1355	3	3	M-08	B	8.70				X

VIOLATIONS REPORT FOR PH (Su).

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	237	1205	3	3	M-09	S	8.79				X
78	237	1205	3	3	M-09	B	8.72				X
78	237	1420	3	3	M-10	S	9.23	X			X
78	237	1440	3	3	M-11	S	9.05	X			X
78	237	950	3	3	M-12	S	9.04	X			X
78	237	950	3	3	M-12	B	9.06	X			X
78	237	1013	3	3	M-13	S	9.07	X			X
78	237	1013	3	3	M-13	B	9.04	X			X
78	237	1040	3	3	M-14	S	9.05	X			X
78	237	1040	3	3	M-14	B	9.11	X			X
78	237	1123	3	3	M-15	S	9.03	X			X
78	237	1123	3	3	M-15	B	9.01	X			X
78	237	1500	3	3	M-16	S	8.94				X
78	237	1520	3	3	M-17	S	9.07	X			X
78	237	1530	3	3	M-18	S	9.15	X			X
78	237	1512	3	3	M-19	S	9.18	X			X
78	237	1512	3	3	M-19	B	8.79				X
78	237	1540	3	3	M-20	S	9.25	X			X
78	237	1540	3	3	M-20	B	8.99				X
78	237	1630	3	3	M-21	S	9.21	X			X
78	237	1630	3	3	M-21	B	8.87				X
78	240	1025	3	3	M-22	S	8.79				X
78	240	1000	3	3	M-23	S	9.28	X			X
78	240	1130	3	3	M-24	S	8.94				X
78	240	1130	3	3	M-24	B	8.97				X
78	240	1250	3	3	M-25	S	8.98				X
78	240	1250	3	3	M-25	B	8.90				X
78	240	940	3	3	M-26	S	9.13	X			X
78	240	907	3	3	M-27	S	8.55				X
78	240	845	3	3	O-01	S	9.09	X	X	X	
78	240	953	3	3	O-04	S	9.10	X	X	X	
78	240	1040	3	3	O-06	B	9.02	X	X		
78	240	1335	3	3	O-07	S	9.04	X	X		
78	240	1335	3	3	O-07	B	9.03	X	X		
78	240	1255	3	3	O-09	S	9.24	X	X	X	
78	240	1310	3	3	O-10	S	9.24	X	X	X	
78	240	1455	3	3	O-13	S	9.01	X	X		
78	254	1045	3	3	O-29	S	9.15	X	X	X	
78	254	1028	3	3	O-30	S	9.06	X	X	X	
78	254	1145	3	3	O-34	S	9.15	X	X	X	
78	254	1200	3	3	O-35	S	9.35	X	X	X	
78	254	1300	3	3	O-41	S	9.06	X	X		
78	254	1315	3	3	O-48	S	9.03	X	X		
78	276	1130	4	1	M-04	S	8.72				X
78	276	1230	4	1	M-06	S	8.82				X
78	276	1230	4	1	M-06	B	8.88				X
78	276	1210	4	1	M-07	S	8.76				X
78	276	1435	4	1	M-08	S	8.52				X
78	276	1150	4	1	M-09	S	8.53				X

VIOLATIONS REPORT FOR PH (Su).

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	276	900	4	1	M-12	S	9.49	X			X
78	276	900	4	1	M-12	B	9.50	X			X
78	276	942	4	1	M-13	S	8.61				X
78	276	942	4	1	M-13	B	8.60				X
78	276	1020	4	1	M-14	S	8.55				X
78	276	1020	4	1	M-14	B	8.59				X
78	276	1655	4	1	M-19	S	8.62				X
78	276	1655	4	1	M-19	B	8.69				X
78	276	1630	4	1	M-20	S	8.51				X
78	276	1630	4	1	M-20	B	8.54				X
78	280	1040	4	1	M-22	S	8.72				X
78	281	1200	4	1	M-23	S	8.79				X
78	279	1230	4	1	M-24	S	8.56				X
78	279	1230	4	1	M-24	B	8.54				X
78	279	1155	4	1	M-25	S	8.62				X
78	279	1155	4	1	M-25	B	8.61				X
78	280	1010	4	1	M-26	S	8.89				X
78	280	935	4	1	M-27	S	8.70				X
78	277	1035	4	2	M-03	S	8.64				X
78	277	1105	4	2	M-04	S	8.57				X
78	277	1205	4	2	M-05	S	8.58				X
78	277	1205	4	2	M-05	B	8.57				X
78	277	1143	4	2	M-06	S	8.56				X
78	277	1143	4	2	M-06	B	8.63				X
78	277	1130	4	2	M-07	S	8.58				X
78	277	1235	4	2	M-08	S	8.60				X
78	277	1235	4	2	M-08	B	8.57				X
78	277	1210	4	2	M-10	S	8.66				X
78	277	1230	4	2	M-11	S	8.63				X
78	277	855	4	2	M-12	S	8.55				X
78	277	955	4	2	M-14	S	8.53				X
78	277	1430	4	2	M-16	S	8.57				X
78	281	1310	4	2	M-22	S	8.69				X
78	282	1130	4	2	M-23	S	8.98				X
78	280	1200	4	2	M-24	S	8.60				X
78	280	1200	4	2	M-24	B	8.53				X
78	281	1145	4	2	M-26	S	8.87				X
78	281	915	4	2	M-27	S	8.62				X
78	281	1405	4	2	O-07	S	9.03	X	X		
78	281	1405	4	2	O-07	B	9.01	X	X		
78	278	1020	4	3	M-03	S	8.64				X
78	278	1055	4	3	M-04	S	8.68				X
78	278	1230	4	3	M-05	B	8.56				X
78	278	1155	4	3	M-06	B	8.51				X
78	278	1130	4	3	M-07	S	8.74				X
78	278	1130	4	3	M-09	S	9.21	X			X
78	278	1130	4	3	M-09	B	9.23	X			X
78	278	1200	4	3	M-10	S	8.79				X
78	278	1225	4	3	M-11	S	8.62				X

VIOLATIONS REPORT FOR PH (Su) .

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	278	905	4	3	M-12	S	8.57				X
78	278	905	4	3	M-12	B	8.59				X
78	278	930	4	3	M-13	S	8.61				X
78	278	930	4	3	M-13	B	8.61				X
78	279	940	4	3	M-16	S	8.57				X
78	279	1115	4	3	M-18	S	8.77				X
78	282	1150	4	3	M-22	S	8.71				X
78	281	1200	4	3	M-24	S	8.59				X
78	281	1200	4	3	M-24	B	8.56				X
78	282	1115	4	3	M-26	S	8.92				X
78	282	1050	4	3	M-27	S	8.66				X

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	133	1286	10.34%
OHIO-EPA NORMAL	64	855	7.48%
OHIO-EPA EXCEPTED	42	257	16.34%
MICHIGAN DNR	240	431	55.68%
TOTAL	304	1286	23.64%

VIOLATIONS REPORT FOR PH (Su) -

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	206	1140	2	1	M-04	S	8.82				X
79	206	1300	2	1	M-06	S	8.58				X
79	206	1300	2	1	M-06	B	8.58				X
79	206	1215	2	1	M-07	S	8.69				X
79	206	1430	2	1	M-08	S	8.53				X
79	206	1430	2	1	M-08	B	8.52				X
79	206	1525	2	1	M-09	S	8.71				X
79	206	1525	2	1	M-09	B	8.68				X
79	206	1300	2	1	M-10	S	8.79				X
79	206	1330	2	1	M-11	S	8.67				X
79	206	945	2	1	M-13	S	8.60				X
79	206	945	2	1	M-13	B	8.72				X
79	206	1020	2	1	M-14	S	8.73				X
79	206	1020	2	1	M-14	B	8.69				X
79	206	1150	2	1	M-15	S	8.69				X
79	206	1150	2	1	M-15	B	8.69				X
79	206	1440	2	1	M-16	S	9.00				X
79	206	1600	2	1	M-17	S	9.22	X			X
79	206	1620	2	1	M-18	S	9.11	X			X
79	206	1825	2	1	M-19	S	8.76				X
79	206	1825	2	1	M-19	B	8.75				X
79	206	1745	2	1	M-20	S	8.70				X
79	206	1745	2	1	M-20	B	8.69				X
79	206	1710	2	1	M-21	S	8.70				X
79	206	1710	2	1	M-21	B	8.70				X
79	206	1700	2	1	M-22	S	9.33	X			X
79	209	955	2	1	M-23	S	9.51	X			X
79	209	1225	2	1	M-24	S	8.75				X
79	209	1225	2	1	M-24	B	8.74				X
79	209	1155	2	1	M-25	S	8.74				X
79	209	1155	2	1	M-25	B	8.73				X
79	209	930	2	1	M-26	S	9.39	X			X
79	209	910	2	1	M-27	S	8.98				X
79	209	840	2	1	O-01	S	9.08	X	X	X	
79	209	1140	2	1	O-09	S	9.30	X	X	X	
79	209	1200	2	1	O-10	S	9.28	X	X	X	
79	209	1245	2	1	O-12	S	9.12	X	X		
79	212	1537	2	1	O-25	S	9.04	X	X		
79	215	1425	2	1	O-29	S	9.47	X	X	X	
79	215	1405	2	1	O-30	S	9.85	X	X	X	
79	215	1340	2	1	O-31	S	9.98	X	X	X	
79	215	1315	2	1	O-32	S	9.46	X	X	X	
79	215	1250	2	1	O-33	S	9.16	X	X	X	
79	215	1215	2	1	O-34	S	9.13	X	X	X	
79	215	1155	2	1	O-35	S	9.24	X	X	X	
79	215	1700	2	1	O-37	S	9.14	X	X	X	
79	215	1700	2	1	O-37	B	9.06	X	X	X	
79	207	1020	2	2	M-03	S	8.57				X

VIOLATIONS REPORT FOR PH (Su).

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	207	1045	2	2	M-04	S	8.63				X
79	207	1555	2	2	M-05	S	8.81				X
79	207	1555	2	2	M-05	B	8.68				X
79	207	1530	2	2	M-06	S	8.82				X
79	207	1530	2	2	M-06	B	8.67				X
79	207	1110	2	2	M-07	S	8.66				X
79	207	1650	2	2	M-08	S	9.08	X			X
79	207	1650	2	2	M-08	B	8.64				X
79	207	1720	2	2	M-09	S	8.85				X
79	207	1720	2	2	M-09	B	8.53				X
79	207	1140	2	2	M-10	S	9.06	X			X
79	207	1215	2	2	M-11	S	8.62				X
79	207	1235	2	2	M-12	S	8.72				X
79	207	1235	2	2	M-12	B	8.60				X
79	207	1320	2	2	M-13	S	8.86				X
79	207	1320	2	2	M-13	B	8.68				X
79	207	1355	2	2	M-14	S	8.59				X
79	207	1430	2	2	M-15	S	8.64				X
79	207	1430	2	2	M-15	B	8.56				X
79	207	1345	2	2	M-16	S	8.63				X
79	207	1425	2	2	M-17	S	9.48	X			X
79	207	1440	2	2	M-18	S	9.38	X			X
79	207	1944	2	2	M-19	S	8.96				X
79	207	1944	2	2	M-19	B	8.63				X
79	207	1920	2	2	M-20	S	9.05	X			X
79	207	1920	2	2	M-20	B	8.65				X
79	207	1848	2	2	M-21	S	8.87				X
79	207	1848	2	2	M-21	B	8.72				X
79	207	1500	2	2	M-22	S	9.36	X			X
79	210	1100	2	2	M-23	S	9.15	X			X
79	210	1242	2	2	M-24	S	9.02	X			X
79	210	1242	2	2	M-24	B	8.93				X
79	210	1215	2	2	M-25	S	8.90				X
79	210	1215	2	2	M-25	B	8.74				X
79	210	1130	2	2	M-26	S	9.38	X			X
79	210	950	2	2	M-27	S	9.24	X			X
79	210	930	2	2	O-01	S	9.11	X	X	X	
79	210	1036	2	2	O-04	S	9.03	X	X	X	
79	210	1036	2	2	O-04	B	9.04	X	X	X	
79	210	1400	2	2	O-09	S	9.23	X	X	X	
79	210	1255	2	2	O-10	S	9.24	X	X	X	
79	210	1450	2	2	O-11	S	9.05	X	X		
79	213	1407	2	2	O-25	S	9.06	X	X		
79	216	1115	2	2	O-30	S	9.81	X	X	X	
79	216	1100	2	2	O-31	S	9.79	X	X	X	
79	216	1045	2	2	O-32	S	9.55	X	X	X	
79	216	1030	2	2	O-33	S	9.22	X	X	X	
79	216	1040	2	2	O-37	S	9.01	X	X	X	
79	208	915	2	3	M-03	S	8.82				X

VIOLATIONS REPORT FOR PH (Su).

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	208	940	2	3	M-04	S	8.68				X
79	208	1000	2	3	M-07	S	8.88				X
79	208	1345	2	3	M-08	S	8.97				X
79	208	1345	2	3	M-08	B	8.70				X
79	208	1405	2	3	M-09	S	8.95				X
79	208	1020	2	3	M-10	S	9.20	X			X
79	208	1035	2	3	M-11	S	9.19	X			X
79	208	945	2	3	M-12	S	8.83				X
79	208	945	2	3	M-12	B	8.77				X
79	208	1015	2	3	M-13	S	8.88				X
79	208	1015	2	3	M-13	B	8.84				X
79	208	1035	2	3	M-14	S	8.72				X
79	208	1035	2	3	M-14	B	8.62				X
79	208	1100	2	3	M-15	S	8.75				X
79	208	1100	2	3	M-15	B	8.77				X
79	208	1110	2	3	M-16	S	8.90				X
79	208	1130	2	3	M-17	S	9.25	X			X
79	208	1155	2	3	M-18	S	9.31	X			X
79	208	1520	2	3	M-19	S	9.10	X			X
79	208	1520	2	3	M-19	B	8.86				X
79	208	1550	2	3	M-20	S	9.14	X			X
79	208	1550	2	3	M-20	B	8.56				X
79	208	1615	2	3	M-21	S	9.05	X			X
79	208	1615	2	3	M-21	B	8.61				X
79	208	1215	2	3	M-22	S	9.22	X			X
79	211	1200	2	3	M-24	S	9.00				X
79	211	1200	2	3	M-24	B	8.97				X
79	211	1125	2	3	M-25	S	8.92				X
79	211	1125	2	3	M-25	B	8.88				X
79	211	1105	2	3	M-27	S	8.74				X
79	211	1030	2	3	O-05	S	9.08	X	X		
79	211	1030	2	3	O-05	B	9.04	X	X		
79	211	1215	2	3	O-09	S	9.17	X	X	X	
79	211	1300	2	3	O-10	S	9.10	X	X	X	
79	214	1745	2	3	O-27	S	9.01	X	X		
79	217	1337	2	3	O-30	S	9.29	X	X	X	
79	217	1325	2	3	O-31	S	9.41	X	X	X	
79	217	1310	2	3	O-32	S	9.14	X	X	X	
79	217	1350	2	3	O-40	S	9.06	X	X		
79	263	1114	3	1	M-01	S	8.69				X
79	263	1156	3	1	M-03	S	9.03	X			X
79	263	1224	3	1	M-04	S	8.78				X
79	263	1353	3	1	M-05	S	8.69				X
79	263	1353	3	1	M-05	B	8.99				X
79	263	1318	3	1	M-06	S	8.95				X
79	263	1318	3	1	M-06	B	8.92				X
79	263	1252	3	1	M-07	S	9.10	X			X
79	263	1430	3	1	M-08	S	8.98				X
79	263	1430	3	1	M-08	B	8.92				X

VIOLATIONS REPORT FOR PH (Su) .

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	263	1230	3	1	M-09	S	8.90				X
79	263	1230	3	1	M-09	B	8.89				X
79	263	1403	3	1	M-10	S	8.99				X
79	263	1622	3	1	M-11	S	9.05	X			X
79	263	1027	3	1	M-12	S	8.88				X
79	263	1027	3	1	M-12	B	8.96				X
79	263	1049	3	1	M-13	S	9.02	X			X
79	263	1049	3	1	M-13	B	9.03	X			X
79	263	1110	3	1	M-14	S	8.96				X
79	263	1110	3	1	M-14	B	8.93				X
79	263	1145	3	1	M-15	S	8.86				X
79	263	1145	3	1	M-15	B	8.85				X
79	263	1639	3	1	M-16	S	8.85				X
79	263	1700	3	1	M-17	S	9.24	X			X
79	263	1756	3	1	M-18	S	9.16	X			X
79	263	1736	3	1	M-19	S	9.09	X			X
79	263	1736	3	1	M-19	B	9.04	X			X
79	263	1712	3	1	M-20	S	8.93				X
79	263	1712	3	1	M-20	B	8.80				X
79	263	1640	3	1	M-21	S	8.78				X
79	263	1640	3	1	M-21	B	8.70				X
79	263	1811	3	1	M-22	S	9.20	X			X
79	260	1208	3	1	M-23	S	9.07	X			X
79	260	1305	3	1	M-24	S	9.12	X			X
79	260	1305	3	1	M-24	B	8.96				X
79	260	1227	3	1	M-25	S	8.99				X
79	260	1227	3	1	M-25	B	8.79				X
79	260	1145	3	1	M-26	S	9.15	X			X
79	260	1132	3	1	M-27	S	8.95				X
79	260	1115	3	1	O-05	S	9.01	X	X		
79	260	1140	3	1	O-06	S	9.07	X	X		
79	260	1413	3	1	O-09	S	9.07	X	X	X	
79	260	1426	3	1	O-10	S	9.08	X	X	X	
79	260	1530	3	1	O-11	S	9.05	X	X		
79	256	1205	3	1	O-14	S	9.03	X	X		
79	252	1642	3	1	O-29	S	9.25	X	X	X	
79	252	1624	3	1	O-30	S	9.16	X	X	X	
79	252	1353	3	1	O-31	S	9.33	X	X	X	
79	252	1528	3	1	O-32	S	9.19	X	X	X	
79	252	1345	3	1	O-33	S	9.06	X	X	X	
79	252	1320	3	1	O-34	S	9.03	X	X	X	
79	264	1017	3	2	M-03	S	9.00				X
79	264	1042	3	2	M-04	S	9.00				X
79	264	1205	3	2	M-05	S	8.98				X
79	264	1205	3	2	M-05	B	8.92				X
79	264	1140	3	2	M-06	S	8.96				X
79	264	1140	3	2	M-06	B	8.91				X
79	264	1104	3	2	M-07	S	9.03	X			X
79	264	1240	3	2	M-08	S	9.04	X			X

VIOLATIONS REPORT FOR PH (Su) -

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	264	1240	3	2	M-08	B	8.98				X
79	264	1108	3	2	M-09	S	8.94				X
79	264	1108	3	2	M-09	B	8.94				X
79	264	1128	3	2	M-10	S	9.09	X			X
79	264	1146	3	2	M-11	S	9.06	X			X
79	264	920	3	2	M-12	S	8.94				X
79	264	920	3	2	M-12	B	9.03	X			X
79	264	935	3	2	M-13	S	8.98				X
79	264	935	3	2	M-13	B	8.99				X
79	264	955	3	2	M-14	S	8.90				X
79	264	955	3	2	M-14	B	8.91				X
79	264	1021	3	2	M-15	S	8.84				X
79	264	1021	3	2	M-15	B	8.82				X
79	264	1210	3	2	M-16	S	8.73				X
79	264	1224	3	2	M-17	S	9.09	X			X
79	264	1509	3	2	M-18	S	9.18	X			X
79	264	1507	3	2	M-19	S	9.05	X			X
79	264	1507	3	2	M-19	B	9.04	X			X
79	264	1435	3	2	M-20	S	8.84				X
79	264	1435	3	2	M-20	B	8.75				X
79	264	1412	3	2	M-21	S	8.65				X
79	264	1412	3	2	M-21	B	8.61				X
79	264	1520	3	2	M-22	S	9.12	X			X
79	261	1013	3	2	M-23	S	9.09	X			X
79	261	1238	3	2	M-24	S	8.97				X
79	261	1238	3	2	M-24	B	8.97				X
79	261	1203	3	2	M-25	S	8.99				X
79	261	1203	3	2	M-25	B	8.99				X
79	261	1000	3	2	M-26	S	8.97				X
79	261	940	3	2	M-27	S	8.76				X
79	253	1222	3	2	O-31	S	9.14	X	X	X	
79	253	1133	3	2	O-32	S	9.13	X	X	X	
79	253	1115	3	2	O-33	S	9.05	X	X	X	
79	266	946	3	3	M-07	S	8.96				X
79	265	1510	3	3	M-08	S	8.93				X
79	265	1510	3	3	M-08	B	8.88				X
79	265	1313	3	3	M-09	S	8.96				X
79	265	1313	3	3	M-09	B	8.97				X
79	265	1849	3	3	M-10	S	9.30	X			X
79	265	1818	3	3	M-11	S	9.08	X			X
79	265	1045	3	3	M-12	S	8.98				X
79	265	1045	3	3	M-12	B	8.97				X
79	265	1120	3	3	M-13	S	8.99				X
79	265	1120	3	3	M-13	B	8.96				X
79	265	1144	3	3	M-14	S	8.80				X
79	265	1144	3	3	M-14	B	8.74				X
79	265	1215	3	3	M-15	S	8.78				X
79	265	1215	3	3	M-15	B	8.75				X
79	265	1030	3	3	M-16	S	8.76				X

VIOLATIONS REPORT FOR PH (Su).

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	265	1047	3	3	M-17	S	9.11	X			X
79	265	1138	3	3	M-18	S	9.04	X			X
79	265	1707	3	3	M-19	S	8.90				X
79	265	1707	3	3	M-19	B	8.89				X
79	265	1645	3	3	M-20	S	8.87				X
79	265	1645	3	3	M-20	B	8.86				X
79	265	1415	3	3	M-21	S	8.54				X
79	265	1415	3	3	M-21	B	8.54				X
79	265	1200	3	3	M-22	S	9.16	X			X
79	262	1905	3	3	M-23	S	9.19	X			X
79	262	1612	3	3	M-24	S	9.24	X			X
79	262	1612	3	3	M-24	B	8.95				X
79	262	1505	3	3	M-25	S	9.04	X			X
79	262	1505	3	3	M-25	B	8.79				X
79	262	1858	3	3	M-26	S	9.23	X			X
79	262	1847	3	3	M-27	S	8.93				X
79	262	1218	3	3	O-05	S	9.03	X	X		
79	262	1218	3	3	O-05	B	9.01	X	X		
79	262	1531	3	3	O-09	S	9.06	X	X	X	
79	262	1549	3	3	O-10	S	9.04	X	X	X	
79	262	1430	3	3	O-11	S	9.10	X	X		
79	259	1620	3	3	O-14	S	9.04	X	X		
79	259	1710	3	3	O-17	S	9.04	X	X		
79	259	1620	3	3	O-19	S	9.02	X	X		
79	259	1555	3	3	O-20	S	9.08	X	X		
79	254	1411	3	3	O-31	S	9.01	X	X	X	
79	282	1300	4	1	M-10	S	8.95				X
79	282	1320	4	1	M-11	S	8.84				X
79	282	1015	4	1	M-12	S	8.61				X
79	282	1015	4	1	M-12	B	8.57				X
79	282	1053	4	1	M-13	S	8.52				X
79	282	1715	4	1	M-17	S	8.89				X
79	282	1735	4	1	M-18	S	8.88				X
79	282	1840	4	1	M-19	S	8.65				X
79	282	1840	4	1	M-19	B	8.59				X
79	282	1802	4	1	M-20	S	8.68				X
79	282	1802	4	1	M-20	B	8.69				X
79	282	1750	4	1	M-22	S	8.83				X
79	285	950	4	1	M-23	S	8.55				X
79	285	1250	4	1	M-24	S	8.54				X
79	285	1250	4	1	M-24	B	8.60				X
79	285	1015	4	1	M-26	S	8.51				X
79	285	1035	4	1	M-27	S	8.80				X
79	291	1300	4	1	O-15	S	9.62	X	X	X	
79	291	1445	4	1	O-16	S	9.61	X	X	X	
79	291	1408	4	1	O-17	S	9.56	X	X		
79	291	1408	4	1	O-17	B	9.56	X	X		
79	291	1345	4	1	O-18	S	9.45	X	X		
79	291	1345	4	1	O-18	B	9.48	X	X		

VIOLATIONS REPORT FOR PH (Su) -

LIMITS IN EFFECT:

IJC	6.50 -	9.00
O-EPA NORM	6.50 -	9.00
O-EPA EX	6.50 -	9.00
MICH DNR	6.70 -	8.50

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	291	1258	4	1	O-19	S	9.28	X	X		
79	291	1258	4	1	O-19	B	9.32	X	X		
79	291	1225	4	1	O-20	S	9.26	X	X		
79	291	1225	4	1	O-20	B	9.23	X	X		
79	291	1505	4	1	O-21	S	9.63	X	X	X	
79	291	1545	4	1	O-22	S	9.42	X	X		
79	291	1605	4	1	O-23	S	9.25	X	X		
79	291	1522	4	1	O-24	S	9.27	X	X		
79	291	1522	4	1	O-24	B	9.28	X	X		
79	291	1612	4	1	O-25	S	9.29	X	X		
79	291	1612	4	1	O-25	B	9.25	X	X		
79	291	1615	4	1	O-26	S	9.42	X	X		
79	291	1755	4	1	O-27	S	9.13	X	X		
79	291	1755	4	1	O-27	B	9.05	X	X		
79	291	1942	4	1	O-28	S	9.04	X	X		
79	291	1840	4	1	O-36	S	9.02	X	X		
79	283	1010	4	2	M-12	S	8.62				X
79	283	1010	4	2	M-12	B	8.60				X
79	286	1535	4	2	M-23	S	8.78				X
79	286	1550	4	2	M-26	S	8.78				X
79	286	1610	4	2	M-27	S	8.86				X
79	284	1445	4	3	M-10	S	8.56				X
79	284	940	4	3	M-12	B	8.59				X
79	284	1002	4	3	M-13	S	8.91				X
79	284	1002	4	3	M-13	B	8.88				X
79	284	1020	4	3	M-17	S	8.78				X
79	284	1035	4	3	M-18	S	8.75				X
79	285	1115	4	3	M-19	S	8.54				X
79	285	1115	4	3	M-19	B	8.51				X
79	284	1050	4	3	M-22	S	8.52				X
79	287	1150	4	3	M-26	S	8.74				X
79	287	1125	4	3	M-27	S	8.57				X

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	138	1381	9.99%
OHIO-EPA NORMAL	82	930	8.82%
OHIO-EPA EXCEPTED	44	284	15.49%
MICHIGAN DNR	243	451	53.88%
TOTAL	325	1381	23.53%

VIOLATIONS REPORT FOR AMMONIA (ug/l NH3)

LIMITS IN EFFECT:
IJC VIOLATION LEVEL IS 500
OHIO VIOLATION LEVEL DEPENDS
ON TEMPERATURE AND PH

YEAR	DAY	TIME	CRUISE	ROW	STATION	DEPTH CODE	VALUE	OHIO VIOLATION LEVEL REGULAR	OHIO VIOLATION LEVEL EXCEPTED	PH	TEMP	OBJECTIVES AND STANDARDS VIOLATED IJC	EPANORM	EPAEX
78	107	1203	1	2	0-25	S	503.00	4000	8000	7.66	5.40	X		
78	181	840	2	1	0-02	S	575.50	1300	2600	7.53	25.50	X		
78	181	840	2	1	0-02	B	916.50	1800	3600	7.41	24.50	X		
78	181	925	2	1	0-03	S	521.00	900	1800	7.67	25.20	X		
78	181	1140	2	1	0-08	S	1175.70	1000	2000	7.55	30.00	X	X	
78	181	1122	2	1	0-09	S	571.00	250	500	8.20	28.00	X	X	X
78	191	1705	2	1	0-44	B	202.20	200	400	8.53	23.50		X	
78	179	1640	2	2	0-01	S	1231.00	200	400	8.43	25.00	X	X	X
78	180	1441	2	3	0-01	S	391.60	100	200	8.59	27.00		X	X
78	183	906	2	3	0-02	S	598.50	850	1700	7.66	25.50	X		
78	183	906	2	3	0-02	B	542.50	900	1800	7.68	24.50	X		
78	235	1120	3	1	M-01	S	608.40	450	900	8.02	24.00	X		
78	238	830	3	1	0-02	S	643.90	550	1100	7.86	25.60	X	X	
78	238	830	3	1	0-02	B	501.40	450	900	7.96	25.60	X	X	
78	239	1435	3	2	0-08	S	161.80	150	300	8.42	29.50		X	
78	240	900	3	3	0-02	S	638.40	700	1400	7.75	25.90	X		
78	240	900	3	3	0-02	B	564.90	700	1400	7.82	25.70	X		
78	240	1238	3	3	0-08	S	378.40	250	500	8.06	30.00		X	

SUMMARY:

—ORGANIZATION—	VIOLATIONS	SAMPLES	PERCENT
IJC	14	1086	1.29%
OHIO-EPA NORMAL	9	687	1.31%
OHIO-EPA EXCEPTED	3	203	1.48%
TOTAL	18	1086	1.66%

VIOLATIONS REPORT FOR AMMONIA (ug/l NH3)

LIMITS IN EFFECT:
IJC VIOLATION LEVEL IS 500
OHIO VIOLATION LEVEL DEPENDS
ON TEMPERATURE AND PH

YEAR	DAY	TIME	CRUISE	RUN	STATION	DEPTH CODE	VALUE	OHIO VIOLATION LEVEL REGULAR	OHIO VIOLATION LEVEL EXCEPTED	PH	TEMP	OBJECTIVES AND STANDARDS VIOLATED IJC	EPANORM	EPAEX
79	88	1320	1	1	M-01	S	709.10	2050	4100	8.05	5.00	X		
79	91	1020	1	1	M-27	S	1058.50	1600	3200	8.12	5.90	X		
79	91	950	1	1	O-01	S	1004.10	1200	2400	8.20	5.90	X		
79	89	1010	1	2	M-01	S	985.70	1850	3700	7.98	6.30	X		
79	92	1140	1	2	M-23	S	1549.70	1200	2400	8.20	6.00	X		
79	92	1120	1	2	M-26	S	1758.50	1200	2400	8.17	6.00	X		
79	92	1050	1	2	M-27	S	1546.80	1850	3700	8.00	6.00	X		
79	92	1000	1	2	O-02	B	505.60	2500	5000	7.81	7.60	X		
79	90	1025	1	3	M-01	S	685.30	1600	3200	7.98	8.00	X		
79	93	935	1	3	O-01	S	676.20	1200	2400	8.19	6.20	X		
79	93	930	1	3	O-02	B	504.00	2500	5000	7.80	7.70	X		
79	209	927	2	1	O-02	S	937.90	850	1700	7.71	26.00	X	X	
79	209	927	2	1	O-02	B	731.10	850	1700	7.66	26.00	X		
79	210	1130	2	2	O-06	S	117.70	100	200	8.83	24.00		X	
79	260	945	3	1	O-02	S	605.00	750	1500	7.88	21.00	X		
79	260	945	3	1	O-02	B	515.00	650	1300	8.01	20.20	X		
79	260	1358	3	1	O-08	S	345.00	250	500	8.36	22.00		X	
79	262	1836	3	3	O-01	S	187.80	100	200	8.88	19.50		X	
79	262	1045	3	3	O-02	S	689.50	550	1100	8.06	20.30	X	X	
79	262	1045	3	3	O-02	B	974.50	550	1100	8.10	19.70	X	X	
79	287	945	4	3	O-02	S	634.50	1450	2900	7.91	11.70	X		

SUMMARY:

—ORGANIZATION—	VIOLATIONS	SAMPLES	PERCENT
IJC	18	1093	1.65%
OHIO-EPA NORMAL	6	728	0.82%
OHIO-EPA EXCEPTED	0	227	0.00%
TOTAL	21	1093	1.92%

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm) -

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	117	931	1	1	M-02	S	330	X			
78	114	1340	1	1	M-04	S	325	X			
78	114	1555	1	1	M-10	S	400	X			
78	115	920	1	1	M-16	S	419	X			
78	115	1012	1	1	M-17	S	320	X			
78	118	1402	1	1	M-23	S	320	X			
78	118	1537	1	1	M-27	S	420	X			
78	118	1510	1	1	O-01	S	400	X		X	
78	117	1420	1	1	O-02	S	435	X		X	
78	117	1420	1	1	O-02	B	440	X		X	
78	117	1330	1	1	O-03	S	410	X		X	
78	117	1330	1	1	O-03	B	410	X		X	
78	117	1830	1	1	O-08	S	370	X		X	
78	117	1741	1	1	O-11	S	400	X		X	
78	117	1741	1	1	O-11	B	400	X		X	
78	117	1645	1	1	O-12	S	320	X			
78	117	1650	1	1	O-13	S	410	X		X	
78	117	1650	1	1	O-13	B	440	X		X	
78	112	1407	1	1	O-30	S	340	X		X	
78	112	1529	1	1	O-31	S	330	X		X	
78	112	1606	1	1	O-32	S	320	X			
78	112	1740	1	1	O-33	S	340	X		X	
78	112	1755	1	1	O-34	S	340	X		X	
78	110	1900	1	1	O-44	S	364	X		X	
78	110	1900	1	1	O-44	B	450	X		X	
78	118	1131	1	2	M-02	S	380	X			
78	117	1150	1	2	M-07	S	340	X			
78	117	1207	1	2	M-10	S	420	X			
78	117	1250	1	2	M-16	S	340	X			
78	117	1315	1	2	M-17	S	320	X			
78	117	1440	1	2	M-18	S	430	X			
78	118	1250	1	2	M-24	S	330	X			
78	118	1250	1	2	M-24	B	325	X			
78	118	1335	1	2	M-25	S	320	X			
78	119	1137	1	2	M-27	S	440	X			
78	119	1126	1	2	O-01	S	360	X		X	
78	118	945	1	2	O-02	S	485	X		X	
78	118	945	1	2	O-02	B	490	X		X	
78	118	1024	1	2	O-03	S	480	X		X	
78	118	1024	1	2	O-03	B	480	X		X	
78	118	1050	1	2	O-04	S	440	X		X	
78	118	1050	1	2	O-04	B	440	X		X	
78	118	1105	1	2	O-05	S	440	X		X	
78	118	1105	1	2	O-05	B	440	X		X	
78	118	1131	1	2	O-06	S	330	X		X	
78	118	1131	1	2	O-06	B	390	X		X	
78	118	1812	1	2	O-08	S	385	X		X	
78	118	1827	1	2	O-09	S	340	X		X	
78	118	1843	1	2	O-10	S	320	X			

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	118	1515	1	2	O-11	S	410	X	X		
78	118	1515	1	2	O-11	B	410	X	X		
78	118	1900	1	2	O-12	S	340	X	X		
78	118	1445	1	2	O-13	S	430	X	X		
78	118	1445	1	2	O-13	B	445	X	X		
78	113	1224	1	2	O-32	S	320	X			
78	113	1300	1	2	O-33	S	340	X	X		
78	113	1315	1	2	O-34	S	360	X	X		
78	177	924	2	1	M-01	S	455	X			
78	177	1050	2	1	M-02	S	340	X			
78	178	1211	2	1	M-10	S	330	X			
78	178	1245	2	1	M-11	S	450	X			
78	178	1315	2	1	M-16	S	350	X			
78	178	1347	2	1	M-17	S	340	X			
78	178	1515	2	1	M-18	S	400	X			
78	178	1545	2	1	M-22	S	390	X			
78	178	1815	2	1	M-23	S	425	X			
78	178	1755	2	1	M-26	S	490	X			
78	178	1705	2	1	M-27	S	500	X			
78	178	1735	2	1	O-01	S	475	X	X		
78	181	1200	2	1	O-07	B	400	X	X		
78	181	1140	2	1	O-08	S	560	X	X		
78	181	1122	2	1	O-09	S	525	X	X		
78	181	1050	2	1	O-10	S	525	X	X		
78	181	1019	2	1	O-12	S	340	X	X		
78	181	950	2	1	O-14	S	340	X	X		
78	188	1254	2	1	O-22	S	310	X			
78	188	1320	2	1	O-23	S	320	X			
78	191	1222	2	1	O-29	S	530	X	X		
78	191	1125	2	1	O-30	S	550	X	X		
78	191	1300	2	1	O-31	S	525	X	X		
78	191	1340	2	1	O-32	S	510	X	X		
78	191	1423	2	1	O-33	S	475	X	X		
78	191	1445	2	1	O-34	S	400	X	X		
78	191	1525	2	1	O-35	S	365	X	X		
78	191	-98	2	1	O-41	S	360	X	X		
78	179	1320	2	2	M-10	S	420	X			
78	179	1310	2	2	M-11	S	420	X			
78	179	1820	2	2	M-16	S	440	X			
78	179	1805	2	2	M-17	S	400	X			
78	179	1750	2	2	M-18	S	410	X			
78	179	1740	2	2	M-22	S	350	X			
78	179	1718	2	2	M-23	S	350	X			
78	179	1707	2	2	M-26	S	330	X			
78	179	1655	2	2	M-27	S	425	X			
78	179	1640	2	2	O-01	S	540	X		X	
78	182	1055	2	2	O-05	S	355	X		X	
78	182	1055	2	2	O-05	B	340	X		X	
78	182	1153	2	2	O-06	S	320	X			
78	182	855	2	2	O-08	S	550	X		X	

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	182	918	2	2	O-09	S	530	X	X		
78	182	937	2	2	O-10	S	480	X	X		
78	182	1010	2	2	O-12	S	390	X	X		
78	182	1037	2	2	O-14	S	330	X	X		
78	189	1200	2	2	O-23	S	320	X			
78	189	1211	2	2	O-26	S	310	X			
78	192	1235	2	2	O-29	S	535	X	X		
78	192	1135	2	2	O-30	S	590	X	X		
78	192	1250	2	2	O-31	S	545	X	X		
78	192	1313	2	2	O-32	S	540	X	X		
78	192	1330	2	2	O-33	S	565	X	X		
78	192	1350	2	2	O-34	S	500	X	X		
78	192	1415	2	2	O-35	S	370	X	X		
78	180	1000	2	3	M-10	S	360	X			
78	180	950	2	3	M-11	S	620	X			
78	180	1020	2	3	M-16	S	535	X			
78	180	1045	2	3	M-17	S	475	X			
78	180	1325	2	3	M-18	S	355	X			
78	180	1337	2	3	M-22	S	360	X			
78	180	1355	2	3	M-23	S	330	X			
78	180	1407	2	3	M-26	S	340	X			
78	180	1422	2	3	M-27	S	400	X			
78	180	1441	2	3	O-01	S	560	X	X		
78	183	906	2	3	O-02	S	560	X	X		
78	183	906	2	3	O-02	B	570	X	X		
78	183	1004	2	3	O-03	S	540	X	X		
78	183	1004	2	3	O-03	B	410	X	X		
78	183	1110	2	3	O-04	S	350	X	X		
78	183	1110	2	3	O-04	B	350	X	X		
78	183	1142	2	3	O-05	S	355	X	X		
78	183	1142	2	3	O-05	B	360	X	X		
78	190	1035	2	3	O-21	S	310	X			
78	193	935	2	3	O-29	S	530	X	X		
78	193	915	2	3	O-30	S	505	X	X		
78	193	945	2	3	O-31	S	525	X	X		
78	193	1010	2	3	O-32	S	450	X	X		
78	193	1020	2	3	O-33	S	540	X	X		
78	193	1032	2	3	O-34	S	450	X	X		
78	193	1040	2	3	O-35	S	380	X	X		
78	193	1525	2	3	O-40	S	390	X	X		
78	193	1525	2	3	O-40	B	385	X	X		
78	193	1405	2	3	O-42	S	310	X			
78	193	1320	2	3	O-44	S	380	X	X		
78	193	1320	2	3	O-44	B	310	X			
78	193	1250	2	3	O-45	B	310	X			
78	238	930	3	1	M-27	S	445	X			
78	238	845	3	1	O-01	S	360	X	X		
78	238	830	3	1	O-02	S	450	X	X		
78	238	830	3	1	O-02	B	439	X	X		
78	238	1540	3	1	O-08	S	395	X	X		

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	249	1030	3	1	O-21	S	315	X			
78	252	1054	3	1	O-29	S	535	X	X		
78	252	1015	3	1	O-30	S	540	X	X		
78	252	1113	3	1	O-31	S	540	X	X		
78	252	1155	3	1	O-32	S	430	X	X		
78	252	1220	3	1	O-33	S	365	X	X		
78	252	1245	3	1	O-34	S	330	X	X		
78	252	1315	3	1	O-35	S	335	X	X		
78	252	915	3	1	O-37	S	322	X	X		
78	252	915	3	1	O-37	B	330	X	X		
78	236	1545	3	2	M-16	S	313	X			
78	239	1020	3	2	M-23	S	310	X			
78	239	1000	3	2	M-26	S	310	X			
78	239	937	3	2	M-27	S	430	X			
78	239	900	3	2	O-02	S	435	X	X		
78	239	900	3	2	O-02	B	432	X	X		
78	239	926	3	2	O-03	S	327	X	X		
78	239	926	3	2	O-03	B	319	X			
78	239	1435	3	2	O-08	S	400	X	X		
78	250	1145	3	2	O-26	S	310	X			
78	253	1115	3	2	O-29	S	545	X	X		
78	253	1100	3	2	O-30	S	395	X	X		
78	253	1130	3	2	O-31	S	545	X	X		
78	253	1010	3	2	O-32	S	425	X	X		
78	253	1205	3	2	O-33	S	330	X	X		
78	253	1217	3	2	O-34	S	350	X	X		
78	253	1235	3	2	O-35	S	330	X	X		
78	237	1115	3	3	M-02	S	340	X			
78	237	1440	3	3	M-11	S	325	X			
78	237	950	3	3	M-12	B	344	X			
78	237	1500	3	3	M-16	S	320	X			
78	237	1520	3	3	M-17	S	310	X			
78	240	1000	3	3	M-23	S	320	X			
78	240	940	3	3	M-26	S	345	X			
78	240	907	3	3	M-27	S	485	X			
78	240	900	3	3	O-02	S	477	X	X		
78	240	900	3	3	O-02	B	457	X	X		
78	240	1238	3	3	O-08	S	450	X	X		
78	254	1045	3	3	O-29	S	535	X	X		
78	254	1028	3	3	O-30	S	540	X	X		
78	254	1100	3	3	O-31	S	525	X	X		
78	254	940	3	3	O-32	S	435	X	X		
78	254	1134	3	3	O-33	S	365	X	X		
78	254	1145	3	3	O-34	S	350	X	X		
78	254	1200	3	3	O-35	S	360	X	X		
78	254	900	3	3	O-37	S	328	X	X		
78	254	900	3	3	O-37	B	320	X			
78	276	1450	4	1	M-16	S	395	X			
78	280	935	4	1	M-27	S	328	X			
78	280	800	4	1	O-02	S	309	X			

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	89	1415	1	1	M-10	S	477	X			
79	89	1450	1	1	M-11	S	393	X			
79	88	1950	1	1	M-12	S	380	X			
79	88	1950	1	1	M-12	B	341	X			
79	89	1535	1	1	M-16	S	507	X			
79	89	1725	1	1	M-17	S	377	X			
79	89	1750	1	1	M-18	S	357	X			
79	91	1120	1	1	M-23	S	467	X			
79	91	1055	1	1	M-26	S	597	X			
79	91	1020	1	1	M-27	S	747	X			
79	91	950	1	1	O-01	S	637	X		X	
79	91	935	1	1	O-02	S	377	X		X	
79	91	935	1	1	O-02	B	378	X		X	
79	91	1010	1	1	O-03	S	367	X		X	
79	91	1010	1	1	O-03	B	372	X		X	
79	91	1045	1	1	O-04	S	394	X		X	
79	91	1045	1	1	O-04	B	385	X		X	
79	91	1105	1	1	O-05	S	405	X		X	
79	91	1105	1	1	O-05	B	390	X		X	
79	91	1145	1	1	O-06	B	339	X		X	
79	91	1615	1	1	O-08	S	587	X		X	
79	91	1710	1	1	O-09	S	532	X		X	
79	91	1740	1	1	O-10	S	427	X		X	
79	97	1130	1	1	O-14	S	527	X		X	
79	97	1215	1	1	O-15	S	477	X		X	
79	97	1240	1	1	O-16	S	487	X		X	
79	97	1230	1	1	O-17	S	467	X		X	
79	97	1230	1	1	O-17	B	497	X		X	
79	97	1205	1	1	O-18	S	417	X		X	
79	97	1205	1	1	O-18	B	417	X		X	
79	97	1145	1	1	O-19	S	407	X		X	
79	97	1145	1	1	O-19	B	412	X		X	
79	97	1115	1	1	O-20	B	327	X		X	
79	97	1315	1	1	O-21	S	467	X		X	
79	97	1415	1	1	O-22	S	347	X		X	
79	97	1440	1	1	O-23	S	357	X		X	
79	97	1410	1	1	O-25	S	372	X		X	
79	97	1410	1	1	O-25	B	382	X		X	
79	97	1500	1	1	O-26	S	332	X		X	
79	103	1030	1	1	O-29	S	467	X		X	
79	103	1005	1	1	O-30	S	487	X		X	
79	103	1055	1	1	O-31	S	457	X		X	
79	103	1215	1	1	O-32	S	477	X		X	
79	103	1305	1	1	O-33	S	387	X		X	
79	103	1350	1	1	O-34	S	387	X		X	
79	103	1630	1	1	O-44	S	527	X		X	
79	103	1630	1	1	O-44	B	457	X		X	
79	103	1540	1	1	O-45	B	342	X		X	
79	90	1305	1	2	M-10	S	480	X			

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	90	1330	1	2	M-11	S	320	X			
79	89	920	1	2	M-12	S	328	X			
79	89	920	1	2	M-12	B	324	X			
79	90	1405	1	2	M-16	S	380	X			
79	90	1450	1	2	M-17	S	350	X			
79	90	1510	1	2	M-18	S	420	X			
79	90	1525	1	2	M-22	S	330	X			
79	92	1140	1	2	M-23	S	537	X			
79	92	1350	1	2	M-24	S	317	X			
79	92	1350	1	2	M-24	B	337	X			
79	92	1230	1	2	M-25	B	361	X			
79	92	1120	1	2	M-26	S	597	X			
79	92	1050	1	2	M-27	S	747	X			
79	92	1025	1	2	O-01	S	527	X	X		
79	92	1000	1	2	O-02	S	338	X	X		
79	92	1000	1	2	O-02	B	348	X	X		
79	92	1040	1	2	O-03	S	333	X	X		
79	92	1040	1	2	O-03	B	338	X	X		
79	92	1110	1	2	O-04	S	353	X	X		
79	92	1110	1	2	O-04	B	352	X	X		
79	92	1130	1	2	O-05	S	393	X	X		
79	92	1130	1	2	O-05	B	393	X	X		
79	92	1205	1	2	O-06	S	350	X	X		
79	92	1205	1	2	O-06	B	375	X	X		
79	92	1245	1	2	O-08	S	537	X	X		
79	92	1330	1	2	O-09	S	437	X	X		
79	92	1335	1	2	O-10	S	407	X	X		
79	98	1100	1	2	O-12	S	327	X	X		
79	98	1310	1	2	O-14	S	517	X	X		
79	98	1420	1	2	O-15	S	477	X	X		
79	98	1445	1	2	O-16	S	427	X	X		
79	98	1150	1	2	O-17	S	427	X	X		
79	98	1150	1	2	O-17	B	397	X	X		
79	98	1135	1	2	O-18	B	312	X			
79	98	1055	1	2	O-20	S	347	X	X		
79	98	1055	1	2	O-20	B	322	X	X		
79	98	1515	1	2	O-21	S	397	X	X		
79	98	1345	1	2	O-25	S	347	X	X		
79	98	1345	1	2	O-25	B	377	X	X		
79	104	1250	1	2	O-32	S	477	X	X		
79	104	1310	1	2	O-33	S	447	X	X		
79	104	1405	1	2	O-34	S	347	X	X		
79	90	1025	1	3	M-01	S	320	X			
79	90	1100	1	3	M-02	S	370	X			
79	90	1210	1	3	M-04	S	310	X			
79	91	1445	1	3	M-10	S	457	X			
79	91	1505	1	3	M-11	S	377	X			
79	90	934	1	3	M-12	B	339	X			
79	91	1350	1	3	M-16	S	467	X			
79	91	1210	1	3	M-18	S	347	X			

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	91	1155	1	3	M-22	S	317	X			
79	93	1110	1	3	M-23	S	627	X			
79	93	1245	1	3	M-24	S	527	X			
79	93	1245	1	3	M-24	B	527	X			
79	93	1050	1	3	M-26	S	547	X			
79	93	1005	1	3	M-27	S	647	X			
79	93	935	1	3	O-01	S	627	X	X		
79	93	930	1	3	O-02	S	527	X	X		
79	93	930	1	3	O-02	B	537	X	X		
79	93	955	1	3	O-03	S	527	X	X		
79	93	955	1	3	O-03	B	597	X	X		
79	93	1025	1	3	O-04	S	487	X	X		
79	93	1025	1	3	O-04	B	527	X	X		
79	93	1050	1	3	O-05	S	357	X	X		
79	93	1050	1	3	O-05	B	547	X	X		
79	93	1135	1	3	O-06	B	587	X	X		
79	93	1415	1	3	O-07	B	527	X	X		
79	93	1305	1	3	O-08	S	527	X	X		
79	93	1345	1	3	O-09	S	487	X	X		
79	93	1410	1	3	O-10	S	477	X	X		
79	93	1450	1	3	O-11	S	367	X	X		
79	93	1450	1	3	O-11	B	567	X	X		
79	93	1535	1	3	O-13	S	497	X	X		
79	93	1535	1	3	O-13	B	557	X	X		
79	102	1205	1	3	O-16	S	357	X	X		
79	102	1240	1	3	O-21	S	472	X	X		
79	102	1335	1	3	O-22	S	362	X	X		
79	102	1355	1	3	O-23	S	357	X	X		
79	102	1235	1	3	O-24	S	347	X	X		
79	102	1235	1	3	O-24	B	347	X	X		
79	105	1055	1	3	O-30	S	477	X	X		
79	105	1140	1	3	O-31	S	427	X	X		
79	105	1230	1	3	O-33	S	457	X	X		
79	105	1250	1	3	O-34	S	537	X	X		
79	105	1315	1	3	O-35	S	392	X	X		
79	105	950	1	3	O-37	S	317	X			
79	105	1015	1	3	O-38	S	342	X	X		
79	105	1015	1	3	O-38	B	322	X	X		
79	206	1340	2	1	M-05	S	320	X			
79	206	1340	2	1	M-05	B	322	X			
79	206	1430	2	1	M-08	S	341	X			
79	206	1430	2	1	M-08	B	331	X			
79	206	1330	2	1	M-11	S	310	X			
79	206	910	2	1	M-12	S	388	X			
79	206	910	2	1	M-12	B	391	X			
79	206	945	2	1	M-13	S	361	X			
79	206	945	2	1	M-13	B	360	X			
79	206	1620	2	1	M-18	S	320	X			
79	206	1700	2	1	M-22	S	320	X			
79	209	955	2	1	M-23	S	390	X			

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	209	930	2	1	M-26	S	400	X			
79	209	910	2	1	M-27	S	530	X			
79	209	840	2	1	O-01	S	360	X	X		
79	209	927	2	1	O-02	S	645	X	X		
79	209	927	2	1	O-02	B	634	X	X		
79	209	952	2	1	O-03	S	366	X	X		
79	209	952	2	1	O-03	B	365	X	X		
79	209	1022	2	1	O-04	S	321	X	X		
79	209	1050	2	1	O-08	S	630	X	X		
79	215	1425	2	1	O-29	S	550	X	X		
79	215	1405	2	1	O-30	S	520	X	X		
79	215	1340	2	1	O-31	S	480	X	X		
79	215	1315	2	1	O-32	S	440	X	X		
79	215	1250	2	1	O-33	S	380	X	X		
79	215	1215	2	1	O-34	S	320	X			
79	215	1155	2	1	O-35	S	340	X	X		
79	215	1700	2	1	O-37	S	329	X	X		
79	215	1700	2	1	O-37	B	319	X			
79	207	935	2	2	M-01	S	315	X			
79	207	1555	2	2	M-05	S	342	X			
79	207	1555	2	2	M-05	B	310	X			
79	207	1530	2	2	M-06	S	330	X			
79	207	1650	2	2	M-08	S	337	X			
79	207	1140	2	2	M-10	S	330	X			
79	207	1215	2	2	M-11	S	380	X			
79	207	1235	2	2	M-12	S	399	X			
79	207	1235	2	2	M-12	B	338	X			
79	207	1320	2	2	M-13	S	346	X			
79	207	1345	2	2	M-16	S	510	X			
79	207	1425	2	2	M-17	S	390	X			
79	207	1440	2	2	M-18	S	390	X			
79	207	1920	2	2	M-20	S	354	X			
79	207	1500	2	2	M-22	S	380	X			
79	210	1100	2	2	M-23	S	360	X			
79	210	1130	2	2	M-26	S	360	X			
79	210	950	2	2	M-27	S	450	X			
79	210	930	2	2	O-01	S	440	X	X		
79	210	938	2	2	O-02	S	576	X	X		
79	210	938	2	2	O-02	B	578	X	X		
79	210	1008	2	2	O-03	S	374	X	X		
79	210	1008	2	2	O-03	B	359	X	X		
79	210	1036	2	2	O-04	S	357	X	X		
79	210	1036	2	2	O-04	B	332	X	X		
79	210	1100	2	2	O-05	S	321	X	X		
79	210	1100	2	2	O-05	B	320	X			
79	210	1430	2	2	O-08	S	530	X	X		
79	210	1400	2	2	O-09	S	310	X			
79	216	1130	2	2	O-29	S	630	X	X		
79	216	1115	2	2	O-30	S	530	X	X		
79	216	1100	2	2	O-31	S	470	X	X		

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	216	1045	2	2	O-32	S	420	X	X		
79	216	1030	2	2	O-33	S	320	X			
79	216	1010	2	2	O-34	S	320	X			
79	216	1000	2	2	O-35	S	315	X			
79	216	1040	2	2	O-37	S	351	X	X		
79	216	1040	2	2	O-37	B	326	X	X		
79	216	1105	2	2	O-38	S	312	X			
79	216	1655	2	2	O-44	S	337	X	X		
79	216	1655	2	2	O-44	B	327	X	X		
79	208	845	2	3	M-01	S	472	X			
79	208	915	2	3	M-03	S	362	X			
79	208	940	2	3	M-04	S	402	X			
79	208	1000	2	3	M-07	S	402	X			
79	208	1345	2	3	M-08	S	311	X			
79	208	1345	2	3	M-08	B	316	X			
79	208	1020	2	3	M-10	S	462	X			
79	208	1035	2	3	M-11	S	442	X			
79	208	945	2	3	M-12	S	369	X			
79	208	945	2	3	M-12	B	369	X			
79	208	1110	2	3	M-16	S	572	X			
79	208	1130	2	3	M-17	S	482	X			
79	208	1155	2	3	M-18	S	442	X			
79	208	1520	2	3	M-19	S	347	X			
79	208	1520	2	3	M-19	B	321	X			
79	208	1550	2	3	M-20	S	322	X			
79	208	1550	2	3	M-20	B	320	X			
79	208	1215	2	3	M-22	S	432	X			
79	211	1105	2	3	M-27	S	440	X			
79	211	1045	2	3	O-01	S	430	X	X		
79	211	845	2	3	O-02	S	657	X	X		
79	211	845	2	3	O-02	B	627	X	X		
79	211	920	2	3	O-03	S	457	X	X		
79	211	920	2	3	O-03	B	464	X	X		
79	211	1215	2	3	O-08	S	670	X	X		
79	214	1325	2	3	O-21	S	320	X			
79	217	1352	2	3	O-29	S	550	X	X		
79	217	1337	2	3	O-30	S	530	X	X		
79	217	1325	2	3	O-31	S	480	X	X		
79	217	1310	2	3	O-32	S	420	X	X		
79	217	1300	2	3	O-33	S	320	X			
79	217	1240	2	3	O-34	S	320	X			
79	217	1230	2	3	O-35	S	360	X	X		
79	217	1530	2	3	O-37	S	372	X	X		
79	217	1530	2	3	O-37	B	362	X	X		
79	217	1505	2	3	O-38	S	335	X	X		
79	217	1505	2	3	O-38	B	330	X	X		
79	217	1000	2	3	O-44	S	423	X	X		
79	263	1114	3	1	M-01	S	330	X			
79	263	1639	3	1	M-16	S	380	X			
79	260	1208	3	1	M-23	S	315	X			

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	260	1145	3	1	M-26	S	330	X			
79	260	1132	3	1	M-27	S	485	X			
79	260	1115	3	1	O-01	S	430	X	X		
79	260	945	3	1	O-02	S	498	X	X		
79	260	945	3	1	O-02	B	436	X	X		
79	260	1023	3	1	O-03	B	345	X	X		
79	260	1358	3	1	O-08	S	480	X	X		
79	260	1413	3	1	O-09	S	410	X	X		
79	260	1426	3	1	O-10	S	400	X	X		
79	252	1642	3	1	O-29	S	475	X	X		
79	252	1624	3	1	O-30	S	540	X	X		
79	252	1353	3	1	O-31	S	505	X	X		
79	252	1528	3	1	O-32	S	485	X	X		
79	252	1345	3	1	O-33	S	470	X	X		
79	252	1320	3	1	O-34	S	485	X	X		
79	252	1304	3	1	O-35	S	425	X	X		
79	252	1740	3	1	O-37	B	320	X			
79	264	1210	3	2	M-16	S	400	X			
79	264	1520	3	2	M-22	S	315	X			
79	261	1013	3	2	M-23	S	312	X			
79	261	1000	3	2	M-26	S	350	X			
79	261	940	3	2	M-27	S	472	X			
79	261	926	3	2	O-01	S	415	X	X		
79	261	910	3	2	O-02	S	473	X	X		
79	261	910	3	2	O-02	B	473	X	X		
79	261	1007	3	2	O-03	S	313	X			
79	261	1007	3	2	O-03	B	310	X			
79	261	1040	3	2	O-04	B	311	X			
79	261	1105	3	2	O-08	S	460	X	X		
79	261	1120	3	2	O-09	S	380	X	X		
79	261	1140	3	2	O-10	S	375	X	X		
79	253	1334	3	2	O-29	S	485	X	X		
79	253	1302	3	2	O-30	S	605	X	X		
79	253	1222	3	2	O-31	S	530	X	X		
79	253	1133	3	2	O-32	S	435	X	X		
79	253	1115	3	2	O-33	S	475	X	X		
79	253	1050	3	2	O-34	S	500	X	X		
79	253	1015	3	2	O-35	S	445	X	X		
79	253	1025	3	2	O-37	S	326	X	X		
79	253	1025	3	2	O-37	B	331	X	X		
79	253	1721	3	2	O-44	B	360	X	X		
79	265	1030	3	3	M-16	S	320	X			
79	262	1905	3	3	M-23	S	330	X			
79	262	1847	3	3	M-27	S	460	X			
79	262	1836	3	3	O-01	S	485	X	X		
79	262	1045	3	3	O-02	S	479	X	X		
79	262	1045	3	3	O-02	B	449	X	X		
79	262	1121	3	3	O-03	S	322	X	X		
79	262	1121	3	3	O-03	B	315	X			
79	262	1512	3	3	O-08	S	440	X	X		

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

LIMITS IN EFFECT:

IJC	>	308.00
O-EPA NORM	>	320.00
O-EPA EX	>	2400.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	262	1531	3	3	O-09	S	420	X	X		
79	262	1549	3	3	O-10	S	320	X			
79	254	1455	3	3	O-29	S	470	X	X		
79	254	1433	3	3	O-30	S	605	X	X		
79	254	1411	3	3	O-31	S	510	X	X		
79	254	1319	3	3	O-32	S	470	X	X		
79	254	1249	3	3	O-33	S	500	X	X		
79	254	1145	3	3	O-34	S	420	X	X		
79	254	1128	3	3	O-35	S	335	X	X		
79	254	920	3	3	O-44	S	311	X			
79	254	920	3	3	O-44	B	338	X	X		
79	282	1650	4	1	M-16	S	320	X			
79	285	1035	4	1	M-27	S	311	X			
79	285	1830	4	1	O-02	S	342	X	X		
79	285	1830	4	1	O-02	B	322	X	X		
79	285	1130	4	1	O-08	S	325	X	X		
79	294	1355	4	1	O-29	S	485	X	X		
79	294	1325	4	1	O-30	S	459	X	X		
79	294	1305	4	1	O-31	S	390	X	X		
79	294	1235	4	1	O-32	S	380	X	X		
79	294	1215	4	1	O-33	S	520	X	X		
79	294	1110	4	1	O-35	S	360	X	X		
79	283	1250	4	2	M-16	S	380	X			
79	286	1535	4	2	M-23	S	313	X			
79	286	1610	4	2	M-27	S	321	X			
79	286	1630	4	2	O-01	S	340	X	X		
79	286	950	4	2	O-02	S	358	X	X		
79	286	950	4	2	O-02	B	312	X			
79	286	1035	4	2	O-08	S	357	X	X		
79	286	1100	4	2	O-09	S	322	X	X		
79	295	1625	4	2	O-29	S	485	X	X		
79	295	1605	4	2	O-30	S	460	X	X		
79	295	1550	4	2	O-31	S	464	X	X		
79	295	1355	4	2	O-32	S	362	X	X		
79	295	1335	4	2	O-33	S	382	X	X		
79	295	1250	4	2	O-35	S	322	X	X		
79	287	1125	4	3	M-27	S	335	X			
79	287	945	4	3	O-02	S	349	X	X		
79	287	955	4	3	O-09	S	315	X			
79	296	1525	4	3	O-29	S	416	X	X		
79	296	1500	4	3	O-30	S	413	X	X		
79	296	1435	4	3	O-31	S	420	X	X		
79	296	1400	4	3	O-32	S	442	X	X		
79	296	1710	4	3	O-37	B	330	X	X		
79	296	1000	4	3	O-44	S	373	X	X		
79	296	1000	4	3	O-44	B	376	X	X		

VIOLATIONS REPORT FOR CONDUCTIVITY (umho/cm).

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	345	1370	25.18%
OHIO-EPA NORMAL	215	907	23.70%
OHIO-EPA EXCEPTED	0	275	0.00%
TOTAL	345	1370	25.18%

VIOLATIONS REPORT FOR TOTAL PHOSPHORUS (ug/l).

LIMITS IN EFFECT:

IJC	>	500.00
O-EPA NORM	>	1000.00
O-EPA EX	>	1000.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	117	1830	1	1	O-08	S	618.4	X			
78	117	1645	1	1	O-12	S	874.0	X			
78	118	945	1	2	O-02	S	616.4	X			
78	118	945	1	2	O-02	B	1030.4	X	X	X	
78	118	1024	1	2	O-03	B	661.2	X			
78	118	1131	1	2	O-06	B	617.6	X			
78	118	1812	1	2	O-08	S	540.8	X			
78	118	1515	1	2	O-11	B	524.0	X			
78	111	1230	1	2	O-42	B	644.4	X			
78	178	1705	2	1	M-27	S	774.8	X			
78	178	1735	2	1	O-01	S	535.2	X			
78	181	840	2	1	O-02	S	581.6	X			
78	181	1140	2	1	O-08	S	574.0	X			
78	180	1422	2	3	M-27	S	658.4	X			
78	183	1004	2	3	O-03	B	628.1	X			
78	183	1110	2	3	O-04	S	626.0	X			
78	239	937	3	2	M-27	S	502.0	X			
78	281	1500	4	2	O-10	S	502.3	X			

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	18	1249	1.44%
OHIO-EPA NORMAL	1	835	0.12%
OHIO-EPA EXCEPTED	1	252	0.40%
TOTAL	18	1249	1.44%

VIOLATIONS REPORT FOR TOTAL PHOSPHORUS (ug/l).

LIMITS IN EFFECT:

IJC	>	500.00
O-EPA NORM	>	1000.00
O-EPA EX	>	1000.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	295	1317	4	2	0-34	S	976.5	X			

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	1	1341	0.07%
OHIO-EPA NORMAL	0	889	0.00%
OHIO-EPA EXCEPTED	0	269	0.00%
TOTAL	1	1341	0.07%

VIOLATIONS REPORT FOR NITRATE + NITRITE (ug/l).

LIMITS IN EFFECT:
O-EPA NORM > 100000.00
O-EPA EX > 100000.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR

1978

SUMMARY:

—ORGANIZATION—	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	0	856	0.00%
OHIO-EPA EXCEPTED	0	258	0.00%
TOTAL	0	1295	0.00%

VIOLATIONS REPORT FOR NITRATE + NITRITE (ug/l).

LIMITS IN EFFECT:
O-EPA NORM > 100000.00
O-EPA EX > 100000.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR

1979

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	0	926	0.00%
OHIO-EPA EXCEPTED	0	283	0.00%
TOTAL	0	1390	0.00%

VIOLATIONS REPORT FOR CHLORIDE (mg/l).

LIMITS IN EFFECT:
O-EPA NORM > 250.00
MICH DNR > 50.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	177	1050	2	1	M-02	S	52.0				X
78	178	1705	2	1	M-27	S	50.1				X

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	0	679	0.00%
MICHIGAN DNR	2	329	0.61%
TOTAL	2	1008	0.20%

VIOLATIONS REPORT FOR CHLORIDE (mg/l).

LIMITS IN EFFECT:
O-EPA NORM > 250.00
MICH DNR > 50.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
1979											

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	0	79	0.00%
MICHIGAN DNR	0	32	0.00%
TOTAL	0	111	0.00%

VIOLATIONS REPORT FOR FLUORIDE (mg/l).

LIMITS IN EFFECT:

IJC	>	1.20
O-EPA NORM	>	1.80
O-EPA EX	>	2.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR

1978

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	0	305	0.00%
OHIO-EPA NORMAL	0	200	0.00%
OHIO-EPA EXCEPTED	0	76	0.00%
TOTAL	0	305	0.00%

VIOLATIONS REPORT FOR FLUORIDE (mg/l).

LIMITS IN EFFECT:

IJC	>	1.20
O-EPA NORM	>	1.80
O-EPA EX	>	2.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR

1979

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	0	0	0.00%
OHIO-EPA NORMAL	0	0	0.00%
OHIO-EPA EXCEPTED	0	0	0.00%
TOTAL	0	0	0.00%

VIOLATIONS REPORT FOR SULFATE (ug/l).

LIMITS IN EFFECT:
O-EPA NORM > 250.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	191	1125	2	1	0-30	S	283.2		X		
78	252	1054	3	1	0-29	S	334.8		X		
78	252	1015	3	1	0-30	S	348.4		X		
78	252	1113	3	1	0-31	S	334.0		X		
78	253	1115	3	2	0-29	S	342.0		X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	5	843	0.59%
TOTAL	5	1267	0.39%

VIOLATIONS REPORT FOR SULFATE (ug/1).

LIMITS IN EFFECT:
O-EPA NORM > 250.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR

1979

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	0	79	0.00%
TOTAL	0	112	0.00%

VIOLATIONS REPORT FOR FECAL COLIFORMS (#/100ml).

LIMITS IN EFFECT:
O-EPA NORM > 200.00
MICH DNR > 200.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	178	1705	2	1	M-27	S	230				X
78	181	840	2	1	O-02	S	10000		X		
78	181	840	2	1	O-02	B	1200		X		
78	181	925	2	1	O-03	S	370		X		
78	188	1019	2	1	O-15	S	220		X		
78	188	1254	2	1	O-22	S	3200		X		
78	188	1320	2	1	O-23	S	220		X		
78	179	1925	2	2	M-12	S	250				X
78	179	1718	2	2	M-19	S	630				X
78	179	1600	2	2	M-24	S	3300				X
78	235	1120	3	1	M-01	S	720				X
78	239	900	3	2	O-02	S	440		X		
78	239	900	3	2	O-02	B	800		X		
78	250	1145	3	2	O-26	S	660		X		
78	253	1315	3	2	O-42	S	230		X		
78	253	905	3	2	O-44	S	23000		X		
78	253	905	3	2	O-44	B	9800		X		
78	253	925	3	2	O-45	B	980		X		
78	277	925	4	2	M-01	S	330				X
78	277	1010	4	2	M-02	S	250				X
78	277	1035	4	2	M-03	S	460				X
78	277	1520	4	2	M-18	S	980				X
78	289	910	4	2	O-33	S	240		X		
78	286	930	4	3	O-23	S	210		X		
78	286	945	4	3	O-26	S	5100		X		
78	290	910	4	3	O-44	B	480		X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	17	212	8.02%
MICHIGAN DNR	9	120	7.50%
TOTAL	26	332	7.83%

VIOLATIONS REPORT FOR FECAL COLIFORMS (#/100ml).

LIMITS IN EFFECT:
O-EPA NORM > 200.00
MICH DNR > 200.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	89	1415	1	1	M-10	S	420				X
79	104	1405	1	2	O-34	S	3300		X		
79	104	930	1	2	O-44	S	2000		X		
79	104	930	1	2	O-44	B	360		X		
79	104	1135	1	2	O-45	B	210		X		
79	105	1405	1	2	O-48	S	1300		X		
79	93	1005	1	3	M-27	S	240				X
79	93	935	1	3	O-01	S	350		X		
79	93	930	1	3	O-02	S	670		X		
79	93	930	1	3	O-02	B	850		X		
79	93	955	1	3	O-03	S	550		X		
79	93	955	1	3	O-03	B	670		X		
79	93	1025	1	3	O-04	B	300		X		
79	93	1345	1	3	O-09	S	500		X		
79	105	1120	1	3	O-29	S	3800		X		
79	105	1055	1	3	O-30	S	410		X		
79	105	1140	1	3	O-31	S	1200		X		
79	105	1223	1	3	O-44	S	2100		X		
79	105	1223	1	3	O-44	B	1500		X		
79	207	935	2	2	M-01	S	1520				X
79	207	1020	2	2	M-03	S	224				X
79	216	1655	2	2	O-44	S	1080		X		
79	216	1655	2	2	O-44	B	1210		X		
79	211	845	2	3	O-02	S	570		X		
79	211	845	2	3	O-02	B	600		X		
79	211	920	2	3	O-03	S	310		X		
79	211	920	2	3	O-03	B	250		X		
79	211	1215	2	3	O-08	S	409		X		
79	214	1500	2	3	O-26	S	480		X		
79	263	1224	3	1	M-04	S	688				X
79	262	1045	3	3	O-02	B	430		X		
79	259	1235	3	3	O-26	S	530		X		
79	295	1155	4	2	O-41	S	214		X		
79	284	1210	4	3	M-09	S	204				X
79	284	1210	4	3	M-09	B	336				X
79	284	1030	4	3	M-14	S	287				X
79	284	1030	4	3	M-14	B	273				X
79	296	1000	4	3	O-44	S	300		X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	29	301	9.63%
MICHIGAN DNR	9	148	6.08%
TOTAL	38	449	8.46%

VIOLATIONS REPORT FOR TOTAL CADMIUM (ug/l).

LIMITS IN EFFECT:

IJC	>	0.20
O-EPA NORM	>	1.20
O-EPA EX	>	12.00
MICH DNR	>	12.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	276	935	4	1	M-01	1	0.940	X			
78	276	1030	4	1	M-02	1	17.340	X			X
78	178	845	2	1	M-03	1	0.280	X			
78	276	1100	4	1	M-03	1	1.240	X			
78	178	1030	2	1	M-05	1	1.740	X			
78	235	1335	3	1	M-05	1	0.540	X			
78	276	1350	4	1	M-05	1	6.740	X			
78	276	1230	4	1	M-06	1	7.940	X			
78	235	1525	3	1	M-07	1	1.140	X			
78	276	1210	4	1	M-07	1	0.640	X			
78	276	1435	4	1	M-08	1	4.940	X			
78	276	1350	4	1	M-10	1	6.240	X			
78	276	1420	4	1	M-11	1	0.740	X			
78	276	900	4	1	M-12	1	8.640	X			
78	235	1045	3	1	M-13	1	0.280	X			
78	235	1110	3	1	M-14	1	3.840	X			
78	276	1020	4	1	M-14	1	1.940	X			
78	235	1150	3	1	M-15	1	1.140	X			
78	235	1735	3	1	M-17	1	0.540	X			
78	276	1515	4	1	M-17	1	0.340	X			
78	178	1515	2	1	M-18	1	1.240	X			
78	235	1815	3	1	M-18	1	0.840	X			
78	276	1625	4	1	M-18	1	12.340	X			X
78	235	1610	3	1	M-19	1	0.840	X			
78	276	1655	4	1	M-19	1	5.840	X			
78	178	1525	2	1	M-20	1	0.640	X			
78	235	1635	3	1	M-20	1	0.840	X			
78	276	1630	4	1	M-20	1	6.240	X			
78	238	1135	3	1	M-22	1	0.230	X			
78	238	1100	3	1	M-23	1	0.640	X			
78	281	1200	4	1	M-23	1	1.240	X			
78	238	1130	3	1	M-24	1	0.440	X			
78	279	1230	4	1	M-24	1	7.840	X			
78	238	1213	3	1	M-25	1	0.540	X			
78	279	1155	4	1	M-25	1	6.140	X			
78	178	1755	2	1	M-26	1	0.540	X			
78	238	1025	3	1	M-26	1	1.640	X			
78	280	1010	4	1	M-26	1	7.440	X			
78	280	935	4	1	M-27	1	6.140	X			
78	280	925	4	1	O-03	1	17.340	X	X	X	
78	117	1010	1	1	O-06	1	0.440	X			
78	238	1540	3	1	O-08	1	2.140	X	X		
78	117	1645	1	1	O-12	1	0.740	X			
78	238	1410	3	1	O-12	1	1.040	X			
78	284	1140	4	1	O-18	1	1.140	X			
78	284	1037	4	1	O-20	1	2.340	X	X		
78	284	1155	4	1	O-21	1	8.240	X	X		
78	284	1310	4	1	O-22	1	0.320	X			

VIOLATIONS REPORT FOR TOTAL CADMIUM (ug/l).

LIMITS IN EFFECT:

IJC	>	0.20
O-EPA NORM	>	1.20
O-EPA EX	>	12.00
MICH DNR	>	12.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	284	1330	4	1	O-23	1	0.440	X			
78	284	1327	4	1	O-24	1	16.340	X	X		
78	284	1612	4	1	O-27	1	5.340	X	X		
78	288	1230	4	1	O-29	1	0.640	X			
78	288	1310	4	1	O-30	1	0.740	X			
78	288	1330	4	1	O-31	1	10.340	X	X		
78	288	1350	4	1	O-32	1	15.340	X	X	X	
78	288	1130	4	1	O-33	1	12.340	X	X	X	
78	288	1058	4	1	O-34	1	0.540	X			
78	284	1703	4	1	O-36	1	14.340	X	X		
78	288	1450	4	1	O-38	1	1.840	X	X		
78	288	1405	4	1	O-39	1	14.340	X	X		
78	288	1310	4	1	O-40	1	0.340	X			
78	288	950	4	1	O-41	1	4.940	X	X		
78	288	1230	4	1	O-42	1	12.340	X	X		
78	288	1201	4	1	O-43	1	5.840	X	X		
78	288	1137	4	1	O-45	1	3.540	X	X		
78	288	1120	4	1	O-46	1	2.740	X	X		
78	288	1047	4	1	O-47	1	0.940	X			
78	288	1015	4	1	O-50	1	0.260	X			

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	68	306	22.22%
OHIO-EPA NORMAL	17	199	8.54%
OHIO-EPA EXCEPTED	3	73	4.11%
MICHIGAN DNR	2	107	1.87%
TOTAL	68	306	22.22%

VIOLATIONS REPORT FOR TOTAL CHROMIUM (ug/l).

LIMITS IN EFFECT:

IJC	>	50.00
O-EPA NORM	>	50.00
O-EPA EX	>	100.00
MICH DNR	>	100.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	178	1235	2	1	M-08	1	50.116	X			
78	276	900	4	1	M-12	1	52.116	X			
78	178	1315	2	1	M-16	1	51.116	X			
78	276	1600	4	1	M-21	1	70.116	X			
78	238	830	3	1	O-02	1	66.116	X		X	
78	238	905	3	1	O-03	1	75.116	X		X	
78	238	1010	3	1	O-05	1	70.116	X		X	
78	238	1043	3	1	O-06	1	61.116	X		X	
78	238	1320	3	1	O-07	1	56.116	X		X	
78	238	1510	3	1	O-09	1	84.116	X		X	
78	238	1445	3	1	O-10	1	60.116	X		X	
78	238	1410	3	1	O-12	1	114.116	X		X	
78	238	1410	3	1	O-12	1	104.116	X		X	
78	238	1340	3	1	O-14	1	75.116	X		X	
78	249	930	3	1	O-15	1	81.116	X		X	
78	249	1000	3	1	O-16	1	65.116	X		X	
78	249	1125	3	1	O-17	1	67.116	X		X	
78	249	1150	3	1	O-18	1	59.116	X		X	
78	249	1204	3	1	O-19	1	58.116	X		X	
78	249	1222	3	1	O-20	1	73.116	X		X	
78	284	1155	4	1	O-21	1	77.116	X		X	
78	249	1105	3	1	O-22	1	63.116	X		X	
78	249	1130	3	1	O-23	1	77.116	X		X	
78	284	1330	4	1	O-23	1	51.116	X		X	
78	249	1325	3	1	O-24	1	52.116	X		X	
78	284	1400	4	1	O-26	1	64.116	X		X	
78	284	1612	4	1	O-27	1	72.116	X		X	
78	288	1330	4	1	O-31	1	73.116	X		X	
78	288	1350	4	1	O-32	1	50.116	X		X	
78	252	1315	3	1	O-35	1	64.116	X		X	

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	30	309	9.71%
OHIO-EPA NORMAL	26	201	12.93%
OHIO-EPA EXCEPTED	0	75	0.00%
MICHIGAN DNR	0	108	0.00%
TOTAL	30	309	9.71%

VIOLATIONS REPORT FOR TOTAL CHROMIUM (ug/l).

LIMITS IN EFFECT:

IJC	>	50.00
O-EPA NORM	>	50.00
O-EPA EX	>	100.00
MICH DNR	>	100.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	263	1156	3	1	M-03	1	136.034	X			X
79	260	1140	3	1	O-06	1	256.034	X	X		
79	260	1530	3	1	O-11	1	206.034	X	X		
79	256	1205	3	1	O-14	1	126.034	X	X		
79	256	1216	3	1	O-20	1	53.034	X	X		
79	256	1327	3	1	O-21	1	336.034	X	X	X	
79	256	1434	3	1	O-22	1	65.034	X	X		
79	256	1505	3	1	O-23	1	426.034	X	X		
79	255	1530	3	1	O-27	1	93.034	X	X		
79	252	1624	3	1	O-30	1	50.034	X	X		
79	252	1353	3	1	O-31	1	116.034	X	X	X	
79	252	1528	3	1	O-32	1	116.034	X	X	X	
79	252	1525	3	1	O-43	1	176.034	X	X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	13	303	4.29%
OHIO-EPA NORMAL	12	197	6.09%
OHIO-EPA EXCEPTED	3	75	4.00%
MICHIGAN DNR	1	106	0.94%
TOTAL	13	303	4.29%

VIOLATIONS REPORT FOR TOTAL COPPER (ug/l).

LIMITS IN EFFECT:

IJC	>	5.00
O-EPA NORM	>	5.00
O-EPA EX	>	10.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	117	1022	1	1	M-01	1	5.762	X			
78	276	935	4	1	M-01	1	12.762	X			
78	235	1240	3	1	M-02	1	23.762	X			
78	276	1030	4	1	M-02	1	46.762	X			
78	178	845	2	1	M-03	1	103.762	X			
78	276	1100	4	1	M-03	1	6.762	X			
78	178	915	2	1	M-04	1	133.762	X			
78	178	1030	2	1	M-05	1	59.762	X			
78	276	1350	4	1	M-05	1	8.762	X			
78	114	1140	1	1	M-06	1	5.762	X			
78	178	1135	2	1	M-06	1	123.762	X			
78	178	1000	2	1	M-07	1	133.762	X			
78	235	1525	3	1	M-07	1	28.762	X			
78	276	1210	4	1	M-07	1	9.762	X			
78	178	1235	2	1	M-08	1	163.762	X			
78	276	1435	4	1	M-08	1	5.762	X			
78	178	1320	2	1	M-09	1	343.762	X			
78	276	1150	4	1	M-09	1	9.762	X			
78	178	1211	2	1	M-10	1	13.762	X			
78	276	1420	4	1	M-11	1	18.762	X			
78	178	2000	2	1	M-12	1	61.762	X			
78	276	900	4	1	M-12	1	76.762	X			
78	178	1925	2	1	M-13	1	28.762	X			
78	178	835	2	1	M-14	1	88.762	X			
78	235	1110	3	1	M-14	1	62.762	X			
78	178	917	2	1	M-15	1	24.762	X			
78	235	1150	3	1	M-15	1	23.762	X			
78	115	920	1	1	M-16	1	46.762	X			
78	178	1315	2	1	M-16	1	43.762	X			
78	235	1715	3	1	M-16	1	943.762	X			
78	276	1450	4	1	M-16	1	63.762	X			
78	178	1347	2	1	M-17	1	133.762	X			
78	235	1735	3	1	M-17	1	2193.762	X			
78	235	1815	3	1	M-18	1	41.762	X			
78	178	1635	2	1	M-19	1	10.762	X			
78	235	1610	3	1	M-19	1	7.762	X			
78	235	1635	3	1	M-20	1	21.762	X			
78	178	1445	2	1	M-21	1	9.762	X			
78	235	1700	3	1	M-21	1	14.762	X			
78	178	1545	2	1	M-22	1	43.762	X			
78	118	1402	1	1	M-23	1	9.762	X			
78	178	1815	2	1	M-23	1	38.762	X			
78	238	1100	3	1	M-23	1	23.762	X			
78	178	1730	2	1	M-24	1	123.762	X			
78	238	1130	3	1	M-24	1	15.762	X			
78	178	1808	2	1	M-25	1	24.762	X			
78	238	1213	3	1	M-25	1	34.762	X			
78	178	1755	2	1	M-26	1	28.762	X			
78	238	1025	3	1	M-26	1	42.762	X			

VIOLATIONS REPORT FOR TOTAL COPPER (ug/l).

LIMITS IN EFFECT:

IJC	>	5.00
O-EPA NORM	>	5.00
O-EPA EX	>	10.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	280	1010	4	1	M-26	1	8.762	X			
78	178	1705	2	1	M-27	1	15.762	X			
78	238	930	3	1	M-27	1	59.762	X			
78	118	1510	1	1	O-01	1	18.762	X	X	X	
78	238	845	3	1	O-01	1	13.762	X	X	X	
78	181	840	2	1	O-02	1	7.762	X	X		
78	181	925	2	1	O-03	1	69.762	X	X	X	
78	280	950	4	1	O-04	1	7.762	X	X		
78	181	1100	2	1	O-05	1	18.762	X	X		
78	117	900	1	1	O-07	1	37.762	X	X		
78	238	1540	3	1	O-08	1	8.762	X	X		
78	181	1050	2	1	O-10	1	12.762	X	X	X	
78	181	950	2	1	O-14	1	15.762	X	X		
78	181	950	2	1	O-14	1	15.762	X	X		
78	106	1145	1	1	O-19	1	8.762	X	X		
78	188	1235	2	1	O-19	1	113.762	X	X		
78	249	1222	3	1	O-20	1	27.762	X	X		
78	188	1130	2	1	O-21	1	203.762	X	X	X	
78	188	1254	2	1	O-22	1	153.762	X	X		
78	188	1320	2	1	O-23	1	86.762	X	X		
78	104	1510	1	1	O-24	1	11.762	X	X		
78	188	1426	2	1	O-24	1	103.762	X	X		
78	104	1250	1	1	O-25	1	13.762	X	X		
78	188	1510	2	1	O-25	1	123.762	X	X		
78	106	1530	1	1	O-26	1	5.762	X	X		
78	188	1354	2	1	O-26	1	44.762	X	X		
78	188	1755	2	1	O-27	1	25.762	X	X		
78	188	1840	2	1	O-28	1	5.762	X	X		
78	191	1222	2	1	O-29	1	5.762	X	X		
78	112	1407	1	1	O-30	1	6.762	X	X		
78	191	1125	2	1	O-30	1	16.762	X	X	X	
78	191	1445	2	1	O-34	1	103.762	X	X	X	
78	191	1525	2	1	O-35	1	23.762	X	X	X	
78	188	1654	2	1	O-36	1	55.762	X	X		
78	191	1000	2	1	O-37	1	5.762	X	X		
78	288	1520	4	1	O-37	1	23.762	X	X	X	
78	288	1405	4	1	O-39	1	36.762	X	X		
78	191	1203	2	1	O-40	1	87.762	X	X		
78	252	1118	3	1	O-40	1	11.762	X	X		
78	288	1310	4	1	O-40	1	33.762	X	X		
78	288	1230	4	1	O-42	1	5.762	X	X		
78	288	1201	4	1	O-43	1	27.762	X	X		
78	191	1705	2	1	O-44	1	5.762	X	X		
78	110	1654	1	1	O-46	1	7.762	X	X		
78	191	1530	2	1	O-47	1	5.762	X	X		
78	288	1047	4	1	O-47	1	14.762	X	X		
78	288	930	4	1	O-48	1	12.762	X	X		
78	191	1415	2	1	O-49	1	10.762	X	X		
78	288	950	4	1	O-49	1	14.762	X	X		
78	110	1312	1	1	O-50	1	6.762	X	X		

VIOLATIONS REPORT FOR TOTAL COPPER (ug/l).

LIMITS IN EFFECT:

IJC	>	5.00
O-EPA NORM	>	5.00
O-EPA EX	>	10.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	191	1455	2	1	0-50	1	28.762	X	X		
78	288	1015	4	1	0-50	1	13.762	X	X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	101	303	33.33%
OHIO-EPA NORMAL	49	196	25.00%
OHIO-EPA EXCEPTED	9	72	12.50%
TOTAL	101	303	33.33%

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	178	1315	2	1	M-16	1	1076.590	X			X
78	235	1715	3	1	M-16	1	886.590	X			X
78	276	1450	4	1	M-16	1	1676.590	X			X
78	115	1012	1	1	M-17	1	1276.590	X			X
78	178	1347	2	1	M-17	1	1476.590	X			X
78	235	1735	3	1	M-17	1	766.590	X			X
78	276	1515	4	1	M-17	1	1376.590	X			X
78	115	1115	1	1	M-18	1	1276.590	X			X
78	178	1515	2	1	M-18	1	816.590	X			X
78	235	1815	3	1	M-18	1	576.590	X			X
78	276	1625	4	1	M-18	1	1776.590	X			X
78	115	1540	1	1	M-19	1	826.590	X			X
78	178	1635	2	1	M-19	1	426.590	X			X
78	276	1655	4	1	M-19	1	386.590	X			X
78	115	1620	1	1	M-20	1	846.590	X			X
78	178	1525	2	1	M-20	1	336.590	X			X
78	115	1700	1	1	M-21	1	786.590	X			X
78	276	1600	4	1	M-21	1	656.590	X			X
78	118	1324	1	1	M-22	1	386.590	X			X
78	178	1545	2	1	M-22	1	916.590	X			X
78	238	1135	3	1	M-22	1	426.590	X			X
78	280	1040	4	1	M-22	1	466.590	X			X
78	118	1402	1	1	M-23	1	696.590	X			X
78	178	1815	2	1	M-23	1	1076.590	X			X
78	238	1100	3	1	M-23	1	1076.590	X			X
78	281	1200	4	1	M-23	1	356.590	X			X
78	117	1900	1	1	M-24	1	666.590	X			X
78	178	1730	2	1	M-24	1	516.590	X			X
78	238	1130	3	1	M-24	1	386.590	X			X
78	279	1230	4	1	M-24	1	346.590	X			X
78	117	1945	1	1	M-25	1	466.590	X			X
78	178	1808	2	1	M-25	1	386.590	X			X
78	238	1213	3	1	M-25	1	396.590	X			X
78	279	1155	4	1	M-25	1	486.590	X			X
78	118	1436	1	1	M-26	1	586.590	X			X
78	178	1755	2	1	M-26	1	1076.590	X			X
78	238	1025	3	1	M-26	1	696.590	X			X
78	118	1537	1	1	M-27	1	746.590	X			X
78	178	1705	2	1	M-27	1	1276.590	X			X
78	238	930	3	1	M-27	1	2276.590	X			X
78	280	935	4	1	M-27	1	1576.590	X			X
78	118	1510	1	1	O-01	1	1076.590	X	X	X	
78	178	1735	2	1	O-01	1	1276.590	X	X	X	
78	238	845	3	1	O-01	1	1776.590	X	X	X	
78	280	855	4	1	O-01	1	1576.590	X	X	X	
78	117	1420	1	1	O-02	1	1576.590	X	X	X	
78	181	840	2	1	O-02	1	1376.590	X	X	X	
78	238	830	3	1	O-02	1	1376.590	X	X	X	
78	280	800	4	1	O-02	1	1976.590	X	X	X	

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	117	1330	1	1	0-03	1	1976.590	X	X	X	
78	181	925	2	1	0-03	1	1076.590	X	X	X	
78	238	905	3	1	0-03	1	1276.590	X	X	X	
78	117	1200	1	1	0-04	1	2476.590	X	X	X	
78	181	1005	2	1	0-04	1	316.590	X	X		
78	238	940	3	1	0-04	1	1176.590	X	X	X	
78	280	950	4	1	0-04	1	976.590	X	X		
78	117	1055	1	1	0-05	1	2476.590	X	X		
78	238	1010	3	1	0-05	1	776.590	X	X		
78	280	1012	4	1	0-05	1	856.590	X	X		
78	117	1010	1	1	0-06	1	1576.590	X	X		
78	238	1043	3	1	0-06	1	506.590	X	X		
78	280	1040	4	1	0-06	1	926.590	X	X		
78	117	900	1	1	0-07	1	706.590	X	X		
78	280	1340	4	1	0-07	1	766.590	X	X		
78	117	1830	1	1	0-08	1	1776.590	X	X	X	
78	181	1140	2	1	0-08	1	1476.590	X	X	X	
78	238	1540	3	1	0-08	1	1776.590	X	X	X	
78	280	1535	4	1	0-08	1	1776.590	X	X	X	
78	117	1801	1	1	0-09	1	2876.590	X	X	X	
78	238	1510	3	1	0-09	1	1176.590	X	X	X	
78	280	1510	4	1	0-09	1	7276.590	X	X	X	
78	117	1724	1	1	0-10	1	3276.590	X	X	X	
78	181	1050	2	1	0-10	1	926.590	X	X		
78	238	1445	3	1	0-10	1	1176.590	X	X	X	
78	280	1445	4	1	0-10	1	5476.590	X	X	X	
78	117	1741	1	1	0-11	1	2076.590	X	X		
78	238	1455	3	1	0-11	1	456.590	X	X		
78	280	1518	4	1	0-11	1	496.590	X	X		
78	117	1645	1	1	0-12	1	2576.590	X	X		
78	181	1019	2	1	0-12	1	1176.590	X	X		
78	238	1410	3	1	0-12	1	1476.590	X	X		
78	280	1405	4	1	0-12	1	886.590	X	X		
78	117	1650	1	1	0-13	1	1476.590	X	X		
78	280	1437	4	1	0-13	1	536.590	X	X		
78	181	950	2	1	0-14	1	4876.590	X	X		
78	181	950	2	1	0-14	1	1376.590	X	X		
78	238	1340	3	1	0-14	1	2376.590	X	X		
78	280	1335	4	1	0-14	1	1976.590	X	X		
78	105	1525	1	1	0-15	1	2476.590	X	X	X	
78	188	1019	2	1	0-15	1	776.590	X	X		
78	249	930	3	1	0-15	1	956.590	X	X		
78	284	1110	4	1	0-15	1	556.590	X	X		
78	105	1620	1	1	0-16	1	2476.590	X	X	X	
78	249	1000	3	1	0-16	1	916.590	X	X		
78	106	1545	1	1	0-17	1	3076.590	X	X		
78	249	1125	3	1	0-17	1	366.590	X	X		
78	284	1200	4	1	0-17	1	306.590	X	X		
78	106	1300	1	1	0-18	1	1976.590	X	X		

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	188	1130	2	1	0-18	1	716.590	X	X		
78	284	1140	4	1	0-18	1	326.590	X	X		
78	106	1145	1	1	0-19	1	3876.590	X	X		
78	188	1235	2	1	0-19	1	476.590	X	X		
78	106	1015	1	1	0-20	1	1976.590	X	X		
78	105	1705	1	1	0-21	1	2076.590	X	X	X	
78	188	1130	2	1	0-21	1	1776.590	X	X	X	
78	249	1030	3	1	0-21	1	2676.590	X	X	X	
78	284	1155	4	1	0-21	1	936.590	X	X		
78	104	1445	1	1	0-22	1	1776.590	X	X		
78	188	1254	2	1	0-22	1	1276.590	X	X		
78	249	1105	3	1	0-22	1	526.590	X	X		
78	284	1310	4	1	0-22	1	576.590	X	X		
78	104	1245	1	1	0-23	1	2276.590	X	X		
78	188	1320	2	1	0-23	1	1576.590	X	X		
78	249	1130	3	1	0-23	1	816.590	X	X		
78	104	1510	1	1	0-24	1	1076.590	X	X		
78	188	1426	2	1	0-24	1	736.590	X	X		
78	284	1327	4	1	0-24	1	376.590	X	X		
78	104	1250	1	1	0-25	1	1676.590	X	X		
78	188	1510	2	1	0-25	1	316.590	X	X		
78	284	1415	4	1	0-25	1	356.590	X	X		
78	106	1530	1	1	0-26	1	2076.590	X	X		
78	188	1354	2	1	0-26	1	606.590	X	X		
78	249	1150	3	1	0-26	1	386.590	X	X		
78	284	1400	4	1	0-26	1	636.590	X	X		
78	107	1510	1	1	0-27	1	976.590	X	X		
78	188	1755	2	1	0-27	1	516.590	X	X		
78	284	1612	4	1	0-27	1	626.590	X	X		
78	107	1410	1	1	0-28	1	776.590	X	X		
78	188	1840	2	1	0-28	1	316.590	X	X		
78	284	1523	4	1	0-28	1	326.590	X	X		
78	112	1320	1	1	0-29	1	3276.590	X	X	X	
78	191	1222	2	1	0-29	1	1576.590	X	X	X	
78	252	1054	3	1	0-29	1	1976.590	X	X	X	
78	288	1230	4	1	0-29	1	1476.590	X	X	X	
78	112	1407	1	1	0-30	1	2276.590	X	X	X	
78	191	1125	2	1	0-30	1	8676.590	X	X	X	
78	252	1015	3	1	0-30	1	306.590	X	X		
78	288	1310	4	1	0-30	1	1676.590	X	X	X	
78	112	1529	1	1	0-31	1	676.590	X	X		
78	191	1300	2	1	0-31	1	1876.590	X	X	X	
78	252	1113	3	1	0-31	1	1276.590	X	X	X	
78	288	1330	4	1	0-31	1	4876.590	X	X	X	
78	112	1606	1	1	0-32	1	1076.590	X	X	X	
78	191	1340	2	1	0-32	1	1776.590	X	X	X	
78	252	1155	3	1	0-32	1	1776.590	X	X	X	
78	288	1350	4	1	0-32	1	976.590	X	X		
78	112	1740	1	1	0-33	1	636.590	X	X		

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	191	1423	2	1	0-33	1	1776.590	X	X	X	
78	252	1220	3	1	0-33	1	976.590	X	X		
78	288	1130	4	1	0-33	1	856.590	X	X		
78	112	1755	1	1	0-34	1	976.590	X	X		
78	191	1445	2	1	0-34	1	1676.590	X	X	X	
78	252	1245	3	1	0-34	1	1076.590	X	X	X	
78	288	1058	4	1	0-34	1	1176.590	X	X	X	
78	112	1715	1	1	0-35	1	706.590	X	X		
78	191	1525	2	1	0-35	1	1176.590	X	X	X	
78	252	1315	3	1	0-35	1	836.590	X	X		
78	288	1035	4	1	0-35	1	736.590	X	X		
78	109	1100	1	1	0-36	1	976.590	X	X		
78	284	1703	4	1	0-36	1	366.590	X	X		
78	109	1645	1	1	0-37	1	976.590	X	X		
78	191	1000	2	1	0-37	1	326.590	X	X		
78	252	915	3	1	0-37	1	426.590	X	X		
78	288	1520	4	1	0-37	1	956.590	X	X		
78	109	1530	1	1	0-38	1	646.590	X	X		
78	288	1450	4	1	0-38	1	586.590	X	X		
78	109	1230	1	1	0-39	1	406.590	X	X		
78	288	1405	4	1	0-39	1	546.590	X	X		
78	109	1340	1	1	0-40	1	616.590	X	X		
78	288	1310	4	1	0-40	1	906.590	X	X		
78	112	1100	1	1	0-41	1	676.590	X	X		
78	288	950	4	1	0-41	1	976.590	X	X		
78	110	1055	1	1	0-42	1	746.590	X	X		
78	288	1230	4	1	0-42	1	946.590	X	X		
78	110	1600	1	1	0-43	1	616.590	X	X		
78	191	1330	2	1	0-43	1	306.590	X	X		
78	252	1227	3	1	0-43	1	626.590	X	X		
78	288	1201	4	1	0-43	1	856.590	X	X		
78	110	1900	1	1	0-44	1	2676.590	X	X	X	
78	252	1500	3	1	0-44	1	1376.590	X	X	X	
78	288	922	4	1	0-44	1	2376.590	X	X	X	
78	110	1822	1	1	0-45	1	306.590	X	X		
78	288	1137	4	1	0-45	1	976.590	X	X		
78	110	1654	1	1	0-46	1	776.590	X	X		
78	288	1120	4	1	0-46	1	976.590	X	X		
78	110	1200	1	1	0-47	1	506.590	X	X		
78	288	1047	4	1	0-47	1	846.590	X	X		
78	192	915	2	1	0-48	1	546.590	X	X		
78	288	930	4	1	0-48	1	1176.590	X	X		
78	288	950	4	1	0-49	1	956.590	X	X		
78	110	1312	1	1	0-50	1	416.590	X	X		
78	288	1015	4	1	0-50	1	926.590	X	X		

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	240	309	77.67%
OHIO-EPA NORMAL	151	201	75.12%
OHIO-EPA EXCEPTED	49	75	65.33%
MICHIGAN DNR	89	108	82.41%
TOTAL	240	309	77.67%

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	206	920	2	1	M-01	1	4031.360	X			X
79	263	1114	3	1	M-01	1	571.360	X			X
79	282	1105	4	1	M-01	1	2331.360	X			X
79	88	1520	1	1	M-02	1	446.590	X			X
79	88	1720	1	1	M-03	1	471.590	X			X
79	206	1040	2	1	M-03	1	3331.360	X			X
79	263	1156	3	1	M-03	1	2031.360	X			X
79	282	1135	4	1	M-03	1	1031.360	X			X
79	88	1815	1	1	M-04	1	776.590	X			X
79	206	1140	2	1	M-04	1	1631.360	X			X
79	263	1224	3	1	M-04	1	1131.360	X			X
79	282	1205	4	1	M-04	1	931.360	X			X
79	88	1335	1	1	M-05	1	1776.590	X			X
79	206	1340	2	1	M-05	1	801.360	X			X
79	263	1353	3	1	M-05	1	631.360	X			X
79	282	1437	4	1	M-05	1	501.360	X			X
79	88	1255	1	1	M-06	1	526.590	X			X
79	206	1300	2	1	M-06	1	861.360	X			X
79	263	1318	3	1	M-06	1	501.360	X			X
79	282	1340	4	1	M-06	1	541.360	X			X
79	206	1215	2	1	M-07	1	881.360	X			X
79	206	1430	2	1	M-08	1	421.360	X			X
79	263	1430	3	1	M-08	1	691.360	X			X
79	282	1540	4	1	M-08	1	351.360	X			X
79	88	1440	1	1	M-09	1	366.590	X			X
79	206	1525	2	1	M-09	1	371.360	X			X
79	263	1230	3	1	M-09	1	481.360	X			X
79	282	1305	4	1	M-09	1	441.360	X			X
79	89	1415	1	1	M-10	1	2476.590	X			X
79	206	1300	2	1	M-10	1	1731.360	X			X
79	263	1403	3	1	M-10	1	1431.360	X			X
79	282	1300	4	1	M-10	1	401.360	X			X
79	89	1450	1	1	M-11	1	976.590	X			X
79	89	1450	1	1	M-11	1	976.590	X			X
79	206	1330	2	1	M-11	1	1331.360	X			X
79	263	1622	3	1	M-11	1	451.360	X			X
79	282	1320	4	1	M-11	1	671.360	X			X
79	206	910	2	1	M-12	1	791.360	X			X
79	263	1027	3	1	M-12	1	861.360	X			X
79	282	1015	4	1	M-12	1	301.360	X			X
79	88	1930	1	1	M-13	1	376.590	X			X
79	206	945	2	1	M-13	1	1031.360	X			X
79	263	1049	3	1	M-13	1	771.360	X			X
79	282	1053	4	1	M-13	1	731.360	X			X
79	206	1150	2	1	M-15	1	561.360	X			X
79	263	1145	3	1	M-15	1	571.360	X			X
79	282	1205	4	1	M-15	1	441.360	X			X
79	89	1535	1	1	M-16	1	1476.590	X			X

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	206	1440	2	1	M-16	1	2931.360	X			X
79	263	1639	3	1	M-16	1	841.360	X			X
79	282	1650	4	1	M-16	1	581.360	X			X
79	89	1725	1	1	M-17	1	2326.590	X			X
79	206	1600	2	1	M-17	1	811.360	X			X
79	263	1700	3	1	M-17	1	591.360	X			X
79	282	1715	4	1	M-17	1	471.360	X			X
79	89	1750	1	1	M-18	1	2726.590	X			X
79	206	1620	2	1	M-18	1	891.360	X			X
79	263	1756	3	1	M-18	1	741.360	X			X
79	282	1735	4	1	M-18	1	361.360	X			X
79	88	1710	1	1	M-19	1	476.590	X			X
79	206	1825	2	1	M-19	1	511.360	X			X
79	263	1736	3	1	M-19	1	331.360	X			X
79	282	1840	4	1	M-19	1	491.360	X			X
79	206	1745	2	1	M-20	1	481.360	X			X
79	263	1712	3	1	M-20	1	381.360	X			X
79	282	1802	4	1	M-20	1	461.360	X			X
79	206	1710	2	1	M-21	1	441.360	X			X
79	263	1640	3	1	M-21	1	421.360	X			X
79	206	1700	2	1	M-22	1	881.360	X			X
79	263	1811	3	1	M-22	1	631.360	X			X
79	282	1750	4	1	M-22	1	351.360	X			X
79	91	1120	1	1	M-23	1	2376.590	X			X
79	209	955	2	1	M-23	1	511.360	X			X
79	260	1208	3	1	M-23	1	331.360	X			X
79	285	950	4	1	M-23	1	1131.360	X			X
79	91	1300	1	1	M-24	1	826.590	X			X
79	209	1225	2	1	M-24	1	621.360	X			X
79	260	1305	3	1	M-24	1	321.360	X			X
79	285	1250	4	1	M-24	1	351.360	X			X
79	209	1155	2	1	M-25	1	441.360	X			X
79	260	1227	3	1	M-25	1	431.360	X			X
79	285	1204	4	1	M-25	1	401.360	X			X
79	91	1055	1	1	M-26	1	3776.590	X			X
79	209	930	2	1	M-26	1	761.360	X			X
79	285	1015	4	1	M-26	1	401.360	X			X
79	209	840	2	1	O-01	1	2431.360	X	X	X	
79	260	1115	3	1	O-01	1	1131.360	X	X	X	
79	285	1100	4	1	O-01	1	1031.360	X	X	X	
79	91	935	1	1	O-02	1	6476.590	X	X	X	
79	209	927	2	1	O-02	1	1431.360	X	X	X	
79	260	945	3	1	O-02	1	4031.360	X	X	X	
79	285	1830	4	1	O-02	1	1831.360	X	X	X	
79	91	1010	1	1	O-03	1	7476.590	X	X	X	
79	209	952	2	1	O-03	1	1031.360	X	X	X	
79	260	1023	3	1	O-03	1	481.360	X	X		
79	285	1800	4	1	O-03	1	2031.360	X	X	X	
79	91	1045	1	1	O-04	1	6476.590	X	X	X	

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	209	1022	2	1	0-04	1	621.360	X	X		
79	260	1050	3	1	0-04	1	521.360	X	X		
79	285	1737	4	1	0-04	1	1131.360	X	X		X
79	91	1105	1	1	0-05	1	4026.590	X	X		
79	209	1042	2	1	0-05	1	501.360	X	X		
79	260	1115	3	1	0-05	1	501.360	X	X		
79	285	1707	4	1	0-05	1	1031.360	X	X		
79	91	1145	1	1	0-06	1	826.590	X	X		
79	209	1108	2	1	0-06	1	381.360	X	X		
79	260	1140	3	1	0-06	1	881.360	X	X		
79	285	1640	4	1	0-06	1	561.360	X	X		
79	91	1615	1	1	0-08	1	5976.590	X	X		X
79	209	1050	2	1	0-08	1	1231.360	X	X		X
79	260	1358	3	1	0-08	1	1631.360	X	X		X
79	285	1130	4	1	0-08	1	2331.360	X	X		X
79	91	1710	1	1	0-09	1	2476.590	X	X		X
79	209	1140	2	1	0-09	1	1531.360	X	X		X
79	260	1413	3	1	0-09	1	911.360	X	X		
79	285	1145	4	1	0-09	1	841.360	X	X		
79	91	1740	1	1	0-10	1	2226.590	X	X		X
79	209	1200	2	1	0-10	1	1531.360	X	X		X
79	260	1426	3	1	0-10	1	851.360	X	X		
79	285	1210	4	1	0-10	1	1431.360	X	X		X
79	209	1515	2	1	0-11	1	351.360	X	X		
79	260	1530	3	1	0-11	1	1131.360	X	X		
79	285	1600	4	1	0-11	1	341.360	X	X		
79	97	1100	1	1	0-12	1	2026.590	X	X		
79	209	1245	2	1	0-12	1	771.360	X	X		
79	256	1230	3	1	0-12	1	811.360	X	X		
79	285	1345	4	1	0-12	1	651.360	X	X		
79	91	1510	1	1	0-13	1	876.590	X	X		
79	209	1432	2	1	0-13	1	311.360	X	X		
79	260	1445	3	1	0-13	1	381.360	X	X		
79	285	1455	4	1	0-13	1	371.360	X	X		
79	97	1130	1	1	0-14	1	14976.590	X	X		
79	209	1320	2	1	0-14	1	671.360	X	X		
79	256	1205	3	1	0-14	1	1031.360	X	X		
79	285	1315	4	1	0-14	1	441.360	X	X		
79	97	1215	1	1	0-15	1	8476.590	X	X		X
79	212	1130	2	1	0-15	1	301.360	X	X		
79	256	1135	3	1	0-15	1	721.360	X	X		
79	291	1300	4	1	0-15	1	301.360	X	X		
79	97	1240	1	1	0-16	1	6976.590	X	X		X
79	212	1150	2	1	0-16	1	651.360	X	X		
79	256	1308	3	1	0-16	1	861.360	X	X		
79	291	1445	4	1	0-16	1	551.360	X	X		
79	97	1230	1	1	0-17	1	4976.590	X	X		
79	212	1312	2	1	0-17	1	361.360	X	X		
79	256	1325	3	1	0-17	1	701.360	X	X		

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	97	1205	1	1	0-18	1	4726.590	X	X		
79	212	1245	2	1	0-18	1	341.360	X	X		
79	256	1300	3	1	0-18	1	451.360	X	X		
79	97	1145	1	1	0-19	1	4626.590	X	X		
79	256	1240	3	1	0-19	1	441.360	X	X		
79	97	1115	1	1	0-20	1	3726.590	X	X		
79	256	1216	3	1	0-20	1	641.360	X	X		
79	97	1315	1	1	0-21	1	8976.590	X	X	X	
79	212	1210	2	1	0-21	1	831.360	X	X		
79	256	1327	3	1	0-21	1	1931.360	X	X	X	
79	291	1505	4	1	0-21	1	1531.360	X	X	X	
79	212	1305	2	1	0-22	1	301.360	X	X		
79	256	1434	3	1	0-22	1	711.360	X	X		
79	291	1545	4	1	0-22	1	461.360	X	X		
79	97	1440	1	1	0-23	1	7476.590	X	X		
79	212	1330	2	1	0-23	1	671.360	X	X		
79	256	1505	3	1	0-23	1	1931.360	X	X		
79	291	1605	4	1	0-23	1	461.360	X	X		
79	97	1410	1	1	0-25	1	3176.590	X	X		
79	256	1600	3	1	0-25	1	831.360	X	X		
79	291	1612	4	1	0-25	1	311.360	X	X		
79	97	1515	1	1	0-27	1	4976.590	X	X		
79	255	1530	3	1	0-27	1	1331.360	X	X		
79	291	1755	4	1	0-27	1	411.360	X	X		
79	97	1645	1	1	0-28	1	2876.590	X	X		
79	103	1030	1	1	0-29	1	4876.590	X	X	X	
79	215	1425	2	1	0-29	1	2131.360	X	X	X	
79	252	1642	3	1	0-29	1	1431.360	X	X	X	
79	294	1355	4	1	0-29	1	3531.360	X	X	X	
79	103	1005	1	1	0-30	1	4976.590	X	X	X	
79	215	1405	2	1	0-30	1	1031.360	X	X	X	
79	252	1624	3	1	0-30	1	1531.360	X	X	X	
79	294	1325	4	1	0-30	1	1231.360	X	X	X	
79	215	1340	2	1	0-31	1	661.360	X	X		
79	252	1353	3	1	0-31	1	1531.360	X	X	X	
79	294	1305	4	1	0-31	1	2531.360	X	X	X	
79	103	1215	1	1	0-32	1	1826.590	X	X	X	
79	215	1315	2	1	0-32	1	1331.360	X	X	X	
79	252	1528	3	1	0-32	1	5231.359	X	X	X	
79	294	1235	4	1	0-32	1	1431.360	X	X	X	
79	103	1305	1	1	0-33	1	1676.590	X	X	X	
79	215	1250	2	1	0-33	1	931.360	X	X		
79	294	1215	4	1	0-33	1	531.360	X	X		
79	103	1410	1	1	0-35	1	876.590	X	X		
79	215	1155	2	1	0-35	1	561.360	X	X		
79	294	1110	4	1	0-35	1	1031.360	X	X	X	
79	97	1605	1	1	0-36	1	1626.590	X	X		
79	255	1358	3	1	0-36	1	471.360	X	X		
79	103	930	1	1	0-37	1	1976.590	X	X	X	

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	215	1700	2	1	O-37	1	1231.360	X	X	X	
79	252	1740	3	1	O-37	1	521.360	X	X		
79	294	1400	4	1	O-37	1	741.360	X	X		
79	103	955	1	1	O-38	1	2126.590	X	X		
79	215	1630	2	1	O-38	1	461.360	X	X		
79	252	1715	3	1	O-38	1	501.360	X	X		
79	294	1332	4	1	O-38	1	401.360	X	X		
79	252	1635	3	1	O-40	1	381.360	X	X		
79	104	1050	1	1	O-41	1	3176.590	X	X		
79	252	1220	3	1	O-41	1	411.360	X	X		
79	103	1150	1	1	O-42	1	1776.590	X	X		
79	252	1555	3	1	O-42	1	411.360	X	X		
79	103	1225	1	1	O-43	1	1926.590	X	X		
79	252	1525	3	1	O-43	1	891.360	X	X		
79	294	1645	4	1	O-43	1	361.360	X	X		
79	103	1630	1	1	O-44	1	2276.590	X	X	X	
79	215	945	2	1	O-44	1	391.360	X	X		
79	252	1500	3	1	O-44	1	571.360	X	X		
79	294	1952	4	1	O-44	1	701.360	X	X		
79	103	1540	1	1	O-45	1	1926.590	X	X		
79	252	1432	3	1	O-45	1	391.360	X	X		
79	294	1930	4	1	O-45	1	321.360	X	X		
79	103	1510	1	1	O-46	1	1676.590	X	X		
79	252	1358	3	1	O-46	1	371.360	X	X		
79	294	1905	4	1	O-46	1	451.360	X	X		
79	103	1445	1	1	O-47	1	1426.590	X	X		
79	252	1327	3	1	O-47	1	431.360	X	X		
79	294	1837	4	1	O-47	1	421.360	X	X		
79	252	1142	3	1	O-48	1	2431.360	X	X		
79	294	1635	4	1	O-48	1	371.360	X	X		
79	103	1315	1	1	O-49	1	1726.590	X	X		
79	252	1205	3	1	O-49	1	361.360	X	X		
79	294	1726	4	1	O-49	1	451.360	X	X		
79	103	1400	1	1	O-50	1	1626.590	X	X		
79	252	1242	3	1	O-50	1	571.360	X	X		
79	294	1752	4	1	O-50	1	531.360	X	X		
79	88	1320	1	1	M-01	1	1126.590	X			X
79	88	1845	1	1	M-07	1	366.590	X			X
79	88	1950	1	1	M-12	1	676.590	X			X
79	88	1845	1	1	M-14	1	341.590	X			X
79	89	1815	1	1	M-22	1	1976.590	X			X
79	91	1020	1	1	M-27	1	3126.590	X			X
79	91	950	1	1	O-01	1	2676.590	X	X	X	
79	91	1635	1	1	O-11	1	1876.590	X	X		
79	97	1415	1	1	O-22	1	7476.590	X	X		
79	97	1330	1	1	O-24	1	3576.590	X	X		
79	97	1500	1	1	O-26	1	5976.590	X	X		
79	103	1055	1	1	O-31	1	2476.590	X	X	X	
79	103	1350	1	1	O-34	1	1326.590	X	X	X	

VIOLATIONS REPORT FOR TOTAL IRON (ug/l).

LIMITS IN EFFECT:

IJC	>	300.00
O-EPA NORM	>	300.00
O-EPA EX	>	1000.00
MICH DNR	>	300.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	103	1025	1	1	O-39	1	1476.590	X	X		
79	103	1110	1	1	O-40	1	1626.590	X	X		
79	206	1020	2	1	M-14	1	561.360	X			X
79	209	910	2	1	M-27	1	1331.360	X			X
79	209	1335	2	1	O-07	1	631.360	X	X		
79	212	1400	2	1	O-26	1	401.360	X	X		
79	215	1215	2	1	O-34	1	811.360	X	X		
79	252	1345	3	1	O-33	1	531.360	X	X		
79	252	1320	3	1	O-34	1	621.360	X	X		
79	252	955	3	1	O-39	1	411.360	X	X		
79	256	1500	3	1	O-24	1	411.360	X	X		
79	256	1515	3	1	O-26	1	421.360	X	X		
79	260	1132	3	1	M-27	1	1131.360	X			X
79	263	1252	3	1	M-07	1	771.360	X			X
79	263	1110	3	1	M-14	1	571.360	X			X
79	282	1220	4	1	M-07	1	481.360	X			X
79	282	1130	4	1	M-14	1	411.360	X			X
79	285	1035	4	1	M-27	1	1131.360	X			X
79	285	1400	4	1	O-07	1	381.360	X	X		
79	291	1522	4	1	O-24	1	331.360	X	X		
79	291	1615	4	1	O-26	1	411.360	X	X		
79	294	1145	4	1	O-34	1	821.360	X	X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	266	304	87.50%
OHIO-EPA NORMAL	167	198	84.34%
OHIO-EPA EXCEPTED	48	75	64.00%
MICHIGAN DNR	99	106	93.40%
TOTAL	266	304	87.50%

VIOLATIONS REPORT FOR TOTAL MANGANESE (ug/l).

LIMITS IN EFFECT:
O-EPA NORM > 50.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	118	1510	1	1	0-01	1	52.108		X		
78	280	855	4	1	0-01	1	55.108		X		
78	117	1420	1	1	0-02	1	59.108		X		
78	280	800	4	1	0-02	1	80.108		X		
78	117	1330	1	1	0-03	1	75.108		X		
78	117	1200	1	1	0-04	1	64.108		X		
78	117	1055	1	1	0-05	1	80.108		X		
78	117	1010	1	1	0-06	1	55.108		X		
78	117	1830	1	1	0-08	1	82.108		X		
78	181	1140	2	1	0-08	1	76.108		X		
78	238	1540	3	1	0-08	1	73.108		X		
78	117	1801	1	1	0-09	1	72.108		X		
78	280	1510	4	1	0-09	1	169.108		X		
78	117	1724	1	1	0-10	1	82.108		X		
78	280	1445	4	1	0-10	1	149.108		X		
78	117	1741	1	1	0-11	1	66.108		X		
78	117	1645	1	1	0-12	1	79.108		X		
78	117	1650	1	1	0-13	1	56.108		X		
78	106	1545	1	1	0-17	1	62.108		X		
78	106	1300	1	1	0-18	1	52.108		X		
78	106	1015	1	1	0-20	1	50.108		X		
78	105	1705	1	1	0-21	1	72.108		X		
78	104	1445	1	1	0-22	1	63.108		X		
78	104	1245	1	1	0-23	1	77.108		X		
78	104	1250	1	1	0-25	1	53.108		X		
78	106	1530	1	1	0-26	1	50.108		X		
78	112	1320	1	1	0-29	1	91.108		X		
78	252	1054	3	1	0-29	1	94.108		X		
78	112	1407	1	1	0-30	1	75.108		X		
78	191	1125	2	1	0-30	1	209.108		X		
78	288	1310	4	1	0-30	1	66.108		X		
78	191	1300	2	1	0-31	1	85.108		X		
78	288	1330	4	1	0-31	1	109.108		X		
78	191	1340	2	1	0-32	1	63.108		X		
78	191	1423	2	1	0-33	1	61.108		X		
78	191	1445	2	1	0-34	1	64.108		X		
78	109	1645	1	1	0-37	1	59.108		X		
78	110	1900	1	1	0-44	1	129.108		X		
78	288	922	4	1	0-44	1	97.108		X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	39	201	19.40%
TOTAL	39	309	12.62%

VIOLATIONS REPORT FOR TOTAL MANGANESE (ug/l).

LIMITS IN EFFECT:
O-EPA NORM > 50.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	209	840	2	1	0-01	1	67.062		X		
79	285	1100	4	1	0-01	1	115.062		X		
79	91	935	1	1	0-02	1	79.108		X		
79	209	927	2	1	0-02	1	70.062		X		
79	260	945	3	1	0-02	1	125.062		X		
79	285	1830	4	1	0-02	1	57.062		X		
79	91	1010	1	1	0-03	1	84.108		X		
79	91	1045	1	1	0-04	1	94.108		X		
79	91	1105	1	1	0-05	1	74.108		X		
79	260	1140	3	1	0-06	1	66.062		X		
79	91	1615	1	1	0-08	1	109.108		X		
79	209	1050	2	1	0-08	1	78.062		X		
79	285	1130	4	1	0-08	1	77.062		X		
79	91	1710	1	1	0-09	1	74.108		X		
79	209	1140	2	1	0-09	1	67.062		X		
79	91	1740	1	1	0-10	1	64.108		X		
79	209	1200	2	1	0-10	1	54.062		X		
79	285	1210	4	1	0-10	1	57.062		X		
79	260	1530	3	1	0-11	1	64.062		X		
79	97	1215	1	1	0-15	1	84.108		X		
79	97	1240	1	1	0-16	1	99.108		X		
79	97	1230	1	1	0-17	1	74.108		X		
79	97	1145	1	1	0-19	1	74.108		X		
79	97	1115	1	1	0-20	1	59.108		X		
79	97	1315	1	1	0-21	1	104.108		X		
79	97	1440	1	1	0-23	1	84.108		X		
79	97	1410	1	1	0-25	1	64.108		X		
79	97	1515	1	1	0-27	1	64.108		X		
79	255	1530	3	1	0-27	1	105.062		X		
79	252	1642	3	1	0-29	1	145.062		X		
79	294	1355	4	1	0-29	1	125.062		X		
79	252	1624	3	1	0-30	1	115.062		X		
79	252	1353	3	1	0-31	1	135.062		X		
79	294	1305	4	1	0-31	1	63.062		X		
79	252	1528	3	1	0-32	1	185.062		X		
79	91	950	1	1	0-01	1	74.108		X		

SUMMARY:

—ORGANIZATION—	VIOLATIONS	SAMPLES	PERCENT
OHIO-EPA NORMAL	36	197	18.27%
TOTAL	36	303	11.88%

VIOLATIONS REPORT FOR TOTAL NICKEL (ug/l).

LIMITS IN EFFECT:

IJC	>	25.00
O-EPA NORM	>	25.00
O-EPA EX	>	200.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	117	1022	1	1	M-01	1	25.460	X			
78	235	1240	3	1	M-02	1	40.460	X			
78	114	1140	1	1	M-06	1	86.460	X			
78	235	1310	3	1	M-06	1	30.460	X			
78	114	1240	1	1	M-07	1	82.460	X			
78	114	1420	1	1	M-09	1	76.460	X			
78	235	1230	3	1	M-09	1	25.460	X			
78	115	1000	1	1	M-12	1	77.460	X			
78	276	900	4	1	M-12	1	80.460	X			
78	115	1045	1	1	M-13	1	62.460	X			
78	115	1135	1	1	M-14	1	45.460	X			
78	235	1110	3	1	M-14	1	136.460	X			
78	115	1425	1	1	M-15	1	79.460	X			
78	235	1150	3	1	M-15	1	27.460	X			
78	115	920	1	1	M-16	1	52.460	X			
78	115	1012	1	1	M-17	1	31.460	X			
78	115	1115	1	1	M-18	1	40.460	X			
78	115	1540	1	1	M-19	1	166.460	X			
78	115	1620	1	1	M-20	1	60.460	X			
78	235	1635	3	1	M-20	1	30.460	X			
78	117	1945	1	1	M-25	1	37.460	X			
78	118	1436	1	1	M-26	1	35.460	X			
78	238	1025	3	1	M-26	1	77.460	X			
78	118	1537	1	1	M-27	1	69.460	X			
78	238	930	3	1	M-27	1	27.460	X			
78	118	1510	1	1	O-01	1	26.460	X	X		
78	280	800	4	1	O-02	1	76.460	X	X		
78	117	1200	1	1	O-04	1	42.460	X	X		
78	181	1005	2	1	O-04	1	43.460	X	X		
78	117	1650	1	1	O-13	1	25.460	X	X		
78	188	1130	2	1	O-21	1	86.460	X	X		
78	104	1445	1	1	O-22	1	47.460	X	X		
78	188	1320	2	1	O-23	1	29.460	X	X		
78	188	1426	2	1	O-24	1	57.460	X	X		
78	284	1327	4	1	O-24	1	25.460	X	X		
78	106	1530	1	1	O-26	1	26.460	X	X		
78	107	1510	1	1	O-27	1	31.460	X	X		
78	112	1320	1	1	O-29	1	34.460	X	X		
78	191	1222	2	1	O-29	1	47.460	X	X		
78	112	1407	1	1	O-30	1	216.460	X	X	X	
78	191	1300	2	1	O-31	1	44.460	X	X		
78	288	1330	4	1	O-31	1	31.460	X	X		
78	112	1606	1	1	O-32	1	86.460	X	X		
78	191	1340	2	1	O-32	1	26.460	X	X		
78	112	1755	1	1	O-34	1	29.460	X	X		
78	191	1000	2	1	O-37	1	37.460	X	X		
78	252	945	3	1	O-38	1	36.460	X	X		
78	252	1020	3	1	O-39	1	68.460	X	X		
78	252	1118	3	1	O-40	1	106.460	X	X		

VIOLATIONS REPORT FOR TOTAL NICKEL (ug/l).

LIMITS IN EFFECT:

IJC	>	25.00
O-EPA NORM	>	25.00
O-EPA EX	>	200.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	191	-98	2	1	O-41	1	38.460	X	X		
78	252	1405	3	1	O-41	1	52.460	X	X		
78	191	1330	2	1	O-43	1	43.460	X	X		
78	252	1227	3	1	O-43	1	26.460	X	X		
78	191	1705	2	1	O-44	1	27.460	X	X		
78	191	-98	2	1	O-46	1	70.460	X	X		
78	191	1530	2	1	O-47	1	64.460	X	X		
78	252	1355	3	1	O-47	1	45.460	X	X		
78	192	915	2	1	O-48	1	49.460	X	X		
78	252	1430	3	1	O-48	1	32.460	X	X		
78	191	1415	2	1	O-49	1	38.460	X	X		
78	252	1252	3	1	O-49	1	31.460	X	X		
78	252	1320	3	1	O-50	1	32.460	X	X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	62	306	20.26%
OHIO-EPA NORMAL	37	199	18.59%
OHIO-EPA EXCEPTED	1	74	1.35%
TOTAL	62	306	20.26%

VIOLATIONS REPORT FOR TOTAL NICKEL (ug/l).

LIMITS IN EFFECT:

IJC	>	25.00
O-EPA NORM	>	25.00
O-EPA EX	>	200.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	282	1105	4	1	M-01	1	123.190	X			
79	263	1156	3	1	M-03	1	64.190	X			
79	282	1135	4	1	M-03	1	143.190	X			
79	263	1224	3	1	M-04	1	31.190	X			
79	282	1205	4	1	M-04	1	243.190	X			
79	263	1353	3	1	M-05	1	333.190	X			
79	282	1437	4	1	M-05	1	183.190	X			
79	263	1318	3	1	M-06	1	123.190	X			
79	282	1340	4	1	M-06	1	223.190	X			
79	206	1430	2	1	M-08	1	123.190	X			
79	263	1430	3	1	M-08	1	153.190	X			
79	282	1540	4	1	M-08	1	47.190	X			
79	206	1525	2	1	M-09	1	27.190	X			
79	263	1230	3	1	M-09	1	113.190	X			
79	282	1305	4	1	M-09	1	173.190	X			
79	263	1403	3	1	M-10	1	193.190	X			
79	89	1450	1	1	M-11	1	36.460	X			
79	89	1450	1	1	M-11	1	36.460	X			
79	263	1622	3	1	M-11	1	93.190	X			
79	282	1320	4	1	M-11	1	243.190	X			
79	206	910	2	1	M-12	1	74.190	X			
79	263	1027	3	1	M-12	1	42.190	X			
79	263	1049	3	1	M-13	1	183.190	X			
79	282	1053	4	1	M-13	1	253.190	X			
79	89	1535	1	1	M-16	1	86.460	X			
79	282	1715	4	1	M-17	1	60.190	X			
79	263	1756	3	1	M-18	1	123.190	X			
79	263	1712	3	1	M-20	1	47.190	X			
79	88	1610	1	1	M-21	1	26.460	X			
79	285	950	4	1	M-23	1	193.190	X			
79	91	1230	1	1	M-25	1	29.960	X			
79	285	1015	4	1	M-26	1	183.190	X			
79	209	840	2	1	O-01	1	36.190	X		X	
79	209	927	2	1	O-02	1	59.190	X		X	
79	260	945	3	1	O-02	1	143.190	X		X	
79	209	1022	2	1	O-04	1	48.190	X		X	
79	209	1042	2	1	O-05	1	60.190	X		X	
79	209	1108	2	1	O-06	1	42.190	X		X	
79	260	1140	3	1	O-06	1	153.190	X		X	
79	285	1640	4	1	O-06	1	25.190	X		X	
79	209	1050	2	1	O-08	1	34.190	X		X	
79	285	1130	4	1	O-08	1	37.190	X		X	
79	285	1210	4	1	O-10	1	30.190	X		X	
79	209	1515	2	1	O-11	1	83.190	X		X	
79	260	1530	3	1	O-11	1	223.190	X		X	
79	209	1245	2	1	O-12	1	71.190	X		X	
79	209	1432	2	1	O-13	1	53.190	X		X	
79	285	1315	4	1	O-14	1	37.190	X		X	
79	291	1300	4	1	O-15	1	123.190	X		X	

VIOLATIONS REPORT FOR TOTAL NICKEL (ug/l).

LIMITS IN EFFECT:

IJC	>	25.00
O-EPA NORM	>	25.00
O-EPA EX	>	200.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	212	1150	2	1	0-16	1	93.190	X	X		
79	291	1445	4	1	0-16	1	31.190	X	X		
79	291	1408	4	1	0-17	1	103.190	X	X		
79	291	1258	4	1	0-19	1	43.190	X	X		
79	212	1142	2	1	0-20	1	59.190	X	X		
79	212	1210	2	1	0-21	1	36.190	X	X		
79	256	1327	3	1	0-21	1	93.190	X	X		
79	291	1505	4	1	0-21	1	37.190	X	X		
79	291	1545	4	1	0-22	1	32.190	X	X		
79	256	1505	3	1	0-23	1	213.190	X	X		
79	212	1537	2	1	0-25	1	71.190	X	X		
79	291	1612	4	1	0-25	1	123.190	X	X		
79	212	1710	2	1	0-27	1	40.190	X	X		
79	255	1530	3	1	0-27	1	67.190	X	X		
79	291	1755	4	1	0-27	1	67.190	X	X		
79	291	1942	4	1	0-28	1	76.190	X	X		
79	294	1355	4	1	0-29	1	383.190	X	X	X	
79	215	1405	2	1	0-30	1	30.190	X	X		
79	294	1325	4	1	0-30	1	64.190	X	X		
79	252	1353	3	1	0-31	1	123.190	X	X		
79	294	1305	4	1	0-31	1	72.190	X	X		
79	252	1528	3	1	0-32	1	61.190	X	X		
79	294	1235	4	1	0-32	1	58.190	X	X		
79	215	1155	2	1	0-35	1	73.190	X	X		
79	255	1358	3	1	0-36	1	33.190	X	X		
79	291	1840	4	1	0-36	1	68.190	X	X		
79	294	1400	4	1	0-37	1	133.190	X	X		
79	252	1715	3	1	0-38	1	303.190	X	X		
79	294	1332	4	1	0-38	1	42.190	X	X		
79	294	1445	4	1	0-40	1	143.190	X	X		
79	215	1004	2	1	0-41	1	40.190	X	X		
79	294	1530	4	1	0-41	1	34.190	X	X		
79	252	1525	3	1	0-43	1	113.190	X	X		
79	294	1645	4	1	0-43	1	123.190	X	X		
79	215	1240	2	1	0-45	1	68.190	X	X		
79	252	1432	3	1	0-45	1	26.190	X	X		
79	294	1905	4	1	0-46	1	113.190	X	X		
79	294	1837	4	1	0-47	1	113.190	X	X		
79	294	1635	4	1	0-48	1	93.190	X	X		
79	294	1726	4	1	0-49	1	193.190	X	X		
79	252	1242	3	1	0-50	1	57.190	X	X		
79	294	1752	4	1	0-50	1	313.190	X	X		
79	88	1815	1	1	M-15	1	36.460	X			
79	89	1815	1	1	M-22	1	32.460	X			
79	212	1400	2	1	0-26	1	28.190	X	X		
79	215	1215	2	1	0-34	1	30.190	X	X		
79	252	1345	3	1	0-33	1	93.190	X	X		
79	291	1522	4	1	0-24	1	54.190	X	X		
79	291	1615	4	1	0-26	1	223.190	X	X		
79	294	1220	4	1	0-39	1	41.190	X	X		

VIOLATIONS REPORT FOR TOTAL NICKEL (ug/l).

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	99	303	32.67%
OHIO-EPA NORMAL	65	198	32.83%
OHIO-EPA EXCEPTED	1	75	1.33%
TOTAL	99	303	32.67%

VIOLATIONS REPORT FOR TOTAL ZINC (ug/l).

LIMITS IN EFFECT:

IJC	>	30.00
O-EPA NORM	>	30.00
O-EPA EX	>	55.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	177	924	2	1	M-01	1	34.370	X			
78	235	1120	3	1	M-01	1	53.370	X			
78	276	935	4	1	M-01	1	120.370	X			
78	276	1030	4	1	M-02	1	100.370	X			
78	276	1100	4	1	M-03	1	69.370	X			
78	276	1130	4	1	M-04	1	34.370	X			
78	276	1350	4	1	M-05	1	36.370	X			
78	276	1230	4	1	M-06	1	38.370	X			
78	114	1240	1	1	M-07	1	44.370	X			
78	114	1330	1	1	M-08	1	61.370	X			
78	235	1500	3	1	M-08	1	62.370	X			
78	235	1230	3	1	M-09	1	60.370	X			
78	276	1150	4	1	M-09	1	32.370	X			
78	276	1350	4	1	M-10	1	31.370	X			
78	114	1622	1	1	M-11	1	70.370	X			
78	235	1635	3	1	M-11	1	52.370	X			
78	276	1420	4	1	M-11	1	43.370	X			
78	115	1000	1	1	M-12	1	44.370	X			
78	235	1010	3	1	M-12	1	120.370	X			
78	115	1045	1	1	M-13	1	62.370	X			
78	235	1045	3	1	M-13	1	120.370	X			
78	115	1135	1	1	M-14	1	160.370	X			
78	235	1110	3	1	M-14	1	280.370	X			
78	235	1150	3	1	M-15	1	280.370	X			
78	276	1105	4	1	M-15	1	43.370	X			
78	115	920	1	1	M-16	1	44.370	X			
78	235	1715	3	1	M-16	1	170.370	X			
78	115	1012	1	1	M-17	1	61.370	X			
78	235	1735	3	1	M-17	1	160.370	X			
78	115	1115	1	1	M-18	1	66.370	X			
78	235	1815	3	1	M-18	1	160.370	X			
78	115	1540	1	1	M-19	1	44.370	X			
78	235	1610	3	1	M-19	1	210.370	X			
78	115	1620	1	1	M-20	1	80.370	X			
78	235	1635	3	1	M-20	1	300.370	X			
78	115	1700	1	1	M-21	1	90.370	X			
78	235	1700	3	1	M-21	1	210.370	X			
78	238	1135	3	1	M-22	1	240.370	X			
78	118	1402	1	1	M-23	1	31.370	X			
78	238	1100	3	1	M-23	1	170.370	X			
78	238	1130	3	1	M-24	1	260.370	X			
78	238	1213	3	1	M-25	1	230.370	X			
78	238	1025	3	1	M-26	1	280.370	X			
78	118	1537	1	1	M-27	1	52.370	X			
78	238	930	3	1	M-27	1	220.370	X			
78	280	935	4	1	M-27	1	90.370	X			
78	178	1735	2	1	O-01	1	180.370	X	X	X	
78	181	840	2	1	O-02	1	90.370	X	X	X	
78	181	925	2	1	O-03	1	120.370	X	X	X	

VIOLATIONS REPORT FOR TOTAL ZINC (ug/l).

LIMITS IN EFFECT:

IJC	>	30.00
O-EPA NORM	>	30.00
O-EPA EX	>	55.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	181	1005	2	1	0-04	1	80.370	X	X	X	
78	181	1100	2	1	0-05	1	100.370	X	X		
78	181	1130	2	1	0-06	1	80.370	X	X		
78	181	1200	2	1	0-07	1	42.370	X	X		
78	181	1140	2	1	0-08	1	130.370	X	X	X	
78	280	1510	4	1	0-09	1	31.370	X	X		
78	181	1050	2	1	0-10	1	90.370	X	X	X	
78	280	1445	4	1	0-10	1	35.370	X	X		
78	181	1435	2	1	0-11	1	140.370	X	X		
78	181	1320	2	1	0-13	1	68.370	X	X		
78	181	950	2	1	0-14	1	80.370	X	X		
78	181	950	2	1	0-14	1	90.370	X	X		
78	188	1019	2	1	0-15	1	54.370	X	X		
78	188	1110	2	1	0-16	1	90.370	X	X	X	
78	188	1038	2	1	0-17	1	59.370	X	X		
78	188	1130	2	1	0-18	1	49.370	X	X		
78	188	1235	2	1	0-19	1	80.370	X	X		
78	106	1015	1	1	0-20	1	140.370	X	X		
78	188	1300	2	1	0-20	1	65.370	X	X		
78	188	1130	2	1	0-21	1	190.370	X	X	X	
78	188	1254	2	1	0-22	1	31.370	X	X		
78	188	1320	2	1	0-23	1	90.370	X	X		
78	249	1130	3	1	0-23	1	40.370	X	X		
78	188	1426	2	1	0-24	1	180.370	X	X		
78	284	1327	4	1	0-24	1	38.370	X	X		
78	104	1250	1	1	0-25	1	100.370	X	X		
78	188	1510	2	1	0-25	1	66.370	X	X		
78	188	1354	2	1	0-26	1	110.370	X	X		
78	188	1755	2	1	0-27	1	42.370	X	X		
78	191	1222	2	1	0-29	1	70.370	X	X	X	
78	191	1125	2	1	0-30	1	53.370	X	X		
78	191	1300	2	1	0-31	1	50.370	X	X		
78	191	1340	2	1	0-32	1	48.370	X	X		
78	288	1350	4	1	0-32	1	32.370	X	X		
78	191	1423	2	1	0-33	1	50.370	X	X		
78	191	1445	2	1	0-34	1	60.370	X	X	X	
78	191	1525	2	1	0-35	1	43.370	X	X		
78	188	1654	2	1	0-36	1	42.370	X	X		
78	191	1000	2	1	0-37	1	50.370	X	X		
78	191	1025	2	1	0-38	1	33.370	X	X		
78	252	945	3	1	0-38	1	69.370	X	X		
78	191	1120	2	1	0-39	1	53.370	X	X		
78	252	1020	3	1	0-39	1	110.370	X	X		
78	191	1203	2	1	0-40	1	40.370	X	X		
78	252	1118	3	1	0-40	1	80.370	X	X		
78	191	-98	2	1	0-41	1	50.370	X	X		
78	252	1405	3	1	0-41	1	90.370	X	X		
78	252	1155	3	1	0-42	1	90.370	X	X		
78	191	1330	2	1	0-43	1	63.370	X	X		
78	252	1227	3	1	0-43	1	70.370	X	X		

VIOLATIONS REPORT FOR TOTAL ZINC (ug/l).

LIMITS IN EFFECT:

IJC	>	30.00
O-EPA NORM	>	30.00
O-EPA EX	>	55.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	191	1635	2	1	O-45	1	36.370	X	X		
78	191	-98	2	1	O-46	1	80.370	X	X		
78	191	1530	2	1	O-47	1	57.370	X	X		
78	252	1355	3	1	O-47	1	180.370	X	X		
78	192	915	2	1	O-48	1	69.370	X	X		
78	252	1430	3	1	O-48	1	160.370	X	X		
78	191	1415	2	1	O-49	1	54.370	X	X		
78	252	1252	3	1	O-49	1	110.370	X	X		
78	191	1455	2	1	O-50	1	30.370	X	X		
78	252	1320	3	1	O-50	1	150.370	X	X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	109	309	35.27%
OHIO-EPA NORMAL	63	201	31.34%
OHIO-EPA EXCEPTED	10	75	13.33%
TOTAL	109	309	35.27%

VIOLATIONS REPORT FOR TOTAL ARSENIC (ug/l).

LIMITS IN EFFECT:

IJC	>	50.00
O-EPA NORM	>	50.00
O-EPA EX	>	100.00
MICH DNR	>	100.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR

1978

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	0	309	0.00%
OHIO-EPA NORMAL	0	201	0.00%
OHIO-EPA EXCEPTED	0	75	0.00%
MICHIGAN DNR	0	108	0.00%
TOTAL	0	309	0.00%

VIOLATIONS REPORT FOR TOTAL ARSENIC (ug/l).

LIMITS IN EFFECT:

IJC	>	50.00
O-EPA NORM	>	50.00
O-EPA EX	>	100.00
MICH DNR	>	100.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
1979											

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	0	304	0.00%
OHIO-EPA NORMAL	0	198	0.00%
OHIO-EPA EXCEPTED	0	75	0.00%
MICHIGAN DNR	0	106	0.00%
TOTAL	0	304	0.00%

VIOLATIONS REPORT FOR TOTAL MERCURY (ug/l).

LIMITS IN EFFECT:

IJC	>	0.20
O-EPA NORM	>	0.20
O-EPA EX	>	0.20
MICH DNR	>	0.05

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
1978											

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	0	303	0.00%
OHIO-EPA NORMAL	0	195	0.00%
OHIO-EPA EXCEPTED	0	73	0.00%
MICHIGAN DNR	0	108	0.00%
TOTAL	0	303	0.00%

VIOLATIONS REPORT FOR TOTAL MERCURY (ug/l).

LIMITS IN EFFECT:

IJC	>	0.20
O-EPA NORM	>	0.20
O-EPA EX	>	0.20
MICH DNR	>	0.05

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	206	920	2	1	M-01	1	0.089				X
79	88	1720	1	1	M-03	1	0.219	X			X
79	206	1040	2	1	M-03	1	0.089				X
79	206	1140	2	1	M-04	1	0.089				X
79	263	1224	3	1	M-04	1	0.350	X			X
79	206	1340	2	1	M-05	1	0.089				X
79	263	1353	3	1	M-05	1	0.340	X			X
79	206	1300	2	1	M-06	1	0.089				X
79	263	1318	3	1	M-06	1	0.260	X			X
79	206	1215	2	1	M-07	1	0.089				X
79	206	1430	2	1	M-08	1	0.089				X
79	263	1430	3	1	M-08	1	0.250	X			X
79	282	1540	4	1	M-08	1	0.095				X
79	88	1440	1	1	M-09	1	0.054				X
79	206	1525	2	1	M-09	1	0.089				X
79	263	1230	3	1	M-09	1	0.064				X
79	206	1300	2	1	M-10	1	0.089				X
79	206	1330	2	1	M-11	1	0.089				X
79	263	1622	3	1	M-11	1	0.140				X
79	206	910	2	1	M-12	1	0.089				X
79	263	1027	3	1	M-12	1	0.064				X
79	206	945	2	1	M-13	1	0.089				X
79	206	1150	2	1	M-15	1	0.089				X
79	206	1440	2	1	M-16	1	0.089				X
79	206	1600	2	1	M-17	1	0.089				X
79	263	1700	3	1	M-17	1	0.064				X
79	89	1750	1	1	M-18	1	0.084				X
79	206	1620	2	1	M-18	1	0.089				X
79	206	1825	2	1	M-19	1	0.089				X
79	263	1736	3	1	M-19	1	0.051				X
79	263	1712	3	1	M-20	1	0.071				X
79	88	1610	1	1	M-21	1	0.419	X			X
79	260	1208	3	1	M-23	1	0.150				X
79	91	1300	1	1	M-24	1	5.984	X			X
79	260	1227	3	1	M-25	1	0.051				X
79	285	1800	4	1	O-03	1	0.220	X	X	X	
79	285	1707	4	1	O-05	1	0.250	X	X		
79	285	1130	4	1	O-08	1	0.340	X	X	X	
79	285	1145	4	1	O-09	1	0.390	X	X	X	
79	256	1600	3	1	O-25	1	0.290	X	X		
79	255	1530	3	1	O-27	1	0.230	X	X		
79	291	1755	4	1	O-27	1	0.220	X	X		
79	255	1450	3	1	O-28	1	0.230	X	X		
79	291	1942	4	1	O-28	1	0.680	X	X		
79	294	1355	4	1	O-29	1	0.240	X	X	X	
79	294	1325	4	1	O-30	1	0.240	X	X	X	
79	252	1353	3	1	O-31	1	0.220	X	X	X	
79	294	1332	4	1	O-38	1	0.250	X	X		

VIOLATIONS REPORT FOR TOTAL MERCURY (ug/l) -

LIMITS IN EFFECT:

IJC	>	0.20
O-EPA NORM	>	0.20
O-EPA EX	>	0.20
MICH DNR	>	0.05

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	252	1500	3	1	O-44	1	0.540	X	X	X	
79	103	1315	1	1	O-49	1	0.309	X	X		
79	206	1020	2	1	M-14	1	0.089				X
79	285	1400	4	1	O-07	1	0.250	X	X		

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	23	303	7.59%
OHIO-EPA NORMAL	16	198	8.08%
OHIO-EPA EXCEPTED	7	75	9.33%
MICHIGAN DNR	36	105	34.28%
TOTAL	52	303	17.16%

VIOLATIONS REPORT FOR TOTAL SELENIUM (ug/l).

LIMITS IN EFFECT:

IJC	>	10.00
O-EPA NORM	>	10.00
O-EPA EX	>	50.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	284	1330	4	1	O-23	1	12.000	X	X		
78	288	1058	4	1	O-34	1	12.000	X	X		

SUMMARY:

—ORGANIZATION—	VIOLATIONS	SAMPLES	PERCENT
IJC	2	308	0.65%
OHIO-EPA NORMAL	2	200	1.00%
OHIO-EPA EXCEPTED	0	75	0.00%
TOTAL	2	308	0.65%

VIOLATIONS REPORT FOR TOTAL LEAD (ug/l).

LIMITS IN EFFECT:

IJC	>	25.00
O-EPA NORM	>	30.00
O-EPA EX	>	30.00
MICH DNR	>	30.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
78	235	1410	3	1	M-04	1	60.181	X			X
78	235	1110	3	1	M-14	1	26.181	X			
78	235	1815	3	1	M-18	1	27.181	X			
78	235	1635	3	1	M-20	1	28.181	X			
78	238	1213	3	1	M-25	1	31.181	X			X
78	238	1025	3	1	M-26	1	38.181	X			X
78	238	930	3	1	M-27	1	40.181	X			X

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	7	308	2.27%
OHIO-EPA NORMAL	0	200	0.00%
OHIO-EPA EXCEPTED	0	75	0.00%
MICHIGAN DNR	4	108	3.70%
TOTAL	7	308	2.27%

VIOLATIONS REPORT FOR TOTAL LEAD (ug/l).

LIMITS IN EFFECT:

IJC	>	25.00
O-EPA NORM	>	30.00
O-EPA EX	>	30.00
MICH DNR	>	30.00

YEAR	DAY	TIME	CRUISE	RUN	STA	DEPTH CODE	VALUE	OBJECTIVES & STANDARDS IJC	EPANORM	EPAEX	MICHDNR
79	263	1811	3	1	M-22	1	71.962	X			X
79	260	1208	3	1	M-23	1	71.962	X			X

SUMMARY:

--ORGANIZATION--	VIOLATIONS	SAMPLES	PERCENT
IJC	2	302	0.66%
OHIO-EPA NORMAL	0	198	0.00%
OHIO-EPA EXCEPTED	0	75	0.00%
MICHIGAN DNR	2	104	1.92%
TOTAL	2	302	0.66%

APPENDIX B

VIOLATIONS, ORGANIC CONTAMINANTS IN WATER

Listing of stations, dates and measured values for water quality violations in the nearshore waters of western Lake Erie for 1978 and 1979.

VIOLATIONS REPORT FOR ORGANIC CONTAMINANTS

Parameter	Limits in Effect (µg/l) IJC Water	O-EPA PWS*	O-EPA Water	M-DNR Water	Year	Julian Date	Station	Depth	Violations IJC Water	O-EPA PWS*	O-EPA Water	M-DNR Water	Value	No. of Samples	No. of Violations	% of Violations
Aldrin/dieldrin (Combined values)	0.001				1979	116	0-8	S	X				0.03	58	2	3.4
					1979	116	0-34	S	X				0.03			
Chlordane	0.060	3.0	0.01											58	0	0
DDT		50.0	0.001		1979	116	0-3	B			X		0.08	116	2	1.7
					1979	116	0-4	B			X		0.01			
Aldrin		1.0	0.01				0-3							58	0	0
Dieldrin		1.0	0.005		1979	116	0-3	S			X		0.02	58	3	5.2
					1979	116	0-8	S			X		0.03			
					1979	116	0-34	S			X		0.03			
Endrin	0.002													12	0	0
Lindane	0.010	4.0	0.01											58	0	0
Heptachlor		0.1	0.001											46	0	0
Heptachlor epoxide		0.1	0.001											12	0	0
Heptachlor heptachlor epoxide (Combined values)	0.001													58	0	0
Diazinon			0.09											58	0	0
														46	0	0
Methoxychlor	0.040	100.0	0.005											58	0	0
Benzene hexachloride			0.1											70	0	0
Mirex	<d.l.		0.001											58	0	0
Disopropyl ester		100.0												58	0	0
Malathion			0.1													
Parathion			0.008											46	0	0
Endosulfan			0.003		1979	116	0-8	S	X		X		0.01	24	1	4.2
Dibutylphthalate	4.0			4.0	1978	151	M-12	B	X			X	12.7	44	3	6.8
					1978	199	0-2	B	X			X	5.0			
					1978	199	M-12	B	X			X	4.1			
Di (2-ethylhexyl phthalate)	0.600			0.6	1978	151	0-4	B	X			X	19.1	44	34	77.3
					1978	151	0-8	S	X			X	15.8			
					1978	151	0-34	S	X			X	13.0			
					1978	151	M-12	B	X			X	44.5			
					1978	151	M-16	S	X			X	18.0			
					1978	199	0-2	B	X			X	16.8			
					1978	199	0-3	S	X			X	7.0			
					1978	199	0-3	B	X			X	113			
					1978	199	0-4	S	X			X	49			
					1978	199	0-4	B	X			X	28			
					1978	199	0-8	S	X			X	47			
					1978	199	0-34	S	X			X	26			
					1978	199	0-12	S	X			X	46			
					1978	199	0-12	S	X			X	41			
					1978	199	M-16	S	X			X	15			
					1978	242	0-1	S	X			X	69			
					1978	242	0-2	S	X			X	26			
					1978	242	0-2	B	X			X	176			
					1978	242	0-2	S	X			X	97			
					1978	242	0-3	B	X			X	511			
					1978	242	0-4	S	X			X	45			
					1978	242	0-4	B	X			X	14			
					1978	242	0-8	S	X			X	6.8			
					1978	242	0-34	S	X			X	12			
					1978	242	M-12	S	X			X	24			
					1978	242	M-12	B	X			X	14			
					1978	242	M-16	S	X			X	1.7			
					1978	242	0-1	S	X			X	42			
					1978	283	0-1	B	X			X	148			
					1978	283	0-2	S	X			X	4.4			
					1978	283	0-3	S	X			X	39			
					1978	283	0-4	B	X			X	16			
					1978	283	M-12	S	X			X	249			
					1978	283	M-16	S	X			X	40			
Other Phthalates	0.2			0.2	1978	151	0-4	B	X			X	1.6	136	63	46.3
					1978	151	0-8	S	X			X	2.0			
Diethylphthalate					1978	151	0-34	S	X			X	2.6			
					1978	151	M-12	B	X			X	3.3			
					1978	151	M-16	S	X			X	1.6			
					1978	199	0-2	S	X			X	2.8			
					1978	199	0-2	B	X			X	4.1			
					1978	199	0-3	S	X			X	2.3			
					1978	199	0-8	S	X			X	1.4			
					1978	199	0-34	S	X			X	0.7			
					1978	199	M-12	S	X			X	0.6			
					1978	199	M-12	B	X			X	3.1			
					1978	199	M-16	S	X			X	3.4			
					1978	242	0-1	S	X			X	5.7			

VIOLATIONS REPORT FOR ORGANIC CONTAMINANTS CONT.

Parameter	Limits in Effect (µg/l) IJC Water	O-EPA PWS*	O-EPA Water	M-DNR Water	Year	Julian Date	Station	Depth	Violations IJC Water	O-EPA PWS*	O-EPA Water	M-DNR Water	Value	No. of Samples	No. of Violations	% of Violations
					1978	242	O-2	S	X			X	27			
					1978	242	O-2	B	X			X	5.5			
					1978	242	O-2	S	X			X	2.2			
					1978	242	O-3	B	X			X	10.8			
					1978	242	O-4	S	X			X	2.8			
					1978	242	O-4	B	X			X	2.7			
					1978	242	O-34	S	X			X	3.2			
					1978	242	M-12	S	X			X	2.1			
					1978	242	M-12	B	X			X	2.2			
					1978	242	M-16	B	X			X	1.7			
					1978	283	O-1	S	X			X	2.2			
					1978	283	O-1	B	X			X	1.9			
					1978	283	O-2	S	X			X	1.3			
					1978	283	O-3	S	X			X	0.5			
					1978	283	M-12	S	X			X	10.6			
					1978	283	M-16	S	X			X	3.0			
Butylbenzyl phthalate	0.2			0.2	1978	151	O-1	S	X			X	2.6			
					1978	151	O-4	B	X			X	2.3			
					1978	151	O-8	S	X			X	1.5			
					1978	151	O-34	S	X			X	2.3			
					1978	151	M-12	B	X			X	2.0			
					1978	151	M-16	S	X			X	2.0			
					1978	199	O-2	S	X			X	3.0			
					1978	199	O-2	B	X			X	12.2			
					1978	199	O-3	S	X			X	4.0			
					1978	199	O-3	B	X			X	2.0			
					1978	199	O-4	S	X			X	0.3			
					1978	199	O-4	B	X			X	0.8			
					1978	199	O-8	S	X			X	4.9			
					1978	199	O-34	S	X			X	1.2			
					1978	199	M-12	S	X			X	2.6			
					1978	199	M-12	B	X			X	1.9			
					1978	199	M-16	S	X			X	3.0			
					1978	242	O-1	S	X			X	4.2			
					1978	242	O-2	B	X			X	3.8			
					1978	242	O-2	S	X			X	2.8			
					1978	242	O-3	B	X			X	10.1			
					1978	242	O-4	S	X			X	3.6			
					1978	242	O-4	B	X			X	3.1			
					1978	242	O-8	S	X			X	0.5			
					1978	242	O-34	S	X			X	3.9			
					1978	242	M-12	S	X			X	5.6			
					1978	242	M-16	S	X			X	5.1			
					1978	283	O-1	S	X			X	5.2			
					1978	283	O-1	B	X			X	5.1			
					1978	283	O-2	S	X			X	3.5			
					1978	283	O-3	B	X			X	2.3			
					1978	283	M-12	S	X			X	3.7			
					1978	283	M-16	S	X			X	4.9			
PCBs				0.001	1978									522	0	0

*Public Water Supply

APPENDIX C

VIOLATIONS, ORGANIC CONTAMINANTS IN FISH

Listing of stations, year and measured values for organic contaminants in fish samples from the nearshore waters of western Lake Erie for 1978 and 1979.

APPENDIX C

VIOLATIONS REPORT FOR ORGANIC CONTAMINANTS IN FISH

1978 - 1979

Parameter	Limits in Effect (ug/g)			Violations										Data Source[3]
	IJC	FDA		Year	Station[1]	IJC	FDA		Species	Value	No. of Violations	No. of Samples at station[2]	% Violations at Station	
		Current	Proposed				Current	Proposed						
DDT/ Metabolites	1.0 (whole fish)	5.0		1979	0-29	X			Channel catfish	2.34	1	11	9.1	Burby
Mirex	<detec-tion limit			1979	0-29	X			Freshwater Drum	0.04	7	11	63.6	Burby
						X			Freshwater Drum	0.02				
						X			Gizzard Shad	0.06				
						X			White Bass	0.02				
						X			White Bass	0.04				
						X			Carp	0.02				
						X			Catfish	0.02				
					0-2	X			Gizzard Shad	0.03	5	6	83.3	Burby
						X			Spottail Shiner	0.02				
						X			Yellow Perch	0.01				
						X			White Bass	0.03				
						X			Carp	0.01				
					M-12	X			Spottail Shiner	0.05	1	4	25.0	Burby
PCBs	0.1 (whole fish)	5.0	2.0	1979	0-21	X			Freshwater Drum	1.07	4	4	100.0	Burby
						X			Carp	0.87				
						X			White Bass	0.41				
						X			White Bass	0.71				
					0-29	X			Gizzard Shad	1.06	8	11	72.7	Burby
						X			White Bass	0.27				
						X			White Bass	0.63				
						X			White Bass	0.86				
						X			Yellow Perch	0.38				
						X			Yellow Perch	0.42				
						X			Carp	0.57				
						X	X	X	Catfish	5.10				
					0-2	X			White Bass	0.71	6	6	100.0	Burby
									Gizzard Shad	0.92				
									Spottail Shiner	1.70				
									Yellow Perch	1.40				
									White Bass	1.56				
						X		X	Carp	3.78				
					M-12	X	X	X	Carp	18	4	4	100.0	Burby
						X	X	X	Spottail Shiner	5.76				
						X	X	X	Brown Bullhead	9.61				
						X		X	Gizzard Shad	3.20				
				1978	0-23	X	X	X	Channel Catfish	6.58	15	15	100.0	Gessner
						X		X	Channel Catfish	4.80				
						X	X	X	Channel Catfish	5.49				
						X		X	Channel Catfish	4.67				
						X		X	Channel Catfish	4.15				
						X		X	Channel Catfish	4.93				
						X		X	Channel Catfish	4.75				
						X		X	Channel Catfish	4.30				

APPENDIX C

VIOLATIONS REPORT FOR ORGANIC CONTAMINANTS IN FISH
1978 - 1979 (continued)

Parameter	Limits in Effect (µg/g)			Violations										
	IJC	FDA		Year	Station[1]	IJC	FDA		Species	Value	No. of Violations	No. of Samples at Station[2]	% Violations at Station	Data Source[3]
		Current	Proposed				Current	Proposed						
PCBs				1978	0-23	X		X	Channel Catfish	4.21				Gessner
						X		X	Channel Catfish	4.73				
						X		X	Channel Catfish	2.85				
						X		X	Channel Catfish	4.57				
						X		X	Channel Catfish	4.44				
						X		X	Channel Catfish	3.01				
						X		X	Channel Catfish	4.39				
				1978	0-39	X			Freshwater Drum	1.42	15	15	100.0	Gessner
						X			Freshwater Drum	1.45				
						X		X	Freshwater Drum	3.45				
						X			Freshwater Drum	1.52				
						X			Freshwater Drum	1.04				
						X		X	Freshwater Drum	2.76				
						X			Freshwater Drum	1.39				
						X			Freshwater Drum	1.60				
						X			Freshwater Drum	1.34				
						X			Freshwater Drum	0.69				
						X			Freshwater Drum	0.58				
						X			Freshwater Drum	1.45				
						X			Freshwater Drum	1.14				
						X			Freshwater Drum	1.26				
						X			Freshwater Drum	1.47				
				1978	0-15, 0-40	X			Yellow Perch	1.12	15	15	100.0	Gessner
						X			Yellow Perch	1.70				
						X			Yellow Perch	1.50				
						X			Yellow Perch	1.34				
						X			Yellow Perch	2.00				
						X		X	Yellow Perch	2.24				
						X		X	Yellow Perch	2.95				
						X		X	Yellow Perch	2.16				
						X			Yellow Perch	1.51				
						X			Yellow Perch	1.62				
						X		X	Yellow Perch	2.57				
						X			Yellow Perch	1.58				
						X			Yellow Perch	1.83				

APPENDIX C

VIOLATIONS REPORT FOR ORGANIC CONTAMINANTS IN FISH

1978 - 1979 (continued)

Parameter	Limits in Effect (ug/g)			Violations										
	IJC	FDA		Year	Station[1]	IJC	FDA		Species	Value	No. of Violations	No. of Samples at Station[2]	% Violations at Station	Data Source[3]
		Current	Proposed				Current	Proposed						
PCBs				1978	0-15, 0-40	X			Yellow Perch	1.51				Gessner
						X		X	Yellow Perch	2.23				
				1978	0-21, 0-36	X		X	Walleye	3.41	15	15	100.0	Gessner
						X		X	Walleye	2.16				
						X		X	Walleye	2.21				
						X		X	Walleye	3.92				
						X		X	Walleye	2.21				
						X		X	Walleye	2.12				
						X		X	Walleye	2.61				
						X		X	Walleye	2.54				
						X			Walleye	1.62				
						X			Walleye	1.84				
						X			Walleye	2.23				
						X		X	Walleye	2.21				
						X		X	Walleye	2.12				
						X		X	Walleye	2.15				
						X		X	Walleye	1.98				

[1] Nearshore stations given are those closest to the fish collection locations used in these studies.

[2] All samples were homogenized, with variable numbers of fish per sample.

[3] Gessner, Mary L. 1980. Pesticide and PCB Levels in Fillet and whole Body Portions of Five Lake Erie Fish Species, Ohio State University. Master's Thesis.

Burby, Brian G., Mark D. Barnes and Charles E. Herdendorf. 1980. Organochlorine Contaminant Concentrations and Uptake Rates in Fishes in Lake Erie Tributary Mouths. Paper presented at the 42nd Conference on Fish and Wildlife Management, St. Paul, Minnesota, December 9, 1980.