MICHIGAN WATER CHEMISTRY MONITORING Great Lakes Tributaries

1998-2005 Report

TABLE OF CONTENTS

<u>Sect</u>	<u>ion</u>		Pa	age
List	of Tab	les		iii
List	of Fig	ures		iv
1.0	High	lights		1
2.0	Intro	duction		3
3.0	Stud	v Desig	n and Methods	4
0.0	2 1	Watar	and Montoue Station Soloation, and Manitaring Schodulag	
	J. I	vvalers	shed Selection, Station Selection, and Monitoring Schedules	4
		3.1.1	Intensive Sites	4
		3.1.2	Integrator Sites	5
		3.1.3	Minimally Impacted Sites	5
		3.1.4	Probabilistic Sites	6
	3.2	Sampl	e Collection and Chemical Analyses	6
		321	Nutrients and Conventionals	6
		322	Mercury and Trace Metals	0
		323	Polychlorinated Rinhenvis	0
		324	Pesticides	7
		0.2.4		
	3.3	Summ	ary Statistics	7
		331	Handling of Lincensored and Coded Data	7
		333	Measures of Central Tendency	<i>1</i> Q
		333	Spatial Comparisons	0 Q
		0.0.0 0 0 1	Jeading Data Estimatos	0 0
		3.3.4 2.2 E	Comparisons with Michigan Dule 57 Water Quality Values	0
		3.3.3 2.2.6	Tomparisons with Michigan Rule 57 Water Quality Values	0
		3.3.0	Temporal Trenu Analyses	9
4.0	Resi	ults, Sui	mmary Statistics, and Discussion	. 10
	4.1 4.2	Measu Spatia	res of Central Tendency	. 10 . 10
		4.2.1	Spatial Comparisons among Intensive and Integrator Sites	. 10
			 4.2.1.1 Phosphorus, Chloride, and Suspended Solids 4.2.1.2 Mercury and Trace Metals 4.2.1.3 Polychlorinated Biphenyls 	. 10 . 11 . 11
		4.2.2	Spatial Comparisons between Minimally Impacted and Potentially Impacted Sites	.11

TABLE OF CONTENTS

			4.2.2.1 4.2.2.2	Phosphorus, Chloride, and Suspended Solids Mercury and Trace Metals	11 11
		4.2.3	Pesticide	es	11
	4.3	Loadir	ng Rate E	stimates	12
		4.3.1 4.3.2 4.3.3	Phospho Mercury Polychlo	orus, Chloride, and Suspended Solids and Trace Metals rinated Biphenyls	
	4.4	Compa	arisons W	/ith Michigan Rule 57 Water Quality Values	12
		4.4.1 4.4.2 4.4.3	Mercury Polychic Pesticide	and Trace Metals rinated Biphenyls es	13 13 13
	4.5	Tempo	oral Trenc	I Analyses	13
5.0	Refe	rences			15
Appe	endix				

LIST OF TABLES

		<u>Page</u>
Table 1	WCMP tributary station location information	16
Table 2	Nutrients and conventionals analyzed for the WCMP, and their analytical methods and quantification levels	17
Table 3	Mercury and trace metals analyzed for the WCMP, and their analytical detection and quantification levels	18
Table 4	PCB congeners analyzed for the WCMP, and their analytical detection and quantification levels for a 160 liter sample	19
Table 5	Pesticides analyzed in 2005 at WCMP intensive and intensively monitored integrator sites, and their analytical quantification levels	20
Table 6	Summary of laboratory result remark codes and their definitions	21
Table 7	WCMP tributary station sampling history	22
Table 8	Mean, median, minimum and maximum concentrations of total phosphorus, chloride, TSS, Hg, Cr, Cu and Pb at intensive and integrator sites	23
Table 9	Mean, median, minimum and maximum concentrations of total PCBs at intensive and integrator sites	25
Table 10	2005 loading rate estimates for total phosphorus, chloride, TSS, Hg, Cr, Cu, Pb and PCB	26
Table 11	Rule 57 water quality values, 2005 means and ranges of concentrations, and exceedance rates for total mercury and trace metal water quality indicators	29
Table 12	Concentrations of total PCBs measured in Michigan rivers in 2005	34
Table 13	Summary of 1998-2005 temporal trends at WCMP sites exhibiting a trend	35

LIST OF FIGURES

		<u>Page</u>
Figure 1	Monitoring cycle year 2005 watersheds	. 36
Figure 2	Monitoring cycle year 2006 watersheds	. 37
Figure 3	Monitoring cycle year 2007 watersheds	. 38
Figure 4	Monitoring cycle year 2008 watersheds	. 39
Figure 5	Monitoring cycle year 2009 watersheds	.40
Figure 6	WCMP intensive sites and their associated watersheds	.41
Figure 7	WCMP integrator sites and their associated watersheds	.42
Figure 8	Diagram of the features of a box plot	. 43
Figure 9	Total phosphorus concentrations measured in 1998-2005 at intensive and integrator sites	. 44
Figure 10	Total chloride concentrations measured in 1998-2005 at intensive and integrator sites	.45
Figure 11	Total suspended solids concentrations measured in 1998-2005 at intensive and integrator sites	. 46
Figure 12	Total mercury concentrations measured in 1998-2005 at intensive and integrator sites	. 47
Figure 13	Total chromium concentrations measured in 1998-2005 at intensive and integrator sites	. 48
Figure 14	Total copper concentrations measured in 1998-2005 at intensive and integrator sites	49
Figure 15	Total lead concentrations measured in 1998-2005 at all intensive and integrator sites	. 50
Figure 16	Total PCB concentrations measured in 1998-2005 at intensive and integrator sites	. 51
Figure 17	Total phosphorus concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites	. 52
Figure 18	Total chloride concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites	. 53

LIST OF FIGURES

<u>Page</u>

Figure 19	Total suspended solids concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites
Figure 20	Total mercury concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites
Figure 21	Total chromium concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites
Figure 22	Total copper concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites
Figure 23	Total lead concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites
Figure 24	Au Sable River hydrograph
Figure 25	Cheboygan River hydrograph60
Figure 26	Clinton River hydrograph61
Figure 27	Escanaba River hydrograph
Figure 28	Lower Grand River hydrograph63
Figure 29	Lower Kalamazoo River hydrograph64
Figure 30	Lower Muskegon River hydrograph65
Figure 31	Pere Marquette River hydrograph
Figure 32	River Rouge hydrograph67
Figure 33	Saginaw River hydrograph68
Figure 34	Shiawassee River hydrograph69
Figure 35	Lower St. Joseph River hydrograph70
Figure 36	Thunder Bay River hydrograph71

SECTION 1.0

HIGHLIGHTS

 This report by the Michigan Department of Environmental Quality (MDEQ), Water Bureau (WB), describes the tributary monitoring component of the Michigan Water Chemistry Monitoring Project (WCMP); it describes the tributary monitoring efforts undertaken as part of the WCMP in 2005 and summarizes those results; and it summarizes previously published tributary monitoring results obtained from the WCMP during 1998-2005. Highlights from this report are grouped below by these two periods of interest.

<u>2005</u>

- Samples were collected at 38 stations in 31 tributary watersheds. Sampling stations were located at or near the mouth of the main stream of each watershed; at a midreach location in selected large watersheds; and at 7 minimally impacted sites. Thirteen of 38 stations were sampled intensively (12 times) during periods of base/low flow and high flow, with an attempted emphasis on the latter. The remaining 25 stations were sampled nonintensively (4 times) without regard to stream flow conditions.
- Contaminants sampled included nutrients, conventionals, low-level mercury (Hg), chromium (Cr), copper (Cu), and lead (Pb) (all stations); polychlorinated biphenyls (PCBs) (selected stations); and the pesticides atrazine, metolachlor, simazine, chlorpyrifos, and diazinon (selected stations).
- All samples analyzed for trace metals met applicable Michigan Rule 57 water quality values. Likewise, all total Hg samples collected at 6 of 38 sites (the Au Sable, Boardman, Cheboygan, and Pigeon Rivers, the Shiawassee River Headwaters, and the Thunder Bay River Headwaters) met the Michigan Rule 57 water quality value of 1.3 nanograms per liter (ng/L) for Hg. At 26 sites, total Hg exceeded 1.3 ng/L in at least 50% of samples collected.
- Total PCB concentrations ranged from 0.082-18 ng/L at the 10 locations sampled for this contaminant. The lowest and highest concentrations were found in samples collected at the Thunder Bay River Headwaters and the Lower Kalamazoo River, respectively. All concentrations exceeded the PCB Rule 57 water quality value of 0.026 ng/L.
- Atrazine, metolachlor, and simazine were found above analytical quantification in 94%, 91%, and 86% of all samples collected, respectively. In contrast, chlorpyrifos and diazinon were below analytical quantification in all samples. Only one sample, collected in June from the Black River, potentially exceeded the Michigan Rule 57 water quality value for any pesticide analyzed at any location during the study. This sample was collected following herbicide application and recent rainfall, and potentially exceeded the Michigan Rule 57 water quality value for atrazine (FCV = 7.3 micrograms per liter [ug/L]) with an atrazine concentration of 10 ug/L.
- Among stations for which 2005 contaminant loading rates were estimated, these ranged from 10-288 metric tons per year (mt/year) total phosphorus, 4,140-224,000 mt/year total chloride, 494-59,900 mt/year total suspended solids (TSS), 0.39-8 kilograms per year (kg/year) total Hg, 8-1,560 kg/year total Cr, 310-6,740 kg/year total Cu, 43-2,830 kg/year total Pb, and 5-16 kg/year total PCB. The Au Sable and Saginaw Rivers generally contributed the smallest and largest contaminant loadings, respectively, to the Great Lakes in 2005.

2005 concentrations of most contaminants at most minimally impacted sites were lower than
or comparable to those measured at their respective potentially impacted sites. One
exception was TSS, which was generally higher at most minimally impacted sites.

<u>1998-2005</u>

- Median normalized total phosphorus, chloride, and TSS concentrations from 1998-2005 exceeded historic background concentrations at approximately 45%, 68%, and 58% of the 31 sites evaluated, respectively.
- During 1998-2005, median normalized total Hg ranged from 0.028 ng/L at the Au Sable River, to 5.5 ng/L at the Lower Kalamazoo River; median normalized total Cr ranged from 0.02 ug/L at the Au Sable River, to 1.8 ug/L at the River Rouge; median normalized total Cu ranged from 0.23 ug/L at the Au Sable River, to 3.6 ug/L at the Clinton River; and median normalized total Pb ranged from 0.04 ug/L at the Au Sable River, to 2.3 ug/L at the Flint River.
- Temporal trends were analyzed for turbidity, dissolved oxygen, pH, specific conductance, temperature, total chloride, TSS, nitrogen (Kjeldahl, ammonia, nitrate, and nitrite), total phosphorus, Cr, Cu, Pb, and Hg. Thirteen of 31 sites evaluated for temporal trends showed a statistically significant trend (p≤0.05), whether increasing or decreasing, in one or more of these constituents over the period of interest (1998-2005). Decreasing trends were found more than twice as frequently as increasing trends. For most constituents, a decreasing trend indicates improving stream water quality conditions.

SECTION 2.0

INTRODUCTION

In June 1998, the MDEQ, WB, initiated the WCMP using part of a \$500,000 appropriation by the state legislature. This project was a first step towards improving water quality monitoring in Michigan since funding reductions imposed in the mid-1990s resulted in severely restricted monitoring capabilities. Past limitations in analytical quantification levels further restricted the effectiveness of monitoring activities. Technological advances in affordable, trace-level analytical techniques incorporated into the WCMP have made it possible to assess Michigan's surface waters for bioaccumulative chemicals of concern, such as Hg and PCBs, at environmentally relevant levels.

The WCMP is an important component of the statewide surface water quality monitoring activities outlined in the January 1997 report prepared by the MDEQ, WB, and the MDEQ, Land and Water Management Division, entitled, "A Strategic Environmental Quality Monitoring Program for Michigan's Surface Waters" (Strategy). The WCMP incorporates the goals of the Strategy, which are:

- 1. Assess the current status and condition of individual waters of the state and determine whether standards are being met.
- 2. Measure temporal and spatial trends in the quality of Michigan's surface waters.
- 3. Provide data to support MDEQ water quality programs and evaluate their effectiveness.
- 4. Detect new and emerging water quality problems.

As initiated in 1998, the WCMP called for annual water chemistry monitoring at selected Michigan streams tributary to the Great Lakes, and at Great Lakes connecting waters, Saginaw Bay, and Grand Traverse Bay. With the November 1998 passage of the Clean Michigan Initiative bond proposal, a substantial increase in annual funding became available for statewide surface water quality monitoring beginning in 2000. The study design of the WCMP was subsequently modified and expanded to help ensure implementation of statewide water chemistry monitoring activities capable of more fully realizing the goals set forth in the Strategy.

This report describes the tributary monitoring component of the WCMP; it describes tributary monitoring efforts undertaken in 2005 as part of the WCMP and summarizes those results; and it presents new summaries of previously published tributary monitoring results obtained from the WCMP during 1998-2005. Temporal trend analysis - one of these new summaries, is presented for the first time (for tributaries) since the WCMP was initiated in 1998.

Details of the complete WCMP study design, as well as previously published annual WCMP reports including tributary monitoring reports, Saginaw and Grand Traverse Bay monitoring reports, and Great Lakes connecting channel monitoring reports, are available upon request from the MDEQ, WB, or on the MDEQ's Web page at https://www.michigan.gov/waterquality, then select Water Quality Monitoring Reports.

In accordance with one of the key principles of the Strategy, the WCMP was planned and conducted in partnership with several outside organizations. In 2005, these included the United States Geological Survey (USGS); MDEQ, Environmental Science and Services Division, Laboratory Section; the Wisconsin State Laboratory of Hygiene (WSLH); and the Great Lakes Environmental Center. The WCMP is coordinated by the MDEQ, WB.

SECTION 3.0

STUDY DESIGN AND METHODS

This section describes the study design and methods of the tributary monitoring component of the WCMP, and their implementation during 2005. It also describes the statistics used to summarize these (2005) results as well as results obtained during 1998-2005.

3.1 WATERSHED SELECTION, STATION SELECTION, AND MONITORING SCHEDULES

When the study design of the WCMP was enhanced in 2000, one primary objective was consistency with existing MDEQ programs and activities to ensure that monitoring would contribute to resource management decisions. This objective led to adapting the WCMP to the 5-year rotating permit basin cycle defined and utilized by the National Pollutant Discharge Elimination System (NPDES) permitting program. Consistent with this cycle, the WCMP recognizes 45 watershed units. Each watershed unit is based on drainage to 1 of the 4 Great Lakes and is allocated to 1 of 5 monitoring years. Figure 1 shows the watershed units allocated to monitoring year 4, which coincides with 2005. Figures 2-5 show the watershed units allocated to monitoring years 5, 1, 2, and 3, which coincide with 2006, 2007, 2008, and 2009, respectively.

Of the 45 watershed units recognized, 31 were selected for placement of water chemistry monitoring stations within the WCMP. The locations of these 31 monitoring stations were selected based on consideration of a number of criteria, including surrounding land use, availability of historical water quality data, proximity to USGS stream flow gauging stations, accessibility, and avoidance of stream reaches subject to flow reversals (although this objective was not achievable on the Saginaw River). These 31 monitoring stations were categorized as either intensive sites or integrator sites. Integrator sites are further categorized as either intensively or nonintensively monitored; this categorization changes depending upon monitoring year.

Additionally, one minimally impacted site was located within each of the watersheds described above, with the exception of the Muskegon and Kalamazoo River watersheds (each of whose upper and lower reaches share a minimally impacted site), and the Saginaw River, for which a minimally impacted site was not assigned. Minimally impacted sites are chosen to provide data on the best water quality that can be expected within each watershed, and are further categorized as nonintensively monitored sites. Watershed selection and monitoring schedules are described below.

3.1.1 Intensive Sites

Of the 31 watersheds selected for placement of monitoring stations, the following 6 were chosen for intensive sampling annually, irrespective of monitoring year: Au Sable, Clinton, Lower Grand, Lower Kalamazoo, Lower Muskegon, and Saginaw River watersheds (Figure 6). High flow volume and known or expected contamination were important watershed selection criteria in the intensive sites category, as these combined factors are associated with the most significant sources of contaminant loading to the Great Lakes. Monitoring stations were located at or near the mouth of the main stream within each watershed. Table 1 provides detailed station location information.

Intensive sites are sampled 12 times per year on a flow-stratified basis beginning with the first significant snowmelt or spring rain event (assuming stream accessibility), and continuing through November. Of these 12 samples, field crews attempt to collect approximately 25% during base/low flow, and the remaining 75% during high flow events, although the latter is not always achievable. A high flow event is defined by one or more of the following conditions: stream flow at or above the 20% exceedance flow; an increase in stream flow of approximately 100% above the preceding base flow condition; or an increase in stream flow following a lengthy period of discharge at base flow and considered likely to produce a measurable change in the concentration of sampled constituents. This monitoring schedule was adopted specifically for those contaminants for which loading rate estimates would be calculated, based on its application in the Lake Michigan Mass Balance Project (LMMB) (United States Environmental Protection Agency [USEPA], 1997a); not all contaminants monitored at intensive sites are sampled according to this schedule (see Section 3.2 of this report for details).

3.1.2 Integrator Sites

The 25 of 31 watersheds not chosen for annual intensive sampling are designated as integrator sites within the WCMP (Figure 7). Integrator sites represent water quality conditions of major streams and rivers in large, heterogeneous basins. Monitoring stations associated with integrator sites are generally located at or near the mouth of the main stream; however, 4 monitoring stations associated with integrator sites are located midreach, to represent the upper reaches of the largest watersheds. Midreach monitoring stations are located on the St. Joseph, Kalamazoo, Grand, and Muskegon Rivers. Table 1 provides detailed station location information.

Integrator sites are sampled intensively on a staggered, 5-year rotation. Once every 5 years (consistent with the NPDES permitting program's basin year cycle), each integrator site is sampled 12 times on a flow-stratified schedule identical to that adopted for intensive sites. As with intensive sites, this schedule allows loading rates to be estimated for selected contaminants. During the other 4 years in this 5-year cycle, integrator sites are sampled 4 times per year. These sampling events are carried out within the period between ice breakup and November, without regard to stream flow.

3.1.3 Minimally Impacted Sites

Monitoring year 4 (2005) watersheds include the Cheboygan, Escanaba, Pere Marquette, Rouge, Shiawassee, and Thunder Bay River watersheds. The Lower St. Joseph River, a monitoring year 5 (2006) watershed, was also sampled - out of rotation, in place of the Upper St. Joseph River - to support the LMMB. The minimally impacted sites selected to represent each of these watersheds include the Pigeon River, Bryan Creek, the Pere Marquette River Headwaters, Johnson Drain, Shiawassee River Headwaters, Thunder Bay River Headwaters, and Pokagon Creek, respectively. These sites were believed to represent the best water quality that might be expected within each watershed, based on consideration of both water chemistry and biota. Water chemistry data obtained from minimally impacted sites allow for a comparison with downstream, potentially impacted sites within the same watershed.

Minimally impacted sites are sampled nonintensively on a staggered, 5-year rotation. Once every 5 years (again, consistent with the NPDES permitting program's basin year cycle), each minimally impacted site is sampled 4 times per year. As with nonintensively monitored integrator sites, sampling events are carried out within the period between ice breakup and November, without regard to stream flow.

3.1.4 Probabilistic Sites

In 2005, a randomized, or probabilistic, sampling component was added to the WCMP. Unlike data obtained from other WCMP sites, water quality information yielded from probabilistic sites can be extrapolated to unsampled sites, thus enabling the MDEQ, WB, to formulate conclusions concerning water quality throughout the state. It is anticipated that the first results of this sampling effort will be published in 2008.

3.2 SAMPLE COLLECTION AND CHEMICAL ANALYSES

Sample collection and chemical analyses are discussed below by analyte category. All participating analytical laboratories have quality assurance programs and use peer-reviewed analytical methods. As of this writing, all analytical methods employed by the WCMP have remained the same since the project was initiated in 1998.

3.2.1 Nutrients and Conventionals

The nutrient and conventional parameters identified in Table 2 were measured at all stations during each sampling event. Table 2 also provides analytical methods and quantification levels where applicable. Field measurements of dissolved oxygen, temperature, pH, and specific conductance were taken during each sampling event using a multiparameter water quality monitoring device.

In most cases, grab samples were collected from a single point in the flow of the stream at approximately 0.3-1.0 meter depth. A subset of grab samples were collected using the method described for PCBs in Section 3.2.3. Samples were collected and handled in accordance with MDEQ-approved procedures (available upon request), and were analyzed by the MDEQ, Environmental Laboratory.

Several analytes were dropped from the WCMP at the end of the 2004 field season, including base/neutral organics, methyl-tertiary-butyl ether (MTBE), benzene, toluene, ethylbenzene, and xylene (BTEX), and total cyanide (CN). Sampling for base/neutral organics, MTBE and BTEX, which began in 1999, and for total CN, which began in 2001, was initiated to support the Strategy's goal to detect new and emerging water quality problems. The vast majority of results obtained for these analytes have been below analytical quantification, leading to the decision to drop them from the WCMP.

3.2.2 Mercury and Trace Metals

Samples for total Hg and trace metals were collected at all stations during each sampling event, and were analyzed by the WSLH. All metals analyzed are shown in Table 3 with analytical detection and quantification levels. Sample collection and handling was carried out in accordance with USEPA Method 1669, "Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels" (USEPA, 1996a). Samples were collected from a single point in the flow of the stream at approximately 0.3-1.0 meter depth.

Total Hg samples were analyzed by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry, consistent with USEPA Method 1631 (USEPA, 2001a). Samples were analyzed for the trace metals Cr, Cu and Pb by Inductively Coupled Plasma – Mass Spectrometry, consistent with USEPA Method 1638 (USEPA, 1996b).

3.2.3 Polychlorinated Biphenyls

The PCB sampling schedule has undergone several revisions since the WCMP was initiated in 1998. The study design of the WCMP was most recently modified in 2004 with respect to PCBs: minimally impacted sites scheduled for sampling in 2004 were each sampled once for PCBs, as in prior years; however, remaining PCB sampling efforts were focused on 3 intensively monitored sites. This approach ensured that minimally impacted sites for all WCMP watersheds were sampled at least once for PCBs, but it also enabled PCB loading rate estimates to be calculated for selected tributaries. Adherence to this modified study design continued in 2005, during which the Lower Grand, Lower Kalamazoo, and Lower St. Joseph Rivers were sampled intensively for PCBs.

PCB samples were collected in accordance with the sample collection and handling protocol described in the "Lake Michigan Mass Balance Study Methods Compendium, Volume 1: Sample Collection Techniques" (USEPA, 1997a). A 160 liter sample volume was obtained by drawing water from 2 depths (at 0.2 and 0.8 of the total stream depth) at each of 3 points in a transect (at 0.25, 0.5, and 0.75 of the stream channel width). The WSLH performed the chemical analyses in accordance with the analytical protocol described in the "Lake Michigan Mass Balance Study Methods Compendium, Volume 2: Organic and Mercury Sample Analysis Techniques" (USEPA, 1997b), with the exception that dissolved and particulate fractions were combined. Table 4 shows all PCB congeners analyzed, along with their analytical detection and quantification levels.

3.2.4 Pesticides

In 2005, a statewide screening study of selected pesticides was undertaken at 23 sites throughout Michigan, including all 13 intensive and intensively monitored integrator sites within the WCMP. This study was undertaken to aid in understanding the occurrence and distribution of pesticides in Michigan streams, and to guide future pesticide sampling efforts by the MDEQ, WB. A total of 320 water samples were analyzed for the herbicides atrazine, metolachlor, and simazine, and for the insecticides chlorpyrifos and diazinon. Analyses were performed using the immunoassay method, which in this study enabled rapid, relatively inexpensive screening capabilities; however, the method is not selective enough to distinguish the target compound from other closely related compounds, meaning comparisons with Michigan Rule 57 water quality values are only tentative. The results of this pesticide screening study as they pertain to WCMP sites are summarized briefly in Section 4 of this report; a comprehensive discussion of this study and the results obtained from it is available upon request from the MDEQ or USGS (Fogarty and Duris, 2007). Table 5 shows all pesticides analyzed, along with their analytical quantification levels.

3.3 SUMMARY STATISTICS

Summary statistics presented in this report include measures of central tendency, spatial comparisons, loading rate estimates, comparisons with Michigan Rule 57 water quality values, and temporal trend analyses. Not all of these statistics were used to summarize the data sets for all contaminants.

3.3.1 Handling of Uncensored and Coded Data

Many surface water quality contaminants occur only at trace-level concentrations and yet are environmentally important at these trace levels. Hg and PCBs are two key examples. Very often the trace-level concentrations found for such contaminants are below analytical quantification or detection levels. Although such concentrations are admittedly less reliable than

concentrations above analytical quantification, they are nevertheless believed to be the best concentration estimates available under the circumstances (Porter et al., 1988; Gilliom et al., 1984). For this reason, data below analytical quantification or detection levels, including negative and zero values, (collectively referred to as uncensored data), were used to the fullest extent possible in the WCMP. Coded data were similarly utilized. Table 6 provides a comprehensive list of result remark codes relevant to WCMP data, along with their definitions.

3.3.2 Measures of Central Tendency

Where possible, arithmetic mean and median concentrations were calculated for each analyte at each monitoring station. Negative values should be interpreted as equivalent to zero.

3.3.3 Spatial Comparisons

Concentrations of total phosphorus, chloride, TSS, Hg, Cr, Cu, Pb, and PCB measured during 1998-2005 were compared among all 31 intensive and integrator sites. Concentrations of these same contaminants measured in 2005 were also compared between minimally impacted sites and their associated downstream, potentially impacted sites. These comparisons are presented in boxplot graphs. Most contaminant concentrations were normalized to flow using Locally Weighted Scatterplot Smoothing (LOWESS), to control for the effects of stream discharge (Helsel, 1991). Figure 8 displays the features of a box plot.

3.3.4 Loading Rate Estimates

Loading rate estimates were calculated for total phosphorus, chloride, TSS, Hg, Cr, Cu, and Pb obtained in 2005 at intensively monitored sites, and for total PCB obtained in 2005 at the Lower Grand, Lower Kalamazoo, and Lower St. Joseph Rivers. Calculations were performed using the Stratified Beale Ratio Estimator described by Richards (1994).

3.3.5 Comparisons with Michigan Rule 57 Water Quality Values

Data obtained in 2005 for total phosphorus, chloride, TSS, Hg, Cr, Cu, Pb, PCB, and pesticides were compared with applicable Rule 57 water quality values developed in accordance with the Michigan Part 4 Rules (MAC, 2006).

For Hg, the applicable Rule 57 water quality value is the wildlife value; and for Cr, Cu, and Pb, the applicable Rule 57 water quality value is the final chronic value (FCV). The FCV for Cr, Cu, and Pb is hardness-dependent and was calculated for each tributary watershed using tributary-specific hardness data. Ambient Cr, Cu, and Pb concentrations are for total metal, whereas the FCVs for these trace metals are expressed as dissolved metal; therefore, a direct comparison between ambient total Cr, Cu, and Pb concentrations and their Rule 57 water quality values cannot be made. This is not an important consideration when the ambient total metal concentration meets the applicable Rule 57 water quality value; however, if it exceeds this value, the available data cannot show whether the ambient concentration of dissolved metal exceeds the Rule 57 water quality value. Additional, more sophisticated monitoring would be necessary to resolve an ambiguity of this nature, and caution must be exercised when drawing conclusions from such data. For total PCB, the applicable Rule 57 water quality value is the FCV; however, the method used for pesticide analysis does not support a direct comparison with Rule 57 water quality values, so any comparisons should be considered tentative.

3.3.6 Temporal Trend Analyses

Temporal trend analyses were performed on 1998-2005 data sets for turbidity, dissolved oxygen, pH, specific conductance, temperature, total chloride, TSS, nitrogen (Kjeldahl, ammonia, nitrate, and nitrite), total phosphorus, Cr, Cu, Pb, and Hg. The preliminary results of these analyses are presented here for the first time since the WCMP was initiated in 1998; a more detailed statistical and graphical evaluation of these results will be presented in a separate report planned for publication in 2010. Measurement of temporal trends is a key goal of the WCMP, and the means by which the MDEQ will attempt to determine whether water quality is improving, deteriorating, or remaining the same at sampled locations.

Temporal trend analyses were performed using the seasonal Kendall test, a nonparametric test considered ideal for use in measuring trends at a wide variety of sites for a wide variety of water quality constituents (Helsel, 1991). LOWESS was used prior to trend analysis in an effort to control for the effects of stream discharge. Temporal trend analyses were attempted for all 31 intensive and integrator sites. Of these, 4 sites (the Boardman, Saginaw, Cheboygan, and Thunder Bay Rivers) were eliminated during the process due to insufficient contaminant or stream flow data.

SECTION 4.0

RESULTS, SUMMARY STATISTICS, AND DISCUSSION

During 2005, field staff collected a total of 256 water samples at Great Lakes tributaries. Table 7 lists all fixed WCMP monitoring stations along with year(s) sampled since the WCMP was initiated in 1998.

4.1 MEASURES OF CENTRAL TENDENCY

The 2005 analytical results for PCB congeners, and the 2005 analytical results and measures of central tendency for nutrients, conventionals, Hg, and trace metals, are presented in the Appendix.

4.2 SPATIAL COMPARISONS

Concentrations of total phosphorus, chloride, TSS, Hg, Cr, Cu, Pb, and PCB measured during 1998-2005 are compared among all 31 intensive and integrator sites. Concentrations of total phosphorus, chloride, TSS, Hg, Cr, Cu, and Pb measured in 2005 are compared between minimally impacted sites and their associated downstream, potentially impacted sites. These comparisons are discussed below.

4.2.1 Spatial Comparisons among Intensive and Integrator Sites

Comparisons for 1998-2005 among all 31 intensive and integrator sites are shown in Figures 9-16 and in Tables 8 and 9. Stream discharge data for the Thunder Bay River could not be obtained for 2000-2001, so concentrations from this period at this site could not be normalized to stream discharge, and actual concentrations were used in their place. Similarly, sample size did not support normalization to stream discharge for total PCBs at all locations, so actual concentrations were used instead.

4.2.1.1 Phosphorus, Chloride, and Suspended Solids

During 1998-2005, median normalized total phosphorus ranged from 0.009 milligrams per liter (mg/L) at the Cheboygan River, to 0.173 mg/L at the Clinton River; median normalized total chloride ranged from 2 mg/L at the Manistique, Tahquamenon, and Sturgeon Rivers, to 143 at the Clinton River; and median normalized TSS ranged from < 4 mg/L at the Au Sable, Cheboygan, Thunder Bay, Escanaba, and Tahquamenon Rivers, to 31 mg/L at the Flint River.

Historic (1967-1968) background water quality stream data published by the Michigan Department of Natural Resources (MDNR, 1970) show statewide median total chloride and TSS concentrations of 8 mg/L and 11 mg/L, respectively. By comparison, 1998-2005 median normalized total chloride and TSS exceeded these historic background concentrations at approximately 68% and 58% of sites, respectively. Similar background data for total phosphorus were not published in that MDNR report; however, the USEPA published more recent (1990-2000) stream data representing reference conditions in Michigan, and an estimated median concentration of 0.061 mg/L total phosphorus was derived from those data (USEPA, 2001b; 2000a; and 2000b). By comparison, 1998-2005 median normalized total phosphorus exceeded this estimated background concentration at 45% of sites.

4.2.1.2 Mercury and Trace Metals

During 1998-2005, median normalized total Hg ranged from 0.028 ng/L at the Au Sable River, to 5.5 ng/L at the Lower Kalamazoo River, and was at or above the quantification level (0.045 ng/L) at 93% of sites; median normalized total Cr ranged from 0.02 ug/L at the Au Sable River, to 1.8 ug/L at the River Rouge, and was at or above the quantification level (0.19 ug/L) at 81% of sites; median normalized total Cu ranged from 0.23 ug/L at the Au Sable River, to 3.6 ug/L at the Clinton River, and was at or above the quantification level (0.1 ug/L) at 100% of sites; and median normalized total Pb ranged from 0.04 ug/L at the Au Sable River, to 2.3 ug/L at the Flint River, and was at or above the quantification level (0.14 ug/L) at 100% of sites.

4.2.1.3 Polychlorinated Biphenyls

During 1998-2005, median actual total PCB ranged from 0.18 ng/L (at the Sturgeon River), to 61 ng/L (at the River Raisin).

4.2.2 Spatial Comparisons between Minimally Impacted and Potentially Impacted Sites

Comparisons between minimally impacted sites and associated downstream, potentially impacted sites are presented in Figures 17-23 for concentrations of water quality indicators measured at each location in 2005. Sample size did not support normalization to stream discharge for these comparisons.

4.2.2.1 Phosphorus, Chloride, and Suspended Solids

Concentrations of total phosphorus and chloride were generally lower at minimally impacted sites compared to their associated downstream, potentially impacted sites. Differences were significant for total phosphorus at Bryan Creek in the Escanaba River watershed, and the Shiawassee River Headwaters, and for total chloride at Bryan Creek (p<0.05). Exceptions included total phosphorus at Pokagon Creek in the Lower St. Joseph River watershed, and total chloride at Johnson Drain in the River Rouge watershed. TSS concentrations were generally higher at most minimally impacted sites; exceptions included the Shiawassee River Headwaters (p<0.05) and Pere Marquette River Headwaters.

4.2.2.2 Mercury and Trace Metals

Concentrations of total Hg were lower at the Shiawassee River Headwaters (p<0.05), Bryan Creek in the Escanaba River watershed, Johnson Drain in the River Rouge watershed, and Thunder Bay River Headwaters, compared to those measured at their respective downstream, potentially impacted sites. Among the exceptions, the Pigeon River in the Cheboygan River watershed, and Pokagon Creek in the Lower St. Joseph River watershed, stood out, although in neither case were differences between them and their respective downstream, potentially impacted sites significant. Concentrations of total Cr, Cu, and Pb were generally lower at minimally impacted sites, although the difference was statistically significant only for Cr and Pb at the Shiawassee River Headwaters (p<0.05).

4.2.3 Pesticides

The herbicides (atrazine, metolachlor, and simazine) were found above analytical quantification in 94%, 91%, and 86% of all samples collected, respectively. In contrast, the insecticides (chlorpyrifos and diazinon) were below analytical quantification in all samples. Patterns in pesticide concentrations by land use and season were identified, with the highest

concentrations of atrazine, metolachlor, and simazine occurring during early summer at stream sites dominated by agricultural land use. A more comprehensive report on the pesticide screening study and the results obtained from it is available upon request from the MDEQ or USGS (Fogarty and Duris, 2007).

4.3 LOADING RATE ESTIMATES

Loading rate estimates of total phosphorus, chloride, TSS, Hg, Cr, Cu, and Pb were calculated for stations in the intensive and intensively monitored integrator site categories. PCB loading rate estimates were also calculated for the Lower Grand, Lower Kalamazoo, and Lower St. Joseph Rivers. Results of these calculations are presented in Table 10, along with mean stream flows based on flow measurements taken during the sampling period, and the 95% confidence intervals associated with the loading rate estimates. All loading rate estimates are based on 2005 results. Stations are shown ranked from highest to lowest estimated loading rate for each contaminant.

Hydrographs of stream flow discharge are presented in Figures 24-36 for each station for which contaminant loading rates were estimated. In addition to showing mean daily stream flow associated with the 2005 sampling period, most of these figures also show the range of stream flow, represented by the 25th and 75th percentiles, calculated from historic stream flow data available for each station (this information could not be calculated for the Lower Kalamazoo River due to insufficient data).

4.3.1 Phosphorus, Chloride, and Suspended Solids

Among stations for which 2005 contaminant loading rates were estimated, the Au Sable River contributed the smallest total phosphorus loadings (10 mt/year) and TSS loadings (494 mt/year), while the Thunder Bay River contributed the smallest total chloride loadings (4,140 mt/year) to the Great Lakes in 2005. The Saginaw River contributed the largest total phosphorus loadings (288 mt/year) and total chloride loadings (224,000 mt/year), and the Lower Grand River contributed the largest TSS loadings (59,900 mt/year) to the Great Lakes in 2005.

4.3.2 Mercury and Trace Metals

Among stations for which 2005 contaminant loading rates were estimated, the Au Sable River contributed the smallest total Hg loadings (0.39 kg/year), Cr loadings (8 kg/year), and Pb loadings (43 kg/year), while the Thunder Bay River contributed the smallest total Cu loadings (310 kg/year) to the Great Lakes in 2005. The Saginaw River contributed the largest total Hg loadings (8 kg/year), Cr loadings (1,560 kg/year), Cu loadings (6,740 kg/year), and Pb loadings (2,830 kg/year) to the Great Lakes in 2005.

4.3.3 Polychlorinated Biphenyls

Among stations for which total PCB loading rates were estimated, the Lower St. Joseph and Lower Grand Rivers contributed the smallest loadings (5 kg/year), and the Lower Kalamazoo River contributed the largest (16 kg/year) in 2005.

4.4 COMPARISONS WITH MICHIGAN RULE 57 WATER QUALITY VALUES

Analyte concentrations from 2005 were compared with their applicable Rule 57 water quality value, and the results are discussed below.

4.4.1 Mercury and Trace Metals

Hg, Cr, Cu, and Pb concentrations are compared with applicable Rule 57 water quality values in Table 11. Also shown are the means and ranges of concentrations, and the exceedance rate for each contaminant. Exceedance rate is represented by the number of individual samples in exceedance of the applicable Rule 57 water quality value/the total number of analyses completed for that contaminant at each monitoring station.

All samples analyzed in 2005 for total Cr, Cu, and Pb met applicable Michigan Rule 57 water quality values at the 38 stations sampled. All total Hg samples collected at 6 of these stations met the Hg Rule 57 water quality value of 1.3 ng/L; specifically, the Au Sable, Boardman, Cheboygan, and Pigeon Rivers, the Shiawassee River Headwaters, and the Thunder Bay River Headwaters. At 26 monitoring stations, total Hg exceeded 1.3 ng/L in at least 50% of samples collected. The remaining stations showed at least 1 sample in exceedance of the Hg Rule 57 water quality value.

4.4.2 Polychlorinated Biphenyls

Total PCB concentrations measured in 2005 at each monitoring station sampled are shown in Table 12. Concentrations exceeded the PCB Rule 57 water quality value of 0.026 ng/L in all samples collected at all stations.

4.4.3 Pesticides

Only one sample, collected in June 2005 from the Black River, potentially exceeded the Michigan Rule 57 water quality value for any pesticide analyzed at any location during the pesticide screening study. This sample was collected following herbicide application and recent rainfall, and potentially exceeded the Michigan Rule 57 water quality value for atrazine (FCV = 7.3 ug/L) with an atrazine concentration of 10 ug/L. A more comprehensive report on the pesticide screening study and the results obtained from it is available upon request from the MDEQ or USGS (Fogarty and Duris, 2007).

4.5 TEMPORAL TREND ANALYSES

Table 13 shows the 13 intensive and integrator sites that exhibited at least one statistically significant temporal trend ($p \le 0.05$), whether increasing (+) or decreasing (-), in at least one constituent during the period of interest (1998-2005). During a specified period of study, an increasing temporal trend indicates that stream concentrations of a given constituent have increased over time; a decreasing temporal trend indicates that stream concentrations have decreased over time. For most constituents, a decreasing trend indicates improving stream water quality conditions, and an increasing trend indicates deteriorating stream water quality conditions for the constituent in question. All constituents for which trends were analyzed are listed in Table 13.

Decreasing trends (of which there were 17) were more than twice as likely to occur as increasing trends (of which there were 7). Among all sites, decreasing trends were found most frequently for turbidity, the nitrogen species (Kjeldahl, ammonia, nitrate, and nitrite), and Cr, although they were also found for chloride, TSS, and total phosphorus. Increasing trends were found for dissolved oxygen, pH, chloride, Cu, and Hg. There appeared to be no correlation between an increasing trend in one constituent and either an increasing or decreasing trend in another constituent(s).

The Upper St. Joseph River had the most increasing trends, with 2 (for pH and chloride). The Escanaba and Tittabawassee Rivers had the most decreasing trends, each with 3: for chloride, TSS, and Cr at the Escanaba River; and for turbidity, Kjeldahl nitrogen, and total phosphorus at the Tittabawassee River. Increasing trends were found more frequently for dissolved oxygen and chloride than for other parameters, each occurring at 2 sites: the Lower Grand and Tahquamenon Rivers, in the case of dissolved oxygen; and at the Lower Kalamazoo and Upper St. Joseph Rivers, in the case of chloride. Decreasing trends were found more frequently for Cr than for other parameters, at 4 sites (the Escanaba, Lower Grand, Lower Kalamazoo, and Lower St. Joseph Rivers).

A more detailed statistical and graphical evaluation of these preliminary temporal trend results will be presented in a separate report planned for publication in 2010.

Prepared by: Christine Aiello, Senior Environmental Quality Analyst Surface Water Assessment Section Water Bureau January 24, 2008

SECTION 5.0

REFERENCES

- Fogarty, L. R. and J. W. Duris. 2007. Screening for the Pesticides Atrazine, Chlorpyrifos, Diazinon, Metolachlor, and Simazine in Michigan, March – November 2005: U. S. Geological Survey Scientific Investigations Report 2007-5077.
- Gilliom, R., R. Hirsch and E. Gilroy. 1984. Effect of Censoring Trace-Level Water Quality Data on Trend-Detection Capability. Environ. Sci. Technol., Vol. 18, No. 7, pp. 530-535.
- Helsel, D. R. 1991. Statistical Analysis of Water-Quality Data. National Water Summary 1990-91 – Stream Water Quality. U.S. Geological Survey Water-Supply Paper 2400. pp. 93-100.
- MAC. 2006. Part 4. Water Quality Standards. R 323.1041-323.1117. January 13, 2006. https://www.michigan.gov/lara/bureau-list/moahr/admin-rules.
- MDNR. 1970. A Survey of Background Water Quality in Michigan Streams. Report #025650.
- Porter, P., R. Ward and H. Bell. 1988. The Detection Limit. Environ. Sci. Technol., Vol. 22, No. 8, pp. 856-861.
- Richards, R. P. 1994. Tributary Loading Estimates for Selected Herbicides in Lake Erie Tributaries of Michigan and Ohio. Final Report to the USEPA, Great Lakes National Program Office, in Partial Fulfillment of Grant #GL995453-01. Heidelberg College.
- USEPA. 2001a. Method 1631: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry. EPA 821/R-01-024.
- USEPA. 2001b. Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion VIII. EPA 822-B-01-015.
- USEPA. 2000a. Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion VII. EPA 822-B-00-018.
- USEPA. 2000b. Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion VI. EPA 822-B-00-017.
- USEPA. 1997a. USGS Field Operation Plan: Tributary Monitoring. Lake Michigan Mass Balance Study Methods Compendium, Vol. 1: Sample Collection Techniques. EPA 905/R-97-012a.
- USEPA. 1997b. PCBs and Pesticides in Surface Water by XAD-2 Resin Extraction. Lake Michigan Mass Balance Study Methods Compendium, Vol. 2: Organic and Mercury Sample Analysis Techniques. EPA 905/R-97-012b.
- USEPA. 1996a. Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels. EPA 821/R-96-011.
- USEPA. 1996b. Method 1638: Determination of Trace Elements in Ambient Waters by Inductively Coupled Plasma-Mass Spectrometry. EPA 821/R-96-005.

Station	Location	County	STORET ID#	Latitude Longitude
Intensive Sites				
Au Sable Clinton Grand (Lower) Kalamazoo (Lower) Muskegon (Lower) Saginaw	Rea Rd. below Foote Dam, Oscoda Twp. Shadyside Pk., Gratiot Ave., city of Mt. Clemens Riverside Pk., vic. of Ottawa Ctr., Robinson Twp. 57th St., vic. New Richmond, Manlius Twp. Maple Island Rd. Main St., City of Essexville	losco Macomb Ottawa Allegan Muskegon Bay	350061 500233 700123 030077 610273 090177	44.43611 °N, - 83.43417 °W 42.58417 °N, - 82.88278 °W 43.02667 °N, - 86.0389 °W 42.65111 °N, - 86.10611 °W 43.31778 °N, - 86.03889 °W 43.61751 °N, - 83.84278 °W
Integrator Sites - Year 2005 Inte	ensively Monitored			
Cheboygan Escanaba Pere Marquette Rouge Shiawassee St. Joseph (Lower)* Thunder Bay	Lincoln Ave., city of Cheboygan 0.35mi US of Soo Line RR Bridge Main St., city of Scottville, Custer/Amber Twp. W. Jefferson Ave. Bridge Fergus Rd., St. Charles Twp. River Pk. off Zollar Dr. Badley St. Alpena Twp.	Cheboygan Delta Mason Wayne Saginaw Berrien Alpena	160073 210102 530027 820070 730023 110628 040123	45.63334 °N, - 84.48195 °W 45.80028 °N, - 87.09583 °W 43.94444 °N, - 86.28000 °W 42.28056 °N, - 83.12889 °W 43.25472 °N, - 84.10556 °W 42.06333 °N, - 86.44889 °W 45.06694 °N, - 83.47194 °W
Integrator Sites - Year 2005 Nor	n-Intensively Monitored			,
Black Boardman Cass Flint Grand (Upper) Huron Kalamazoo (Upper) Manistee Manistique Menominee Muskegon (Upper) Ontonagon Pine Raisin St. Joseph (Upper) Sturgeon Tahquamenon Tittabawassee	Water St. boat launch DS of RR bridge Beitner Rd., Garfield Twp. Sec. 3 M-13 bridge, Spaulding Twp. M-66 bridge, Ionia Twp. Sec. 12 M-13, Spaulding Twp. M-66 bridge, Ionia Twp. Sec. 30 2000' DS of Rockwood WWTP, Berlin Twp. G Ave., city of Augusta M-55 bridge, Manistee Twp., Sec. 31 Vic.old RR bridge N.of old US-2, city of Manistique 26th St. bridge, city of Menominee Hersey Rd., Hersey Twp. RR bridge, St. Ignace Twp. Sec. 10 ERA Dock, city of Monroe Rt. 12 bridge, city of Motville Co Rd. 499, Nahma Twp. Sec. 20 State Campground on U.S.123 Central Rd., Spaulding Twp.	St. Clair Grand Traverse Saginaw Saginaw Ionia Monroe Kalamazoo Manistee Schoolcraft Menominee Osceola Ontonagon Mackinac Monroe St. Joseph Delta Chippewa Saginaw	740385 280014 73024 730285 340025 580364 390057 510088 770073 550038 670008 660038 490006 580046 580046 750273 210032 170141 730025	42.97356 °N, - 82.42029 °W 44.67528 °N, - 85.63070 °W 43.36500 °N, - 83.95473 °W 43.30857 °N, - 83.95328 °W 42.97195 °N, - 85.07000 °W 42.04528 °N, - 85.21417 °W 42.33528 °N, - 85.21417 °W 44.26430 °N, - 86.29538 °W 45.96889 °N, - 86.24611 °W 45.10625 °N, - 87.63556 °W 43.84722 °N, - 85.43231 °W 46.86751 °N, - 89.31695 °W 46.05117 °N, - 84.65681 °W 41.80003 °N, - 83.35444 °W 41.80003 °N, - 85.76694 °W 45.83417 °N, - 86.66862 °W 43.39278 °N, - 85.03889 °W 43.39278 °N, - 84.01111 °W
Minimally Impacted Sites - Year	2005 (Non-Intensively Monitored)			
Pigeon River ¹ Bryan Creek ² Pere Marquette (Headwaters) ³ Johnson Drain ⁴ Shiawassee (Headwaters) ⁵ Pokagon Creek ^{*∧6}	M-68 Bridge; Ellis Twp. Sec. 2 Co Rd. 438, Forsyth Twp. Sec. 28 Peacock Trail Pub. Access, Pleasant Plains Twp. Sec. 16 Hatchery Park, 7 Mile Rd., Northville Twp. Sec. 3 Rattalee Lake Rd., Rose Twp. Sec. 1 Pokagon Hwy, Pokagon Twp.	Cheboygan Marquette Lake Wayne Oakland Cass	160177 520258 430578 821417 631036 140110	45.37445 °N, - 84.51500 °W 46.185408 °N, - 87.56603 °W 43.86187 °N, - 85.88087 °W 42.42571 °N, - 83.48178 °W 42.77175 °N, - 83.57903 °W 41.91254 °N, - 86.17220 °W

* In 2005, the Lower St. Joseph River and Pokagon Creek were sampled out of rotation with their Basin Year.

^In 2007, Pokagon Creek station Storet ID was corrected from 140126 to 140110.

¹ Cheboygan River watershed

² Escanaba River watershed

³ Pere Marquette River watershed

⁴ River Rouge watershed

⁵ Shiawassee River watershed

⁶ Lower St. Joseph River watershed

⁷ Thunder Bay River watershed

Table 2. Nutrients and conventionals analyzed for the WCMP, and their analytical methods and quantification levels.

Analyte	Analytical Method	Quantification Level	Units
Alkalinity (as CaCO3)	310.2	20	mg/L
Ammonia	350.1	0.010	mg/L
Carbon, Total Organic	415.1	0.5	mg/L
Chloride	325.2	1	mg/L
Conductance	Field-Measured	NA	umhos/cm
Hardness	Calculated	5	mg/L
Nitrate	353.2	0.01	mg/L
Nitrate + Nitrite	353.2	0.010	mg/L
Nitrite	353.3	0.002	mg/L
Nitrogen, Kjeldahl	351.2	0.10	mg/L
Oxygen, Dissolved	Field-Measured	NA	mg/L
pH	Field-Measured	NA	рĤ
Phosphate, Ortho	365.1	0.003	mg/L
Phosphorus, Total	365.4	0.005	mg/L
Potassium	7610/258.1	0.1	mg/L
Sodium	7770/273.1	1	mg/L
Solids, Total Dissolved (Calculated)	Calculated	20	mg/L
Solids, Total Suspended	160.2	4	mg/L
Sulfate	375.2	2	mg/L
Temperature	Field-Measured	NA	mg/L
Turbidity	180.1	1	NŤU

NA = Not applicable. NTU = Nephelometric Turbidity Units.

Table 3. Mercury and trace metals analyzed for the WCMP, and their analytical detection and quantification levels.

Analyte	Detection Level	Quantification Level	Units
Hg	0.14	0.45	ng/L
Cr	0.057	0.19	ug/L
Cu	0.03	0.1	ug/L
Pb	0.0041	0.014	ug/L

Congener #	Detection Level (ng/L)	Quantification Level (ng/L)	Congener #	Detection Level (ng/L)	Quantification Level (ng/L)
0	0.00	0.70	07	0.0000	0.040
3	0.22	0.72	97	0.0030	0.010
4/10	0.025	0.083	87	0.0050	0.017
//9	0.0055	0.018	85	0.0055	0.018
6	0.011	0.037	136	0.015	0.050
8/5	0.024	0.080	77/110	0.011	0.037
19	0.0035	0.012	82	0.0035	0.012
18	0.0070	0.023	151	0.0050	0.017
15/17	0.015	0.050	135/144	0.0065	0.022
24/27	0.0035	0.012	123/149	0.0050	0.017
16/32	0.011	0.037	118	0.0080	0.027
26	0.0070	0.023	146	0.0055	0.018
25	0.0060	0.020	132/153/105	0.010	0.033
28/31	0.020	0.070	141	0.0040	0.013
33	0.0075	0.025	137/176	0.0065	0.022
53	0.0040	0.013	163/138	0.011	0.037
51	0.0035	0.012	158	0.0075	0.025
22	0.011	0.037	178	0.0070	0.023
45	0.0045	0.015	187/182	0.0050	0.017
46	0.0045	0.015	183	0.0055	0.018
52	0.0075	0.025	128	0.0045	0.015
49	0.0050	0.017	167	0.0060	0.020
47/48	0.0090	0.030	185	0.0035	0.012
44	0.0065	0.022	174	0.0055	0.018
37/42	0.010	0.033	177	0.0060	0.020
41/71/64	0.010	0.033	202/171	0.0040	0.013
40	0.0050	0.017	172	0.0075	0.025
63	0.012	0.040	180	0.0065	0.022
74	0.0065	0.022	193	0.0075	0.025
70/76	0.012	0.040	199	0.0045	0.015
66	0.012	0.040	170/190	0.0055	0.018
95	0.0060	0.020	198	0.0075	0.025
91	0.0055	0.018	201	0.0090	0.030
56/60	0.0080	0.027	203/196	0.014	0.047
92/84	0.012	0.040	208/195	0.0040	0.013
89	0.0030	0.010	207	0.0035	0.012
101	0.0055	0.018	194	0.0055	0.018
99	0.0040	0.013	206	0.0035	0.012
83	0.0045	0.015			

Table 4. PCB congeners analyzed for the WCMP, and the analytical detection and quantification levels for a 160 liter sample.

Note: Coelution is signified by the "/" notation. Coeluting congeners cannot be separated analytically using analytical methods employed by the WCMP.

Table 5. Pesticides analyzed in 2005 at WCMP intensive and intensively monitored integrator sites, and their analytical quantification levels.

	Quantification Level
Analyte	(ug/L)
Atrazine	0.046
Chlorpyrifos	0.10
Diazinon	0.022
Metolachlor	0.05
Simazine	0.033

Analyte Category	Code	Definition
Nutrients and	А	Value reported is the mean of two or more determinations.
Conventionals	D	Analyte value guantified from a dilution(s); guantification level raised.
	н	Recommended laboratory holding time was exceeded.
	I	Dilution required due to matrix interference; quantification level raised.
	J	Analyte was positively identified. Value is an estimate.
	ND	Observed result was below the quantification level.
	Р	Recommended sample collection/preservation technique not used; reported result(s) is an estimate.
	Т	Reported value is less than the quantification level.
	W	Reported value is less than the method detection level.
Mercury and	BSQC	Batch spike exceeded quality control criteria.
Trace Metals	ССВ	Continuing calibration blank exceeded level of detection.
	CCV	Continuing calibration standard exceeded quality control criteria.
	ELOD	Matrix problem; elevated level of detection reported.
	HT	Recommended laboratory holding time was exceeded before analysis.
	ICB	Initial calibration blank exceeded level of detection.
	ISQC	Internal standard exceeded quality control criteria.
	LCQC	Laboratory control exceeded quality control criteria.
	MBQC	Method blank exceeded level of detection.
	MS	Matrix spike exceeded quality control criteria.
	MSD	Matrix spike duplicate exceeded quality control criteria.
	RI	Result invalidated.
PCBs	CON	Parameter confirmed using an auxiliary analytical technique.
	EST	Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
	FBK	Analyte had measurable value above established QC limit when blank was analyzed using same equipment and analytical method.
	FMS	Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
	FPC	Laboratory performance check failed acceptance criteria.
	NAI	Not analyzed due to uncontrollable interference.
	NDD	Not detected due to dilution.
	UND	Analyte not detected above noise.

Station	STORET ID	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Au Sable	350061	Х		Х	Х	Х	Х	Х	Х	Х	Х
Perry Creek	680056					Х					Х
Black ³	740267			Х	Х	Х	Х	Х	Х	Х	Х
Black (Headwaters)	760058										х
Boardman	280014				Х	Х	Х	Х	Х	Х	Х
East Creek	280318						Х				
Cass	730024			Х	Х	Х	Х	Х	Х	Х	х
Evergreen Creek	790157				Х					Х	
Cheboygan	160073			Х	Х	Х	Х	Х	Х	Х	х
Pigeon River	160177								Х		
Clinton	500233	Х		Х	Х	Х	Х	Х	Х	Х	Х
N. Br. Clinton	500467							Х			
Escanaba	210102		Х	Х	Х	Х	Х	Х	Х	Х	х
Bryan Creek	520258								Х		
Flint	730285			Х	Х	Х	Х	Х	Х	Х	х
S. Br. Flint	440173						X	v			
Grand (Lower)	700123		Х	Х	Х	Х	Х	X	Х	Х	х
Bellamy Creek	340186			v	V	v	v	X	v	v	V
Grand (Upper)	340025			Х	X	Х	х	Х	Х	X	X
Grand (Headwaters)	380083	v		v	X	v	v	v	v	X	V
Huron	580364	х		X	X	X	X	X	X	X	X
Huron (Headwaters)	470521		v	v	v	X	v	v	v	v	X
S Pr Kalamazoo	120221		~	~	~	~	~	×	~	~	~
S. DI. Nalalilazuo Kalamazoa (Lippor) ⁵	200509			v	v	v	v	×	v	v	×
S Pr Kalamazoo	120221			^	^	^	^	×	^	^	^
S. DI. Kalamazoo	E10099			v	v	v	v	×	v	v	×
Andorson Crook	920150			^	^	^	^	×	^	^	^
Manistique	770073		v	v	v	v	v	×	v	v	×
Fox River	770082		^	~	^	~	^	Ŷ	^	^	^
Menominee	550038			x	x	x	x	x	x	x	x
Paint River	360124			~	~	x	~	~	~	~	x
Muskegon (Lower)	610273		х	х	х	x	х	х	х	х	x
Bigelow Creek	630291		~	~	X	~	~	~	~	x	~
Muskegon (Upper)	670008			х	X	х	х	х	х	x	х
Bigelow Creek	630291				X					Х	
Ontonagon	660038			Х	Х	Х	х	Х	Х	Х	х
To Be Determined											
Pere Marguette	530027		Х	Х	Х	Х	Х	Х	Х	Х	х
Pere Marquette (Headwaters)	430578								Х		
Pine	490006			Х	Х	Х	Х	Х	Х	Х	х
Bear Creek	170154							Х			
Raisin	580046	Х		Х	Х	Х	Х	Х	Х	Х	х
Raisin (Headwaters)	380393						Х				
Rouge	820070	Х		Х	Х	Х	Х	Х	Х	Х	х
Johnson Drain	821417								Х		
Saginaw	090177	Х			Х	Х	Х	Х	Х	Х	Х
No minimally impacted site											
Shiawassee	730023	Х		Х	Х	Х	Х	Х	Х	Х	х
Shiawassee (Headwaters)	631036								Х		
St. Joseph (Lower)	110628		Х	Х	Х	Х	Х	Х	X ¹	Х	Х
Pokagon Creek ⁶	140110				Х				X ²		
St. Joseph (Upper)	750273			Х	Х	Х	Х	Х	Х	X ¹	Х
Coldwater River	120215									X ²	
Sturgeon	210032			Х	Х	Х	Х	Х	Х	Х	Х
Eighteen Mile Creek ⁴	210217				Х					Х	
Tahquamenon	170141		Х	Х	Х	Х	Х	Х	Х	Х	Х
Tahquamenon (Headwaters)	480033							Х			
Thunder Bay	040123	Х		Х	Х	Х	Х	Х	Х	Х	Х
I hunder Bay (Headwaters)	600051								X		
l ittabawassee	730025	х		Х	Х	X	Х	Х	Х	Х	X
vv. Br. Littabawassee	260068					Х					Х

¹ Sampled intensively out of rotation with its monitoring year.

² Sampled out of rotation with its monitoring year.

³ In 2006, Black River station was relocated upstream of canal; former station was Storet ID 740385.

⁴ In 2006, Eighteen Mile Creek replaced former Minimally Impacted Site (Tioga River, Storet ID 070070), to correct a site selection error.

⁵ In 2007, Upper Kalamazoo River station Storet ID was corrected from 390057 to 390598.

⁶ In 2007, Pokagon Creek station Storet ID was corrected from 140126 to 140110.

Table 8.1. Mean, median, minimum and maximum concentrations of total Hg, Cr, Cu, Pb, phosphorus, chloride and suspended solids at WCMP intensive and integrator sites. Values represent flow-normalized contaminant concentrations obtained during 1998-2005. Values may not be rounded to the appropriate number of significant figures. Total sample size (N) is also shown.

			Hg (ng/L)	Cr (ug/L)	Cu (ug/L)	Pb (ug/L)	P (mg/L)	CI (mg/L)	TSS (mg/L)	Hg (ng/L)	Cr (ug/L)	Cu (ug/L)	Pb (ug/L)	P (mg/L)	CI (mg/L)	TSS (mg/L)
Storet ID	Station	Ν	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Median	Median	Median	Median	Median	Median	Median
350061	Au Sable	77	0.34	0.02	0.24	0.04	0.010	6	1	0.28	0.02	0.23	0.04	0.010	6	1
740385	Black	23	1.70	0.75	2.19	0.67	0.052	30	16	1.99	0.90	2.37	0.69	0.054	28	16
280014	Boardman	28	1.04	0.07	0.29	0.10	0.012	8	5	0.77	0.04	0.31	0.07	0.010	8	4
730024	Cass	31	2.24	0.86	2.01	0.75	0.085	46	29	2.10	0.74	2.04	0.65	0.073	43	22
160073	Cheboygan	34	0.43	0.05	0.57	0.05	0.009	8	2	0.41	0.04	0.57	0.04	0.009	8	2
500233	Clinton	79	6.01	2.53	4.58	3.29	0.180	136	39	2.95	1.72	3.59	1.65	0.173	143	17
210102	Escanaba	47	3.32	0.58	0.83	0.17	0.040	21	3	3.35	0.61	0.81	0.16	0.038	20	3
730285	Flint	31	5.06	1.38	2.94	2.41	0.155	88	34	4.68	1.19	2.82	2.32	0.155	83	31
700123	Grand (Lower)	79	3.48	0.94	2.24	1.19	0.113	52	27	3.09	0.89	2.30	1.12	0.106	51	25
340025	Grand (Upper)	31	2.87	0.77	2.45	1.01	0.116	52	17	2.32	0.47	2.44	0.90	0.107	56	17
580364	Huron	43	1.81	0.76	1.69	1.90	0.056	94	16	1.65	0.76	1.66	1.83	0.055	91	14
030077	Kalamazoo (Lower)	79	5.76	0.63	1.49	1.37	0.087	44	22	5.55	0.62	1.44	1.34	0.084	47	24
390057	Kalamazoo (Upper)	31	4.34	1.01	1.47	1.31	0.076	41	14	4.54	1.13	1.43	1.29	0.075	43	15
510088	Manistee	31	1.11	0.22	0.45	0.18	0.022	11	9	0.92	0.21	0.44	0.17	0.021	12	9
770073	Manistique	44	2.66	0.38	0.39	0.17	0.019	2	8	2.28	0.36	0.36	0.19	0.020	2	5
550038	Menominee	31	3.41	0.30	0.91	0.18	0.032	6	6	3.04	0.26	0.83	0.13	0.031	6	4
610273	Muskegon (Lower)	78	1.21	0.18	0.64	0.18	0.027	18	10	1.24	0.18	0.64	0.15	0.027	18	9
670008	Muskegon (Upper)	32	1.75	0.24	0.59	0.22	0.035	16	11	1.39	0.21	0.57	0.22	0.034	16	11
660038	Ontonagon	23	2.42	1.01	3.01	0.27	0.044	3	24	1.97	0.77	3.06	0.22	0.040	3	13
530027	Pere Marquette	47	2.03	0.40	0.48	0.28	0.038	12	12	2.11	0.38	0.47	0.30	0.038	12	12
490006	Pine	31	4.17	1.93	1.68	0.90	0.094	3	52	1.94	1.13	1.21	0.47	0.063	3	21
580046	Raisin	43	3.04	1.05	2.83	0.93	0.097	41	22	2.46	0.85	2.55	0.69	0.079	41	14
820070	Rouge	47	5.68	2.20	3.80	2.54	0.096	66	19	4.40	1.79	3.16	2.18	0.077	65	16
090177	Saginaw	68	3.61	1.36	2.48	1.61	0.127	85	33	2.54	0.94	2.18	1.06	0.104	84	20
730023	Shiawassee	47	2.19	1.06	1.66	0.74	0.067	69	21	2.09	1.01	1.62	0.70	0.063	73	19
110628	St. Joseph (Lower)	51	4.19	0.60	1.75	1.11	0.083	30	20	3.54	0.43	1.54	0.85	0.071	30	16
750273	St. Joseph (Upper)	26	1.47	0.11	0.64	0.29	0.033	22	6	1.23	0.10	0.62	0.28	0.033	23	6
210032	Sturgeon	31	2.94	0.33	0.42	0.19	0.021	2	4	2.72	0.34	0.38	0.20	0.021	2	4
170141	Tahquamenon	44	3.79	0.36	0.38	0.19	0.023	2	4	3.11	0.37	0.33	0.17	0.021	2	3
040123	Thunder Bay	45	0.76	0.16	0.37	0.10	0.018	7	3	0.64	0.07	0.34	0.10	0.017	7	3
730025	Tittabawassee	44	2.37	1.22	1.65	0.54	0.068	108	17	1.99	0.85	1.62	0.41	0.066	107	15

Table 8.2. Mean, median, minimum and maximum concentrations of total Hg, Cr, Cu, Pb, phosphorus, chloride and suspended solids at WCMP intensive and integrator sites. Values represent flow-normalized contaminant concentrations obtained during 1998-2005. Values may not be rounded to the appropriate number of significant figures. Total sample size (N) is also shown.

			Hg (ng/L)	Cr (ug/L)	Cu (ug/L)	Pb (ug/L)	P (mg/L)	CI (mg/L)	TSS (mg/L)	Hg (ng/L)	Cr (ug/L)	Cu (ug/L)	Pb (ug/L)	P (mg/L)	CI (mg/L)	TSS (mg/L)
Storet ID	Station	Ν	Min	Min	Min	Min	Min	Min	Min	Max	Max	Max	Max	Max	Max	Max
350061	Au Sable	77	0.24	0.01	0.22	0.03	0.006	6	0.1	0.52	0.07	0.27	0.05	0.011	6	2
740385	Black	23	0.70	0.37	1.39	0.46	0.023	16	8	2.95	1.13	3.76	1.23	0.128	41	32
280014	Boardman	28	0.55	0.03	0.17	0.04	0.009	7	2	3.83	0.42	0.73	0.41	0.036	9	17
730024	Cass	31	1.66	0.39	1.72	0.51	0.059	21	13	5.62	1.95	2.92	1.64	0.200	84	60
160073	Cheboygan	34	0.36	0.01	0.51	0.04	0.007	7	1	0.77	0.20	0.62	0.14	0.016	8	4
500233	Clinton	79	2.78	1.28	3.32	1.45	0.128	38	13	40.45	14.48	13.81	18.04	0.538	156	319
210102	Escanaba	47	2.04	0.42	0.60	0.13	0.031	6	3	6.44	0.67	0.97	0.35	0.054	38	8
730285	Flint	31	2.04	0.86	2.25	1.09	0.122	56	14	14.53	2.95	4.51	6.03	0.231	113	68
700123	Grand (Lower)	79	1.77	0.46	1.51	0.70	0.092	28	21	7.93	1.80	3.07	2.22	0.194	72	36
340025	Grand (Upper)	31	1.49	0.26	1.52	0.43	0.088	34	15	6.26	2.00	3.58	2.09	0.237	74	19
580364	Huron	43	1.17	0.15	1.40	1.39	0.045	88	11	2.93	1.17	2.41	2.37	0.092	137	38
030077	Kalamazoo (Lower)	79	5.11	0.43	1.28	1.20	0.076	25	16	7.38	1.04	2.04	1.54	0.120	54	26
390057	Kalamazoo (Upper)	31	2.21	0.43	1.25	0.73	0.058	14	6	5.89	1.49	1.75	2.01	0.097	55	22
510088	Manistee	31	0.64	0.12	0.37	0.14	0.019	8	8	2.41	0.37	0.60	0.27	0.032	12	11
770073	Manistique	44	1.32	0.29	0.29	0.07	0.013	2	3	5.69	0.57	0.52	0.31	0.026	2	41
550038	Menominee	31	1.36	0.16	0.76	0.11	0.025	3	3	9.94	0.63	1.64	0.54	0.048	8	15
610273	Muskegon (Lower)	78	0.60	0.01	0.54	0.08	0.020	13	4	2.92	0.51	1.00	0.47	0.050	21	30
670008	Muskegon (Upper)	32	0.86	0.13	0.43	0.15	0.022	12	7	4.20	0.48	0.93	0.39	0.062	19	20
660038	Ontonagon	23	0.29	0.53	1.64	0.07	0.018	3	6	8.27	3.53	7.13	1.16	0.167	5	130
530027	Pere Marquette	47	1.64	0.29	0.35	0.19	0.025	5	9	3.15	0.55	0.59	0.34	0.051	15	15
490006	Pine	31	1.70	0.94	0.93	0.42	0.055	2	19	11.85	7.40	4.82	3.38	0.316	4	218
580046	Raisin	43	1.98	0.44	2.12	0.61	0.070	25	12	9.68	3.85	5.55	3.46	0.288	47	99
820070	Rouge	47	3.38	1.52	2.81	1.61	0.059	50	13	28.65	9.38	12.48	5.47	0.408	88	65
090177	Saginaw	68	1.74	0.76	1.92	0.90	0.091	34	18	18.75	6.80	6.92	7.87	0.412	137	183
730023	Shiawassee	47	1.61	0.52	1.39	0.56	0.052	39	13	4.54	2.19	2.34	1.91	0.157	80	44
110628	St. Joseph (Lower)	51	1.30	0.20	1.17	0.47	0.053	20	12	12.56	2.30	4.82	3.98	0.215	36	60
750273	St. Joseph (Upper)	26	1.11	0.07	0.53	0.22	0.025	15	5	7.80	0.47	1.24	0.88	0.092	25	20
210032	Sturgeon	31	1.06	0.20	0.33	0.04	0.015	2	0.4	5.56	0.62	0.78	0.35	0.042	2	10
170141	Tahquamenon	44	1.20	0.24	0.29	0.07	0.017	2	2	7.71	0.56	0.65	0.46	0.035	3	16
040123	Thunder Bay	45	0.21	0.00	0.01	0.05	0.013	5	1	2.50	0.50	0.76	0.16	0.028	14	10
730025	Tittabawassee	44	1.53	0.47	1.26	0.35	0.043	27	13	6.59	3.11	2.44	2.07	0.139	194	34

Table 9. Mean, median, minimum and maximum concentrations of total PCB at WCMP intensive and integrator sites. Values represent actual contaminant concentrations obtained during 1998-2005. Values may not be rounded to appropriate number of significant figures. Total sample size (N) is also shown.

			PCB (ng/L)	PCB (ng/L)	PCB (ng/L)	PCB (ng/L)
Storet ID	Station	N	Mean	Median	Min	Max
350061	Au Sable	21	0.42	0.19	0.05	1.87
740385	Black	4	1.01	0.82	0.66	1.75
280014	Boardman	4	0.90	0.41	0.27	2.51
730024	Cass	4	1.00	0.96	0.74	1.35
160073	Cheboygan	4	0.27	0.21	0.03	0.62
500233	Clinton	10	7.76	7.70	4.23	10.7
210102	Escanaba	8	0.42	0.34	0.15	0.83
730285	Flint	5	1.78	1.76	1.42	2.52
700123	Grand (Lower)	24	2.07	1.69	0.7	4.06
340025	Grand (Upper)	4	1.72	1.51	1.23	2.61
580364	Huron	4	2.27	2.22	1.64	3.02
030077	Kalamazoo (Lower)	25	13.89	14.32	5.65	24.48
390057	Kalamazoo (Upper)	4	5.15	5.19	3.87	6.37
510088	Manistee	4	0.49	0.36	0.26	0.98
770073	Manistique	10	0.72	0.49	0.05	2.36
550038	Menominee	4	0.48	0.50	0.34	0.57
610273	Muskegon (Lower)	8	0.37	0.29	0.17	0.8
670008	Muskegon (Upper)	6	0.35	0.30	0.16	0.71
660038	Ontonagon	4	0.30	0.30	0.15	0.43
530027	Pere Marquette	7	0.67	0.75	0.26	0.88
490006	Pine	16	0.55	0.45	0.1	2.45
580046	Raisin	10	106.89	61.22	1.6	256.18
820070	Rouge	4	27.03	12.18	8.62	75.13
090177	Saginaw	23	14.88	8.67	2.33	38.99
730023	Shiawassee	4	0.96	0.82	0.43	1.77
110628	St. Joseph (Lower)	16	2.10	2.07	1.12	3.82
750273	St. Joseph (Upper)	4	0.81	0.73	0.32	1.46
210032	Sturgeon	4	0.17	0.18	0.04	0.28
170141	Tahquamenon	10	0.47	0.43	0.07	1.44
040123	Thunder Bay	4	0.34	0.26	0.07	0.76
730025	Tittabawassee	4	1.17	1.12	0.79	1.63

Table 10.1. Loading rate estimates for total Hg, Cr, Cu, Pb, phosphorus, chloride, suspended solids and PCB sampled in 2005. Calculations are based on actual contaminant concentrations. (WCMP).

Parameter	Station	Loading Rate+	95% C.I.	Mean Flow+*
Phosphorus		metric tons/year	(+/-)	cfs
	Saginaw River	288	10%	3474
	Grand River (Lower)	256	15%	3034
	St. Joseph River (Lower)	123	6%	2954
	Kalamazoo River (Lower)	110	29%	1613
	Clinton River	54	10%	452
	Muskegon River (Lower)	36	13%	1822
	River Rouge	21	16%	316
	Escanaba River	20	24%	704
	Pere Marquette River	18	22%	645
	Shiawassee River	13	32%	241
	Cheboygan River	12	37%	1218
	Thunder Bay River	12	29%	671
	Au Sable River	10	17%	1266
Chloride		metric tons/year	(+/-)	cfs
	Saginaw River	224000	26%	3474
	Grand River (Lower)	169000	4%	3034
	St. Joseph River (Lower)	88800	8%	2954
	Clinton River	72900	36%	452
	Kalamazoo River (Lower)	71500	6%	1613
	Muskegon River (Lower)	31600	6%	1822
	River Rouge	23900	20%	316
	Shiawassee River	15400	14%	241
	Pere Marquette River	10800	53%	645
	Escanaba River	9540	17%	704
	Cheboygan River	8630	7%	1218
	Au Sable River	6950	4%	1266
	Thunder Bay River	4140	12%	671
TSS		metric tons/year	(+/-)	cfs
	Grand River (Lower)	59900	37%	3034
	Saginaw River	56900	33%	3474
	Kalamazoo River (Lower)	29000	47%	1613
	St. Joseph River (Lower)	25800	21%	2954
	Clinton River	10800	37%	452
	Muskegon River (Lower)	6820	57%	1822
	Pere Marquette River	4830	32%	645
	River Rouge	4790	23%	316
	Escanaba River	3270	82%	704
	Shiawassee River	3140	34%	241
	Cheboygan River	2950	38%	1218
	Thunder Bay River	2060	22%	671
	Au Sable River	494	87%	1266

+ = Calculated values; may not be rounded to appropriate number of significant figures.
 * = Estimates of mean flow are based on measurements taken within the period sampled.

C.I. = Confidence interval of loading rate estimate; true loading rate = estimated loading rate +/- (estimated loading rate x confidence interval).

Table 10.2.	Loading rate estimates for total Hg, Cr, Cu, Pb, phosphorus, chloride, su	spended solids and PCB sampled
	in 2005. Calculations are based on actual contaminant concentrations.	(WCMP).

Parameter	Station	Loading Rate+	95% C.I.	Mean Flow+*
Mercury		kg/year	(+/-)	cfs
	Saginaw River	8	19%	3474
	Grand River (Lower)	8	34%	3034
	Kalamazoo River (Lower)	7	14%	1613
	St. Joseph River (Lower)	5	14%	2954
	Escanaba River	3	46%	704
	Clinton River	2	34%	452
	Muskegon River (Lower)	2	24%	1822
	River Rouge	1	16%	316
	Pere Marquette River	0.88	23%	645
	Thunder Bay River	0.77	57%	671
	Cheboygan River	0.53	29%	1218
	Shiawassee River	0.43	34%	241
	Au Sable River	0.39	30%	1266
Chromium		kg/year	(+/-)	cfs
	Saginaw River	1560	29%	3474
	Grand River (Lower)	1280	35%	3034
	Clinton River	691	33%	452
	St. Joseph River (Lower)	474	25%	2954
	River Rouge	405	29%	316
	Kalamazoo River (Lower)	380	24%	1613
	Escanaba River	227	29%	704
	Muskegon River (Lower)	88	46%	1822
	Shiawassee River	77	30%	241
	Pere Marquette River	66	30%	645
	Thunder Bay River	41	89%	671
	Cheboygan River	39	75%	1218
	Au Sable River	8	81%	1266
Copper		kg/year	(+/-)	cfs
	Saginaw River	6740	15%	3474
	Grand River (Lower)	6230	14%	3034
	St. Joseph River (Lower)	3730	4%	2954
	Kalamazoo River (Lower)	2080	17%	1613
	Clinton River	1670	13%	452
	Muskegon River (Lower)	1320	8%	1822
	River Rouge	873	11%	316
	Cheboygan River	665	8%	1218
	Escanaba River	528	23%	704
	Shiawassee River	392	22%	241
	Au Sable River	383	12%	1266
	Pere Marquette River	314	14%	645
	Thunder Bay River	310	19%	671

+ = Calculated values; may not be rounded to appropriate number of significant figures.
 * = Estimates of mean flow are based on measurements taken within the period sampled.

C.I. = Confidence interval of loading rate estimate; true loading rate = estimated loading rate +/- (estimated loading rate x confidence interval).

Table 10.3. Loading rate estimates for total Hg, Cr, Cu, Pb, phosphorus, chloride, suspended solids and PCB sampled in 2005. Calculations are based on actual contaminant concentrations. (WCMP).

Parameter	Station	Loading Rate+	95% C.I.	Mean Flow+*
Lead		kg/year	(+/-)	cfs
	Saginaw River	2830	20%	3474
	Grand River (Lower)	2660	35%	3034
	Kalamazoo River (Lower)	1690	22%	1613
	St. Joseph River (Lower)	1250	13%	2954
	Clinton River	975	30%	452
	River Rouge	686	28%	316
	Muskegon River (Lower)	168	18%	1822
	Escanaba River	152	58%	704
	Pere Marquette River	119	19%	645
	Shiawassee River	115	29%	241
	Thunder Bay River	68	28%	671
	Cheboygan River	52	28%	1218
	Au Sable River	43	20%	1266
PCB (ng/L)		kg/year	(+/-)	cfs
	Kalamazoo River (Lower)	16	28%	1613
	Grand River (Lower)	5	29%	3034
	St. Joseph River (Lower)	5	20%	2954

+ = Calculated values; may not be rounded to appropriate number of significant figures.

^{* =} Estimates of mean flow are based on measurements taken within the period sampled.

C.I. = Confidence interval of loading rate estimate; true loading rate = estimated loading rate +/- (estimated loading rate x confidence interval).

Table 11.1 Rule 57 water quality values, means and ranges of concentrations, and exceedance rates for Hg, Cr, Cu and Pb at WCMP locations sampled in 2005.

STORET ID	Station	Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)
350061	Au Sable River				
R.57 Water	Quality Value@	1.3	100.0	12.0	15.0
Mean Conce	entration+	0.390	-0.038	0.342	0.037
Range of Co	oncentrations	0.17 - 0.87	-0.15 - 0.023	0.275 - 0.588	0.019 - 0.062
Exceedance	e Rate*	0 / 12	0 / 12	0 / 12	0 / 12
740385	Black River				
R.57 Water	Quality Value@	1.3	130.0	16.0	21.0
Mean Conce	entration+	1.223	0.329	2.168	0.532
Range of Co	oncentrations	0.92 - 1.7	0.231 - 0.507	1.78 - 2.52	0.493 - 0.559
Exceedance	e Rate*	1 / 4	0 / 4	0 / 4	0 / 4
280014	Boardman River				
R.57 Water	Quality Value@	1.3	110.0	14.0	17.0
Mean Conce	entration+	0.708	-0.042	0.345	0.067
Range of Co	oncentrations	0.36 - 1.17	-0.13 - 0.058	0.316 - 0.414	0.028 - 0.12
Exceedance	e Rate*	0 / 4	0 / 4	0 / 4	0 / 4
520258	Bryan Creek				
R.57 Water	Quality Value@	1.3	77.0	9.3	11.0
Mean Conce	entration+	1.615	0.179	0.306	0.065
Range of Co	oncentrations	0.31 - 3.3	0.062 - 0.306	0.234 - 0.41	0.02 - 0.116
Exceedance	e Rate*	3 / 4	0 / 4	0 / 4	0 / 4
730024	Cass River				
R.57 Water	Quality Value@	1.3	160.0	21.0	29.0
Mean Conce	entration+	3.010	0.784	2.175	0.971
Range of Co	oncentrations	2.07 - 4.98	0.187 - 2.07	1.69 - 2.73	0.447 - 2.39
Exceedance	e Rate*	4 / 4	0 / 4	0 / 4	0 / 4
160073	Cheboygan River				
R.57 Water	Quality Value@	1.3	100.0	13.0	16.0
Mean Conce	entration+	0.493	0.008	0.614	0.047
Range of Co	oncentrations	0.27 - 1.06	-0.12 - 0.153	0.502 - 0.767	0.025 - 0.09
Exceedance	e Rate*	0 / 12	0 / 12	0 / 12	0 / 12
500233	Clinton River				
R.57 Water	Quality Value@	1.3	150.0	19.0	27.0
Mean Conce	entration+	4.638	1.541	4.219	2.359
Range of Co	oncentrations	1.58 - 18.83	0.506 - 5.01	2.28 - 8.37	0.753 - 9.38
Exceedance	e Rate*	12 / 12	0 / 12	0 / 12	0 / 12
210102	Escanaba River				
R.57 Water	Quality Value@	1.3	79.0	9.6	11.0
Mean Conce	entration+	2.928	0.371	0.936	0.160
Range of Co	oncentrations	1.55 - 6.7	0.129 - 0.653	0.558 - 2.18	0.109 - 0.403
Exceedance	e Rate*	12 / 12	0 / 12	0 / 12	0 / 12

@ = With the exception of mercury, Rule 57 water quality values are expressed as dissolved metal.
 + = Calculated value; may not be rounded to appropriate number of significant figures.
 * = Number of samples exceeding Rule 57 water quality value / number of samples analyzed.

Table 11.2	Rule 57 water quality values, means and ranges of concentrations, and exceedance rates for Hg, Cr, Cu and Pb at WCMP locations
	sampled in 2005.

STORET ID	Station	Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)
730285	Flint River				
R.57 Water 0	Quality Value@	1.3	150.0	19.0	27.0
Mean Conce	ntration+	3.530	1.003	2.440	1.672
Range of Co	ncentrations	1.12 - 5.52	0.438 - 1.39	1.77 - 3.07	0.568 - 2.81
Exceedance	Rate*	3 / 4	0 / 4	0 / 4	0 / 4
700123	Grand River (Lower)				
R.57 Water 0	Quality Value@	1.3	160.0	21.0	29.0
Mean Conce	ntration+	2.658	0.447	2.031	0.922
Range of Co	ncentrations	0.92 - 5.13	0.147 - 1.17	1.33 - 4.28	0.41 - 2.17
Exceedance	Rate*	8 / 12	0 / 12	0 / 11	0 / 12
340025	Grand River (Upper)				
R.57 Water C	Quality Value@	1.3	170.0	21.0	30.0
Mean Conce	ntration+	2.053	0.359	2.445	0.657
Range of Co	ncentrations	1.44 - 3.01	0.219 - 0.485	1.76 - 3.41	0.5 - 0.851
Exceedance	Rate*	4 / 4	0 / 4	0 / 4	0 / 4
580364	Huron River				
R.57 Water 0	Quality Value@	1.3	230.0	29.0	44.0
Mean Conce	ntration+	1.360	0.334	2.043	1.388
Range of Co	ncentrations	1.05 - 1.84	0.094 - 0.537	1.45 - 3.63	1.09 - 1.76
Exceedance	Rate*	2 / 4	0 / 4	0 / 4	0 / 4
821417	Johnson Drain				
R.57 Water C	Quality Value@	1.3	200.0	26.0	38.0
Mean Conce	ntration+	1.990	0.901	4.208	1.455
Range of Co	ncentrations	1.57 - 2.85	0.5 - 1.39	1.87 - 10.3	1.04 - 2.5
Exceedance	Rate*	4 / 4	0 / 4	0 / 4	0 / 4
030077	Kalamazoo River (Lower)				
R.57 Water C	Quality Value@	1.3	160.0	20.0	27.0
Mean Conce	ntration+	4.814	0.314	1.394	1.197
Range of Co	ncentrations	2.01 - 9.16	0.050 - 0.701	1.02 - 2.58	0.59 - 2.07
Exceedance	Rate*	12 / 12	0 / 12	0 / 12	0 / 12
390057	Kalamazoo River (Upper)				
R.57 Water C	Quality Value@	1.3	180.0	22.0	32.0
Mean Conce	ntration+	3.718	0.762	1.440	1.117
Range of Co	ncentrations	2.29 - 5.6	0.542 - 0.989	1.24 - 1.61	0.745 - 1.63
Exceedance	Rate*	4 / 4	0 / 4	0 / 4	0 / 4
510088	Manistee River				
R.57 Water 0	Quality Value@	1.3	110.0	13.0	17.0
Mean Conce	ntration+	1.495	0.119	0.576	0.163
Range of Cor	ncentrations	0.61 - 3.39	0.006 - 0.208	0.482 - 0.755	0.127 - 0.214
Exceedance	Rate*	1 / 4	0 / 4	0 / 4	0 / 4

@ = With the exception of mercury, Rule 57 water quality values are expressed as dissolved metal.
 + = Calculated value; may not be rounded to appropriate number of significant figures.
 * = Number of samples exceeding Rule 57 water quality value / number of samples analyzed.
Table 11.3 Rule 57 water quality values, means and ranges of concentrations, and exceedance rates for Hg, Cr, Cu and Pb at WCMP locations sampled in 2005.

STORET ID	Station	Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)		
770073	Manistique River						
R.57 Water	Quality Value@	1.3	69.0	8.3	9.3		
Mean Concentration+		1.615	0.225	0.391	0.120		
Range of Concentrations		1.11 - 2.39	0.095 - 0.467	0.332 - 0.432	0.078 - 0.198		
Exceedance	e Rate*	2 / 4	0 / 4	0 / 4	0 / 4		
550038	Menominee River						
R.57 Water	Quality Value@	1.3	78.0	9.4	11.0		
Mean Conce	entration+	3.088	0.242	1.047	0.122		
Range of Co	oncentrations	2.02 - 4.27	0.118 - 0.402	0.902 - 1.25	0.101 - 0.165		
Exceedance	e Rate*	4 / 4	0 / 4	0 / 4	0 / 4		
610273	Muskegon River (Lower)						
R.57 Water	Quality Value@	1.3	110.0	14.0	18.0		
Mean Conce	entration+	0.817	0.061	0.753	0.118		
Range of Concentrations		0.48 - 1.47	-0.05 - 0.209	0.546 - 1.13	0.067 - 0.387		
Exceedance	e Rate*	1 / 12	0 / 12	0 / 12	0 / 12		
670008	Muskegon River (Upper)						
R.57 Water	Quality Value@	1.3	110.0	13.0	17.0		
Mean Conce	entration+	1.295	0.007	0.595	0.143		
Range of Co	oncentrations	0.67 - 2.52	-0.10 - 0.086	0.495 - 0.751	0.084 - 0.199		
Exceedance	e Rate*	1 / 4	0 / 4	0 / 4	0 / 4		
660038	Ontonagon River						
R.57 Water	Quality Value@	1.3	51.0	6.0	6.2		
Mean Conce	entration+	3.515	0.974	3.453	0.271		
Range of Co	oncentrations	0.6 - 6.13	0.524 - 1.37	1.84 - 5.36	0.095 - 0.469		
Exceedance	e Rate*	3 / 4	0 / 4	0 / 4	0 / 4		
530027	Pere Marquette River						
R.57 Water	Quality Value@	1.3	110.0	14.0	18.0		
Mean Conce	entration+	1.717	0.165	0.558	0.252		
Range of Co	oncentrations	0.46 - 4.31	0.018 - 0.519	0.34 - 1.08	0.051 - 0.683		
Exceedance	e Rate*	6 / 12	0 / 12	0 / 12	0 / 12		
430578	Pere Marquette River (Headw	vaters)					
R.57 Water	Quality Value@	1.3	110.0	13.0	17.0		
Mean Conce	entration+	1.430	0.015	0.329	0.127		
Range of Concentrations		1.01 - 1.71	-0.07 - 0.069	0.281 - 0.4	0.042 - 0.19		
Exceedance	e Rate*	2 / 4	0 / 4	0 / 4	0 / 4		
160177	Pigeon River						
R.57 Water	Quality Value@	1.3	130.0	16.0	22.0		
Mean Conce	entration+	0.735	-0.032	0.468	0.047		
Range of Co	oncentrations	0.43 - 1.04	-0.13 - 0.038	0.337 - 0.801	0.02 - 0.073		
Exceedance Rate*		0 / 4	0 / 4	/ 4 0 / 4			

@ = With the exception of mercury, Rule 57 water quality values are expressed as dissolved metal.
 + = Calculated value; may not be rounded to appropriate number of significant figures.
 * = Number of samples exceeding Rule 57 water quality value / number of samples analyzed.

Table 11.4 Rule 57 water quality values, means and ranges of concentrations, and exceedance rates for Hg, Cr, Cu and Pb at WCMP locations sampled in 2005.

STORET ID	Station	Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)		
490006	Pine River						
R.57 Water	Quality Value@	1.3	77.0	9.3	11.0		
Mean Conce	entration+	2.828	1.059	1.285	0.571		
Range of Concentrations		1.34 - 6.21	0.753 - 1.42	1.11 - 1.7	0.451 - 0.77		
Exceedance	e Rate*	4 / 4	0 / 4	0 / 4	0 / 4		
140110	Pokagon Creek						
R.57 Water	Quality Value@	1.3	160.0	20.0	29.0		
Mean Conce	entration+	3.493	0.196	0.949	0.902		
Range of Co	oncentrations	1.28 - 7.59	-0.08 - 0.45	0.628 - 1.51	0.346 - 2.21		
Exceedance	e Rate*	3 / 4	0 / 4	0 / 4	0 / 4		
580046	River Raisin						
R.57 Water	Quality Value@	1.3	140.0	18.0	24.0		
Mean Conce	entration+	1.410	0.291	3.035	0.426		
Range of Co	oncentrations	1.14 - 2.08	0.096 - 0.704	1.89 - 4.04	0.308 - 0.549		
Exceedance	e Rate*	1 / 4	0 / 4	0 / 4	0 / 4		
820070	River Rouge						
R.57 Water	Quality Value@	1.3	100.0	13.0	16.0		
Mean Conce	entration+	4.625	1.611	3.344	2.716		
Range of Concentrations		0.4 - 8.61	0.126 - 3.652	0.793 - 5.83	0.112 - 6.06		
Exceedance	e Rate*	10 / 12	0 / 12	0 / 12	0 / 12		
090177	Saginaw River						
R.57 Water	Quality Value@	1.3	150.0	19.0	26.0		
Mean Conce	entration+	2.148	0.543	2.238	0.909		
Range of Co	oncentrations	0.95 - 3.72	0.14 - 1.01	1.61 - 3.69	0.359 - 1.49		
Exceedance	e Rate*	9 / 12	0 / 12	0 / 12	0 / 12		
730023	Shiawassee River						
R.57 Water	Quality Value@	1.3	160.0	20.0	29.0		
Mean Conce	entration+	1.787	0.324	1.758	0.523		
Range of Concentrations		0.59 - 4.68	- 4.68 0.132 - 0.79		0.191 - 1.16		
Exceedance	e Rate*	9 / 12	0 / 12	0 / 12	0 / 12		
631036	Shiawassee River (Headwater	rs)					
R.57 Water	Quality Value@	1.3	160.0	21.0	29.0		
Mean Conce	entration+	0.328	-0.031	0.666	0.028		
Range of Concentrations		0.2 - 0.42	-0.13 - 0.052	0.451 - 1.26	0.022 - 0.039		
Exceedance	e Rate*	0 / 4	0 / 4	0 / 4	0 / 4		
110628	St. Joseph River (Lower)						
R.57 Water	Quality Value@	1.3	170.0	21.0	30.0		
Mean Conce	entration+	2.013	0.201	1.473	0.537		
Range of Co	oncentrations	0.96 - 3.18	-0.02 - 0.31	1.12 - 1.97	0.338 - 1.06		
Exceedance Rate*		10 / 12	0 / 12 0 / 12				

@ = With the exception of mercury, Rule 57 water quality values are expressed as dissolved metal.
 + = Calculated value; may not be rounded to appropriate number of significant figures.
 * = Number of samples exceeding Rule 57 water quality value / number of samples analyzed.

Table 11.5 Rule 57 water quality values, means and ranges of concentrations, and exceedance rates for Hg, Cr, Cu and Pb at WCMP locations sampled in 2005.

STORET ID Station		Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)			
750273	St. Joseph River (Upper)							
R.57 Water C	Quality Value@	1.3	160.0	19.0	27.0			
Mean Concer	ntration+	1.315	0.029	0.752	0.289			
Range of Cor	ncentrations	0.92 - 1.63	-0.08 - 0.168	0.632 - 0.971	0.24 - 0.322			
Exceedance	Rate*	3 / 4	0 / 4	0 / 4	0 / 4			
210032	Sturgeon River							
R.57 Water C	Quality Value@	1.3	77.0	9.3	11.0			
Mean Concer	ntration+	2.815	0.255	0.449	0.138			
Range of Cor	ncentrations	0.69 - 5.63	0.102 - 0.503	0.368 - 0.53	0.035 - 0.274			
Exceedance Rate*		3 / 4	0 / 4	0 / 4	0 / 4			
170141	Tahquamenon River							
R.57 Water C	Quality Value@	1.3	56.0	6.7	7.1			
Mean Concentration+		3.213	0.167	0.411	0.143			
Range of Concentrations		0.63 - 6.55	-0.004 - 0.38	0.316 - 0.472	0.034 - 0.228			
Exceedance Rate*		3 / 4	0 / 4	0 / 4	0 / 4			
040123	Thunder Bay River							
R.57 Water C	Quality Value@	1.3	110.0	14.0	18.0			
Mean Concer	ntration+	0.809	-0.005	0.477	0.104			
Range of Cor	ncentrations	0.36 - 2.58	-0.15 - 0.164	0.314 - 0.76	0.055 - 0.167			
Exceedance	Rate*	2 / 12	0 / 12	0 / 12	0 / 12			
600051	Thunder Bay River (Headwat	ters)						
R.57 Water C	Quality Value@	1.3	120.0	15.0	20.0			
Mean Concer	ntration+	0.533	-0.060	0.298	0.037			
Range of Concentrations		0.28 - 0.72	-0.14 - 0.015	0.247 - 0.372	0.021 - 0.048			
Exceedance	Rate*	0 / 4	0 / 4	0 / 4	0 / 4			
730025	Tittabawassee River							
R.57 Water C	Quality Value@	1.3	130.0	17.0	23.0			
Mean Concer	ntration+	2.963	0.401	1.833	0.655			
Range of Concentrations		0.63 - 5.3	0.194 - 0.566	1.46 - 2.16	0.163 - 0.932			
Exceedance	Rate*	3 / 4	0 / 4	0 / 4	0 / 4			

@ = With the exception of mercury, Rule 57 water quality values are expressed as dissolved metal.
 + = Calculated value; may not be rounded to appropriate number of significant figures.
 * = Number of samples exceeding Rule 57 water quality value / number of samples analyzed.

STORET ID	Station	Sample Collection Date	Total PCB+ (ng/L)
520258	Bryan Creek	6/21/2005	0.105
700123	Grand River (Lower)	3/22/2005 4/11/2005 5/11/2005 6/8/2005 6/27/2005 7/19/2005 8/23/2005 9/20/2005 10/4/2005 10/26/2005 11/21/2005	1.465 2.878 1.397 3.584 1.584 2.261 1.689 1.319 1.266 1.366 0.996 1.133
821417	Johnson Drain	6/22/2005	3.372
030077	Kalamazoo River (Lower)	3/21/2005 5/4/2005 6/1/2005 6/28/2005 7/20/2005 8/3/2005 8/24/2005 9/14/2005 9/27/2005 10/18/2005 11/2/2005 11/22/2005	5.648 13.393 17.710 15.653 18.247 14.078 12.884 7.454 12.088 9.124 6.880 6.003
430578	Pere Marquette River (Headwaters) 9/6/2005	0.303
160177	Pigeon River	7/20/2005	0.173
140126	Pokagon Creek	5/10/2005	0.445
631036	Shiawassee River (Headwaters)	6/23/2005	0.380
110628	St. Joseph River (Lower)	3/28/2005 5/5/2005 6/29/2005 7/21/2005 8/4/2005 8/25/2005 9/15/2005 9/29/2005 10/19/2005 11/3/2005 11/16/2005	1.318 2.157 2.223 1.981 2.893 2.253 1.824 2.221 2.209 1.122 1.340 1.399
600051	Thunder Bay River (Headwaters)	9/13/2005	0.082

Table 12.Concentrations of total PCB measured in 2005 at Michigan rivers on sampling dates shown.
The Rule 57 water quality value for total PCB = 0.026 ng/L (WCMP 2005).

+ = Calculated value; may not be rounded to appropriate number of significant figures.

Table 13. Summary of 1998-2005 temporal trends at WCMP sites exhibiting a trend in at least one contaminant for which trends were analyzed. All contaminants tested for trend are shown for all sites, whether or not a trend was found (an empty cell indicates no trend).

Parameter	Au Sable	Clinton	Escanaba	Lower Grand	Lower Kalamazoo	Manistique	Ontonagon	Shiawassee	Upper St. Joseph	Lower St. Joseph	Sturgeon	Tahquamenon	Tittabawassee
Turbidity								-			-		-
Dissolved Oxygen				+								+	
рН									+				
Specific Conductance													
Temperature													
Chloride, Total			-		+				+				
Suspended Solids, Total			-										
Nitrogen, Kjeldahl						-							-
Nitrogen, Ammonia						-		-	-				
Nitrogen, Nitrate		-											
Nitrogen, Nitrite	-												
Phosphorus, Total													-
Chromium, Total			-	-	-					-			
Copper, Total										+			
Lead, Total													
Mercury, Total							+						

"+" = Increasing trend over time ($p \le 0.05$).

"-" = Decreasing trend over time ($p \le 0.05$).

Figure 1. Monitoring cycle year 2005 watersheds. Not all watersheds shown have been selected for sampling within the WCMP.

Es

U.P. Watersheds

- ATC Au Train-Chocolay (Marquette-Alger)
- **Ce** Cedar (Menominee)
- **Es** Escanaba (Delta)
- Fi Fishdam (Delta)
- **Fo** Ford (Menominee)
- Ra Rapid (Delta)
- St Sturgeon (Delta)
- Wf Whitefish (Delta)

L.P. Watersheds

- Ch Cheboygan (Cheboygan)
- Kp Kawkawlin-Pine (Bay-Arenac)
- Ma Macatawa (Ottawa)
- **Me** Maumee Tributaries (Hillsdale, Lenawee, Monroe)
- **Oc** Ocqueoc (Presque Isle)
- **Pe** Pentwater (Oceana)
- **PM** Pere Marquette (Mason)
- **Rg** Rouge (Wayne)
- Sh Shiawassee (Saginaw)
- SJ St. Joseph, Upper (St. Joseph)
- **Sw** Swan Creek (Presque Isle)
- **TB** Thunder Bay (Alpena)
- Wi Wiscoggin (Tuscola)

• Watersheds are identified by the name of the principal waterbody, followed in parentheses by the county where the most downstream segment of the principal waterbody is located.



Figure 2. Monitoring cycle year 2006 watersheds. Not all watersheds shown have been selected for sampling within the WCMP.



Figure 3. Monitoring cycle year 2007 watersheds. Not all watersheds shown have been selected for sampling within the WCMP.



BI – Black (Alcona: Lake Huron Shoreline from Oscoda to Alpena)
B2 – Black (Van Buren)
Ga – Galien (Berrien)
Hu – Huron (Monroe)
LMS – Lake Michigan Shorline (Holland to Grand Haven)
LG – Looking Glass (Ionia)
Ma – Maple (Ionia)
SC – St. Clair (St. Clair, Belle, Pine, Black)
Ti – Tittabawassee (Saginaw)
Wh – White (Muskegon)

• Watersheds are identified by the name of the principal waterbody, followed in parentheses by the county where the most downstream segment of the principal waterbody is located.



Figure 4. Monitoring cycle year 2008 watersheds. Not all watersheds shown have been selected for sampling within the WCMP.



Figure 5. Monitoring cycle year 2009 watersheds. Not all watersheds shown have been selected for sampling within the WCMP.

U.P. Watersheds

Ca – Carp River (Mackinac)
Ch – Charlotte & Upper St. Mary's (Chippewa)
Mi – Millecoquins (Mackinac: Lake Michigan Shoreline from Manistique to Lake Huron)
Msq – Manistique (Schoolcraft)
Mu – Munuscong and Lower St. Mary's (Chippewa)
Pe – Pendill's Creek (Chippewa)
Pi – Pine (Mackinac)
Ta – Tahquamenon (Chippewa)
2H – Two Hearted (Luce)
Wa – Waiska (Chippewa)

L.P. Watersheds

BS – Big Sable (Mason) CI – Clinton (Macomb) Gr- Grand, Lower (Ottawa: Maple River to Lake Michigan) Ka – Kalamazoo (Allegan) Ma – Manistee (Manistee) Ri – Rifle (Arenac) Sa – Saginaw (Bay)

• Watersheds are identified by the name of the principal waterbody, followed in parentheses by the county where the most downstream segment of the principal waterbody is located.





Figure 6. WCMP intensive sites and their associated watersheds.





Figure 8. Diagram of the features of a box plot.



Figure 9. Total phosphorus concentrations measured in 1998-2005 at WCMP intensive and integrator sites.





Figure 10. Total chloride concentrations measured in 1998-2005 at WCMP intensive and integrator sites.



Figure 11. Total suspended solids concentrations measured in 1998-2005 at WCMP intensive and integrator sites.







Figure 13. Total chromium concentrations measured in 1998-2005 at WCMP intensive and integrator sites.



Figure 14. Total copper concentrations measured in 1998-2005 at WCMP intensive and integrator sites.







Figure 16. Total PCB concentrations measured in 1998-2005 at WCMP intensive and integrator sites.

Figure 17. Total phosphorus concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites. Unless noted, differences were not significant. Minimally impacted sites are identified in bold (WCMP 2005).



Figure 18. Total chloride concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites. Unless noted, differences were not significant. Minimally impacted sites are identified in bold (WCMP 2005).



Figure 19. Total suspended solids concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites. Unless noted, differences were not significant. Minimally impacted sites are identified in bold (WCMP 2005).



Figure 20. Total mercury concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites. Unless noted, differences were not significant. Minimally impacted sites are identified in bold (WCMP 2005).



Figure 21. Total chromium concentrations measured in 2005 at minimally impacted sites compared with potentially impacted sites. Unless noted, differences were not significant. Minimally impacted sites are identified in bold (WCMP 2005).













Au Sable River

Figure 25. Cheboygan River hydrograph (Historical streamflow data is not available for this location).



Cheboygan River

Figure 26. Clinton River hydrograph.



Clinton River

61

Figure 27. Escanaba River hydrograph.



Escanaba River



Lower Grand River



Lower Kalamazoo River

64

Figure 30. Lower Muskegon River hydrograph.



Lower Muskegon River



Pere Marquette River
Figure 32. River Rouge hydrograph (Historical streamflow data is not available for this location).



River Rouge

DATE

Figure 33. Saginaw River hydrograph.

Saginaw River



DISCHARGE (cfs)

Figure 34. Shiawassee River hydrograph.



Shiawassee River

DATE



Lower St. Joseph River

70

Figure 36. Thunder Bay River hydrograph (Historical streamflow data is not available for this location).



Thunder Bay River

APPENDIX

		Ammonia	N N	litrate	(Nitrite	Kjeldahl	Phosphoru	s (Ortho	Sulfate	Potassium	Chloride	Sodium
STORE	ſ ID	(ing N/L	(II	ig iv/L)	(ing w/∟)	(mg N/L)	(IIIg F/L)	(n	ng P/L)	(mg/L)	(IIIg/L)	(mg/L)	(IIIg/L)
350061	Au Sable River													
	4/5/2005	T 0.009		0.076		0.002	0.130	T 0.004	т	0.001	6.0	0.5	7.0	5.9
	4/27/2005	0.015		0.043		0.002	0.210	0.008	ND W		4.0	0.7	6.0	5.0
	5/18/2005	0.022		0.038		0.002	0.240	0.009	ND W		4.0	0.6	6.0	5.2
	6/9/2005	0.017		0.012		0.002	0.230	0.005	ND W		5.0	0.5	6.0	5.0
	6/28/2005	0.016	Т	0.007	Т	0.001	0.190	0.009	Т	0.002	5.0	0.4	6.0	6.7
	7/19/2005	0.020	Т	0.009		0.002	0.240	0.011	Т	0.002	4.0	0.4	6.0	5.6
	7/26/2005	0.013	Т	0.002		0.002	0.310	0.016	Т	0.002	5.0	0.4	6.0	4.9
	8/23/2005	0.020		0.008		0.002	0.180	0.008		0.004	2.0	0.4	6.0	5.2
	9/14/2005	0.010	Т	0.005	Т	0.001	0.190	0.007		0.003	4.0	0.4	6.0	5.2
	9/28/2005	P 0.014					P 0.160	P 0.013					6.0	
	10/25/2005	0.019		0.034		0.003	0.170	0.013		0.005	6.0	0.6	6.0	4.3
	11/9/2005	0.013		0.015		0.002	0.140	0.010	Т, Н	0.002	7.0	0.8	6.0	4.5
No. of	Samples:	12		12		12	12	12		12	12	12	12	12
	Mean:	0.016		0.023		0.002	0.199	0.009	*	0.002	4.7	0.5	6.1	5.2
	Median:	0.016		0.012		0.002	0.190	0.009	#	0.002	5.0	0.5	6.0	5.2
740385	Black River													
	4/19/2005	0.036		1.030		0.014	0.870	0.042		0.008	80.0	3.4	55.0	25.8
	6/14/2005	0.064		1.610		0.050	0.600	0.035	ND W		30.0	2.5	26.0	11.0
	8/9/2005	0.028		0.194		0.006	0.320	0.031		0.013	23.0	1.7	17.0	7.8
	10/4/2005	0.030		0.210		0.009	0.260	0.030		0.004	22.0	1.8	32.0	18.2
No. of	Samples:	4		4		4	4	4		4	4	4	4	4
	Mean:	0.040		0.761		0.020	0.513	0.035	*	0.007	38.8	2.4	32.5	15.7
	Median:	0.033		0.620		0.012	0.460	0.033		0.006	26.5	2.2	29.0	14.6

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		An (n	nmonia ng N/L)	Nitrate (mg N/L)	Ni (mg	trite 3 N/L)	Kjeldahl Nitrogen	Phosphorus (mg P/L)	s o Ph	Ortho osphate	Sulfate (mg/L)	Pota (m	issium ng/L)	Chloride (mg/L)	So (m	dium ng/L)
STORE	T ID						(mg N/L)		(r	ng P/L)						
280014	Boardman River															
	4/12/2005	Т	0.009	0.260	0.	.003	0.270	0.011	Т	0.002	4.0	D	30.1	34.0		4.7
	5/16/2005	Т	0.007	0.230	0.	.002	0.160	0.009	ND W		5.0		0.7	8.0		5.0
	7/6/2005	Т	0.008	0.164	Η 0.	.003	0.160	0.011	D W H		4.0		0.6	8.0		5.9
	9/7/2005	Т	0.004	0.162	0.	.004	0.120	0.012	ND W		3.0		0.7	8.0		4.6
No. of	Samples:		4	4		4	4	4		4	4		4	4		4
	Mean:		0.007	0.204	0.	.003	0.178	0.011	*	0.002	4.0		8.0	14.5		5.1
	Median:	#	0.008	0.197	0.	.003	0.160	0.011	#	0.002	4.0		0.7	8.0		4.9
520258	Bryan Creek															
	4/18/2005		0.010	0.051	0.	.003	0.440	0.018	Т	0.002	6.0		0.5	1.0	ND	
	6/21/2005		0.014	0.030	0.	.002	0.400	0.020	Т	0.001	3.0		0.6	1.0	ND	
	8/17/2005	Т	0.006	T 0.007	0.	.002	0.390	0.008	Т	0.002	4.0		0.7	1.0	ND	
	10/19/2005		0.016	0.033	Τ 0.	.002	0.310	0.009	W	0.001	17.0		0.6	1.0	ND	
No. of	Samples:		4	4		4	4	4		4	4		4	4		4
	Mean:		0.012	0.030	0.	.002	0.385	0.014		0.002	7.5		0.6	1.0	*	0.5
	Median:		0.012	0.032	0.	.002	0.395	0.014	#	0.002	5.0		0.6	1.0	#	0.5
730024	Cass River															
	4/4/2005	ND D		2.500	0.	.016	0.720	0.062		0.018	52.0		3.0	24.0		10.7
	5/24/2005		0.038	1.610	0.	.020	0.860	0.053		0.010	34.0		2.9	39.0		16.9
	7/26/2005		0.014	1.410	0.	.026	0.780	0.078		0.017	35.0	D	5.3	30.0		14.9
	10/19/2005		0.050	1.290	0.	.025	1.060	0.200		0.089	35.0	D	6.0	88.0		50.8
No. of	f Samples:		4	4		4	4	4		4	4		4	4		4
	Mean:	*	0.027	1.703	0.	.022	0.855	0.098		0.034	39.0		4.3	45.3		23.3
	Median:		0.026	1.510	0.	.023	0.820	0.070		0.018	35.0		4.2	34.5		15.9

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Ammonia (mg N/L)	Nitrate (mg N/L)	Nitrite (ma N/L)	Kjeldahl Nitrogen	Phosphorus (mg P/L)	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORET	ID	(g : ", _)	(g, _)	((mg N/L)	(9 : / =)	(mg P/L)	(9, =)	(9, =)	(9, =)	(9, =)
160073	Cheboygan River										
	4/4/2005	0.014	0.119	0.005	0.340	0.020	0.003	6.0	1.0	7.0	6.1
	4/26/2005	0.014	0.065	0.002	0.310	0.007	ND W	ND	0.9	8.0	7.0
	5/17/2005	0.014	0.062	0.002	0.250	0.010	T 0.002	4.0	0.8	8.0	5.0
	6/8/2005	0.017	0.021	0.004	0.270	0.006	T 0.002	5.0	4.3	11.0	6.1
	6/27/2005	0.019	0.015	T 0.001	0.290	0.009	ND W	3.0	0.7	7.0	6.0
	7/18/2005	0.013	T 0.005	0.002	0.310	0.011	T, PI 0.002	5.0	0.7	8.0	5.7
	7/27/2005	0.018	T 0.004	0.003	0.280	0.007	T 0.001	7.0	0.7	8.0	5.4
	8/22/2005	0.021	0.019	0.002	0.310	0.015	T 0.001	6.0	0.8	8.0	5.0
	9/12/2005	0.014	T 0.004	T 0.001	0.290	0.005	T 0.001	6.0	0.7	8.0	5.6
	9/27/2005	P 0.021			P 0.230	P 0.040				9.0	
1	0/24/2005	0.016	0.034	0.004	0.210	T 0.004	T 0.001	6.0	0.8	8.0	5.6
	11/8/2005	0.017	0.042	0.002	0.240	0.012	T, H 0.002	6.0	0.9	7.0	4.6
No. of S	Samples:	12	12	12	12	12	12	12	12	12	12
	Mean:	0.017	0.035	0.003	0.278	0.012	* 0.002	* 5.0	1.1	8.1	5.6
	Median:	0.017	0.021	0.002	0.285	0.010	# 0.002	6.0	0.8	8.0	5.6

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

- A = Value reported is the mean of two or more determinations.
- D = Analyte value quantified from a dilution(s); quantification level raised.
- H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

- J = Analyte was positively identified. Value is an estimate.
- ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

	Ammonia (mg N/L)	Nitrate	Nitrite	Kjeldahl Nitrogen	Phosphorus (mg P/L)	Ortho Phosphate	Su (r	ulfate	Potas (m	ssium a/L)	C	hloride ma/L)	Sodium
STORET ID		(iiig iv L)	(ing tv =)	(mg N/L)	(119172)	(mg P/L)	(iig/	(9, –)		(11g/ L)	(119/2)
500233 Clinton River													
3/14/2005	0.144	1.670	H 0.028	0.870	0.050	H 0.024	D	36.0		4.3	D	447.0	D 295.0
4/5/2005	0.063	1.250	0.016	0.680	0.055	0.019		39.0		3.4	D	178.0	94.7
4/27/2005	0.127	1.300	0.043	1.390	0.168	0.051		30.0		4.4		171.0	93.6
5/25/2005	0.170	1.360	0.060	1.120	0.122	0.059	D	29.0		4.0	D	190.0	D 104.0
6/14/2005	0.250	1.380	0.106	1.180	0.175	0.101		35.0	D	5.6	D	199.0	D 108.0
7/11/2005	0.130	1.880	0.071	0.980	0.167	0.106		30.0	D	5.6	D	202.0	D 123.0
7/25/2005	0.092	0.880	0.049	1.340	0.310	0.080		21.0		4.4		90.0	54.6
8/15/2005	0.520	1.040	0.097	1.690	0.176	0.082	D	34.0	D	5.4	D	170.0	90.8
9/1/2005	0.136	1.940	0.060	1.200	0.182	0.111	D	36.0	D	6.7	D	206.0	D 119.0
10/4/2005	0.063	1.120	0.046	1.000	0.190	0.096		22.0		4.5		105.0	61.8
11/3/2005	0.021	1.880	0.014	0.810	0.129	0.077		31.0	D	5.5	D	157.0	88.5
11/22/2005	0.127	2.200	0.019	0.830	0.096	0.066		38.0		4.5	D	150.0	79.5
No. of Samples:	12	12	12	12	12	12		12		12		12	12
Mean:	0.154	1.492	0.051	1.091	0.152	0.073		31.8		4.9		188.8	109.4
Median:	0.129	1.370	0.048	1.060	0.168	0.079		32.5		4.5		174.5	94.2

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		An (~	nmonia	Nitrate	Nitrite	Kjeldahl	Phosphorus	Ortho	Sulfate	Potassi	um	Chloride	Sodium
STORET	D	(1)	ig iv/L)	(ing N/L)	(IIIg N/L)	(mg N/L)	(IIIg F/L)	(mg P/L)	(mg/∟)	(mg/t	_)	(IIIg/L)	(IIIg/L)
210102	Escanaba River												
	4/7/2005		0.039	0.250	0.005	0.640	0.040	0.005	11.0		1.1	6.0	9.7
	4/21/2005		0.045	0.107	0.007	0.620	0.021	0.003	21.0		1.6	10.0	22.7
	5/24/2005		0.037	0.067	0.008	0.580	0.023	0.005	24.0		1.9	12.0	28.8
	6/13/2005		0.086	0.118	0.019	0.650	0.027	ND W	33.0		3.2	10.0	32.9
	6/16/2005		0.059	0.107	0.013	0.620	0.027	0.003	18.0		2.0	7.0	22.5
	8/1/2005		0.072	0.230	0.031	0.730	0.059	0.011	87.0		3.8	38.0	75.6
	8/25/2005		0.045	0.146	0.022	0.550	0.036	0.004	90.0	D	5.2	36.0	88.5
	9/15/2005		0.125	0.230	0.054	0.710	0.050	0.013	81.0		4.5	42.0	79.3
	10/3/2005		0.034	0.081	0.012	0.450	0.027	0.006	65.0		3.3	27.0	53.9
	10/6/2005		0.035	0.176	0.009	0.440	0.034	0.004	32.0		2.0	13.0	23.5
1	0/27/2005		0.090	0.082	0.019	0.610	0.028	0.007	58.0		2.7	21.0	46.5
1	1/22/2005		0.135	0.149	H 0.012	0.590	0.026	H 0.004	56.0		2.7	22.0	47.5
No. of	Samples:		12	12	12	12	12	12	12		12	12	12
	Mean:		0.067	0.145	0.018	0.599	0.033	* 0.006	48.0		2.8	20.3	44.3
	Median:		0.052	0.132	0.013	0.615	0.028	0.005	44.5		2.7	17.0	39.7
730285	Flint River												
	4/4/2005		0.012	1.180	0.012	0.730	0.055	0.011	32.0		2.9	60.0	30.7
	5/24/2005	D	0.120	2.140	0.059	1.200	0.170	0.058	27.0		3.7	90.0	50.4
	7/26/2005		0.065	1.690	0.024	0.840	0.200	0.029	19.0		3.6	70.0	40.2
1	0/19/2005		0.022	4.200	0.015	0.790	0.103	0.060	40.0	D	5.8	D 104.0	67.7
No. of	Samples:		4	4	4	4	4	4	4		4	4	4
	Mean:		0.055	2.303	0.028	0.890	0.132	0.040	29.5		4.0	81.0	47.3
	Median:		0.044	1.915	0.020	0.815	0.137	0.044	29.5		3.7	80.0	45.3

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Ammonia (mg N/L)	Nitrate	Nitrite	Kjeldahl Nitrogen	Phosphorus (mg P/L)	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORE	D	(11914)	(ing N/L)	(11914)	(mg N/L)	(iiig 172)	(mg P/L)	(1119/ 2)	(1119/ 12)	(1119/12)	(119, 2)
700123	Grand River (Lower)										
	3/22/2005	D 0.430	2.100	H 0.032	1.220	0.072	0.030	48.0	3.0	62.0	32.8
	4/11/2005	0.220	1.090	0.021	1.160	0.097	0.005	42.0	D 29.3	66.0	19.5
	5/11/2005	0.200	1.050	0.032	1.450	0.110	0.008	41.0	2.8	57.0	30.5
	6/8/2005	0.015	0.550	0.072	1.500	0.131	0.004	38.0	2.8	56.0	28.5
	6/27/2005	0.014	1.280	0.038	1.380	0.098	0.014	42.0	3.1	59.0	30.6
	7/19/2005	0.020	0.260	0.040	1.590	0.143	PI 0.016	47.0	3.1	66.0	37.2
	8/2/2005	0.015	0.380	0.029	1.340	0.099	0.017	48.0	3.3	59.0	30.1
	8/23/2005	0.013	0.520	0.049	1.260	0.100	0.017	50.0	3.2	66.0	35.6
	9/20/2005	0.046	0.960	0.096	0.960	0.106	0.009	51.0	3.6	72.0	42.4
	10/4/2005	0.015	1.270	0.031	0.900	0.086	0.003	42.0	3.6	64.0	37.4
	10/26/2005	0.270	1.270	0.084	0.900	0.082	T 0.002	54.0	3.9	70.0	41.0
	11/21/2005	0.133	1.570	0.025	0.650	0.060	0.025	57.0	3.4	59.0	31.3
No. of	Samples:	12	12	12	12	12	12	12	12	12	12
	Mean:	0.116	1.025	0.046	1.193	0.099	0.013	46.7	5.4	63.0	33.1
	Median:	0.033	1.070	0.035	1.240	0.099	0.012	47.5	3.3	63.0	32.1
340025	Grand River (Upper)										
	3/29/2005	D 0.050	2.500	H 0.016	0.820	0.070	0.025	41.0	3.1	35.0	15.5
	6/1/2005	0.017	1.250	0.020	1.020	0.102	0.018	47.0	2.9	56.0	28.7
	8/2/2005	0.013	0.590	0.021	1.160	0.140	0.023	46.0	3.5	60.0	32.5
	10/19/2005	0.012	1.100	0.014	0.780	0.071	0.006	61.0	4.8	71.0	41.1
No. of	Samples:	4	4	4	4	4	4	4	4	4	4
	Mean:	0.023	1.360	0.018	0.945	0.096	0.018	48.8	3.6	55.5	29.5
	Median:	0.015	1.175	0.018	0.920	0.087	0.021	46.5	3.3	58.0	30.6

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

	Ammonia (mg N/L)	Nitrate	Nitrite	Kjeldahl Nitrogen	Phosphorus	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORET ID	(ing ive)	(ing WE)	(ing tv/L)	(mg N/L)	(ing 1 / L)	(mg P/L)	(mg/L)	(ing/L)	(119/2)	(119/2)
580364 Huron River										
4/18/2005	0.061	0.530	0.008	0.700	0.030	0.003	D 191.0	3.0	D 92.0	48.5
6/22/2005	0.186	0.470	0.037	0.840	0.058	0.018	D 177.0	3.4	D 105.0	53.9
8/8/2005	P 0.070	0.157	0.011	P 0.780	P 0.056	0.017	D 208.0	4.1	D 114.0	57.4
10/3/2005	0.034	0.065	0.008	0.840	0.053	0.009	D 154.0	3.7	D 116.0	60.1
No. of Samples:	4	4	4	4	4	4	4	4	4	4
Mean:	0.088	0.306	0.016	0.790	0.049	0.012	182.5	3.6	106.8	55.0
Median:	0.066	0.314	0.010	0.810	0.055	0.013	184.0	3.6	109.5	55.7
821417 Johnson Drain										
4/18/2005	ND D	2.960	0.036	1.060	0.060	0.007	D 41.0	D 5.6	D 360.0	D 195.0
6/22/2005	D 0.240	2.800	0.101	1.200	0.094	0.039	D 34.0	D 5.1	D 291.0	D 163.0
8/8/2005	D 0.070	2.500	0.032	0.580	0.045	0.005	44.0	4.9	D 208.0	97.4
10/3/2005	0.025	1.480	0.017	0.970	0.073	0.018	D 38.0	D 5.0	D 254.0	D 132.0
No. of Samples:	4	4	4	4	4	4	4	4	4	4
Mean:	* 0.085	2.435	0.047	0.953	0.068	0.017	39.3	5.2	278.3	146.9
Median:	0.048	2.650	0.034	1.015	0.067	0.013	39.5	5.1	272.5	147.5

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Ammonia (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	Kjeldahl Nitrogen	Phosphorus (mg P/L)	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORE	T ID	((119112)	(119142)	(mg N/L)	((mg P/L)	(119, 2)	((119/2)	(1119, 2)
030077	Kalamazoo River (Lower)										
	3/21/2005	0.051	1.670	H 0.012	0.550	0.038	0.009	37.0	2.5	42.0	23.5
	5/4/2005	0.010	0.610	0.011	0.980	0.085	0.003	28.0	2.4	46.0	25.2
	6/1/2005	0.012	0.680	0.022	1.070	0.101	0.007	29.0	2.3	47.0	25.0
	6/28/2005	0.101	0.310	0.014	1.220	0.118	0.012	28.0	2.2	47.0	26.0
	7/20/2005	0.193	0.400	0.041	1.360	0.132	0.003	32.0	3.0	58.0	32.7
	8/3/2005	0.062	0.480	0.022	0.930	0.085	0.006	31.0	2.5	47.0	26.6
	8/24/2005	0.045	0.580	0.021	0.770	0.123	0.005	32.0	3.2	60.0	34.0
	9/14/2005	0.048	0.660	0.020	0.710	0.062	T 0.002	32.0	3.0	62.0	34.9
	9/27/2005	0.029	0.820	0.019	0.770	0.069	0.005	35.0	3.1	62.0	34.6
	10/18/2005	T 0.004	1.020	0.019	0.580	0.056	T 0.002	32.0	3.1	59.0	32.7
	11/2/2005	0.026	1.190	0.010	0.500	0.039	T 0.001	31.0	3.3	60.0	35.1
	11/22/2005	0.078	1.270	0.010	0.480	0.040	0.012	39.0	3.0	56.0	30.3
No. of	Samples:	12	12	12	12	12	12	12	12	12	12
	Mean:	0.055	0.808	0.018	0.827	0.079	0.006	32.2	2.8	53.8	30.1
	Median:	0.047	0.670	0.019	0.770	0.077	0.005	32.0	3.0	57.0	31.5
390057	Kalamazoo River (Upper)										
	3/28/2005	0.150	1.120	H 0.012	0.720	0.047	0.005	32.0	1.8	30.0	14.1
	5/10/2005	0.064	0.980	0.013	0.760	0.072	0.008	29.0	1.9	48.0	23.1
	8/4/2005	0.034	0.800	0.020	0.550	0.066	0.016	33.0	1.8	52.0	25.4
	10/5/2005	0.051	0.970	0.011	0.410	0.091	0.042	24.0	2.2	53.0	26.4
No. of	Samples:	4	4	4	4	4	4	4	4	4	4
	Mean:	0.075	0.968	0.014	0.610	0.069	0.018	29.5	1.9	45.8	22.3
	Median:	0.058	0.975	0.013	0.635	0.069	0.012	30.5	1.9	50.0	24.3

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		An (n	nmonia na N/L)	Nitrate (mg N/L)	Nitrite (ma N/L)	Kjeldahl Nitrogen	Phosphorus (ma P/L)	C Pho	Ortho Isphate	Sulfate (mg/L)	Potassium (mg/L)	Chloride (ma/L)	Sodium (ma/L)
STORE	T ID	,	5 7			(mg N/L)	(5)	(m	g P/L)				(3')
510088	Manistee River												
	4/11/2005		0.024	0.210	0.005	0.260	0.023		0.007	7.0	D 23.2	33.0	6.4
	6/9/2005	Т	0.009	0.125	0.005	0.240	0.021	Т	0.002	7.0	0.6	13.0	8.2
	7/6/2005		0.011	0.148	H 0.006	0.200	0.023	Т, Н	0.002	7.0	0.7	16.0	8.8
	9/7/2005		0.010	0.103	0.005	0.180	0.019	Т	0.002	6.0	0.7	12.0	7.0
No. of	Samples:		4	4	4	4	4		4	4	4	4	4
	Mean:		0.014	0.147	0.005	0.220	0.022		0.003	6.8	6.3	18.5	7.6
	Median:		0.011	0.137	0.005	0.220	0.022	#	0.002	7.0	0.7	14.5	7.6
770073	Manistique River												
	5/9/2005		0.025	0.058	0.003	0.350	0.015		0.004	10.0	0.6	2.0	1.6
	6/13/2005	Т	0.009	0.056	0.003	0.310	0.010	ND W		15.0	0.6	2.0	1.6
	8/15/2005	Т	0.009	0.050	0.003	0.300	0.013	ND W		20.0	0.6	2.0	2.0
	10/19/2005		0.018	0.041	0.003	0.490	0.018	W	0.001	18.0	0.6	2.0	1.8
No. of	f Samples:		4	4	4	4	4		4	4	4	4	4
	Mean:		0.015	0.051	0.003	0.363	0.014	*	0.002	15.8	0.6	2.0	1.8
	Median:		0.014	0.053	0.003	0.330	0.014	#	0.002	16.5	0.6	2.0	1.7
550038	Menominee River												
	4/19/2005		0.021	0.155	0.005	0.550	0.034	Т	0.002	11.0	1.1	5.0	5.9
	6/15/2005		0.032	0.061	0.005	0.570	0.041		0.006	10.0	1.2	6.0	6.4
	8/17/2005	Т	0.006	ND W	0.002	0.380	0.027		0.006	19.0	1.9	8.0	13.9
	10/17/2005		0.016	0.138	0.006	0.510	0.033		0.004	17.0	1.5	6.0	8.1
No. of	f Samples:		4	4	4	4	4		4	4	4	4	4
	Mean:		0.019	* 0.090	0.005	0.503	0.034		0.005	14.3	1.4	6.3	8.6
	Median:		0.019	0.100	0.005	0.530	0.034		0.005	14.0	1.4	6.0	7.3

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Ammonia (mg N/L)	Nitrate	Nitrite	Kjeldahl Nitrogen	Phosphorus	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORET ID		(119142)	(119142)	(11910)	(mg N/L)	(iiig 1 / ב)	(mg P/L)	(1119/12)	(119/2)	(119/2)	(1119, 2)
610273 Mu	skegon River (Lower)										
3/22/2	2005	0.058	0.470	H 0.019	0.390	0.018	0.007	14.0	1.3	21.0	10.5
5/4/2	2005	0.023	0.380	0.007	0.400	0.019	T 0.001	7.0	1.4	15.0	9.0
6/8/2	2005	0.019	0.320	0.008	0.400	0.018	0.003	10.0	1.1	18.0	10.1
6/27/2	2005	0.015	0.290	0.008	0.370	0.022	T 0.001	11.0	1.1	20.0	9.7
7/19/2	2005	0.018	0.230	0.007	0.370	0.021	ND W	11.0	1.1	20.0	12.2
8/2/2	2005	0.012	0.158	0.008	0.340	0.019	0.005	15.0	1.1	20.0	11.1
8/23/2	2005	0.011	0.167	0.007	0.330	0.020	T 0.002	12.0	1.1	22.0	12.5
9/14/2	2005	0.013	0.042	0.003	0.320	0.027	0.004	13.0	1.1	21.0	11.4
9/27/2	2005	0.030	0.093	0.007	0.480	0.067	0.026	14.0	1.2	19.0	11.3
10/18/2	2005	0.018	0.250	0.012	0.290	0.030	0.011	14.0	1.3	20.0	11.3
11/2/2	2005	0.012	0.260	0.005	0.270	0.022	0.004	13.0	1.3	21.0	12.6
11/21/2	2005	0.030	0.290	0.007	0.300	0.020	0.009	17.0	1.2	19.0	10.3
No. of Samp	les:	12	12	12	12	12	12	12	12	12	12
Me	ean:	0.022	0.246	0.008	0.355	0.025	* 0.006	12.6	1.2	19.7	11.0
Med	lian:	0.018	0.255	0.007	0.355	0.021	0.004	13.0	1.2	20.0	11.2
670008 Mu	skegon River (Upper)										
4/12/2	2005	0.019	0.165	0.006	0.480	0.028	0.006	4.0	D 61.0	72.0	6.9
5/17/2	2005	0.013	0.250	0.005	0.390	0.021	T 0.002	5.0	1.0	16.0	10.3
7/7/2	2005	0.013	0.240	H 0.008	0.380	0.040	H 0.006	7.0	1.0	18.0	10.7
9/6/2	2005	T 0.007	0.170	0.006	0.260	0.015	T 0.001	7.0	1.0	18.0	10.5
No. of Samp	les:	4	4	4	4	4	4	4	4	4	4
Me	ean:	0.013	0.206	0.006	0.378	0.026	0.004	5.8	16.0	31.0	9.6
Med	lian:	0.013	0.205	0.006	0.385	0.025	0.004	6.0	1.0	18.0	10.4

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

	Ammonia (mg N/L)	Nitrate (mg N/L)	Nitrite (ma N/L)	Kjeldahl Nitrogen	Phosphorus (mg P/L)	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORET ID	(ing ive)	(119102)	(119102)	(mg N/L)	(iiig 172)	(mg P/L)	(119/2)	(119/2)	(119/2)	(1119/12)
660038 Ontonagon River										
5/2/2005	0.010	0.028	0.006	0.400	0.046	0.009	2.0	1.1	3.0	2.9
6/22/2005	0.013	0.048	PI 0.010	0.730	0.085	0.011	4.0	1.2	3.0	1.9
8/18/2005	T 0.004	ND W	0.005	0.310	0.024	0.005	ND	1.0	3.0	3.6
10/18/2005	0.010	0.050	0.014	0.500	0.049	0.023	4.0	1.3	3.0	2.7
No. of Samples:	4	4	4	4	4	4	4	4	4	4
Mean:	0.009	* 0.033	0.009	0.485	0.051	0.012	* 2.8	1.2	3.0	2.8
Median:	0.010	0.038	0.008	0.450	0.048	0.010	3.0	1.2	3.0	2.8
530027 Pere Marquette River										
3/23/2005	0.032	0.164	H 0.010	0.270	0.022	0.010	13.0	0.8	13.0	7.5
4/11/2005	0.015	0.090	0.003	0.430	0.031	0.007	10.0	D 45.6	51.0	4.8
5/16/2005	0.016	0.105	0.003	0.360	0.031	0.004	9.0	0.7	10.0	7.1
6/9/2005	0.035	0.106	0.007	0.560	0.063	0.011	12.0	0.7	14.0	8.8
6/27/2005	0.026	0.120	0.005	0.360	0.045	0.008	13.0	0.7	15.0	9.1
7/19/2005	0.020	0.072	0.003	0.310	0.040	0.006	13.0	0.7	14.0	9.8
8/2/2005	0.017	0.085	0.005	0.300	0.036	0.008	15.0	0.7	15.0	9.0
8/23/2005	0.013	0.104	0.004	0.280	0.032	0.006	12.0	0.7	13.0	7.8
9/20/2005	0.013	0.084	0.003	0.160	0.022	0.005	16.0	0.7	16.0	10.3
10/4/2005	0.024	0.164	0.005	0.280	0.028	0.006	10.0	0.8	13.0	8.5
10/26/2005	T 0.009	0.080	0.006	0.130	0.017	0.006	15.0	0.7	14.0	8.7
11/17/2005	0.021	0.174	0.004	0.270	0.019	0.008	14.0	0.9	12.0	6.9
No. of Samples:	12	12	12	12	12	12	12	12	12	12
Mean:	0.020	0.112	0.005	0.309	0.032	0.007	12.7	4.5	16.7	8.2
Median:	0.019	0.105	0.005	0.290	0.031	0.007	13.0	0.7	14.0	8.6

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		An (p	nmonia	N (m	litrate	1 (n	Nitrite	Kjeldahl Nitrogen	Phos	phorus	(Ph	Ortho	Sulfate	Potassium	Chloride	Sodium
STORE	T ID	(II	ig w/∟)	(1)	ig iv/L)	(II	ng N/L)	(mg N/L)	(m)	y r/L)	(n	ng P/L)	(IIIg/L)	(IIIg/L)	(IIIg/L)	(IIIg/L)
430578	Pere Marquette Rive	er (Headwater	s)													
	4/12/2005		0.013		0.067		0.003	0.290		0.022		0.005	7.0	D 13.2	18.0	4.1
	5/17/2005		0.011		0.046		0.002	0.250		0.019	т	0.001	6.0	0.6	7.0	5.1
	7/7/2005		0.018		0.069	н	0.005	0.270		0.027	н	0.005	6.0	0.5	7.0	7.2
	9/6/2005	т	0.004		0.018		0.003	0.110		0.012	т	0.002	6.0	0.6	7.0	5.3
No. o	f Samples:		4		4		4	4		4		4	4	4	4	4
	Mean:		0.012		0.050		0.003	0.230		0.020		0.003	6.3	3.7	9.8	5.4
	Median:		0.012		0.057		0.003	0.260		0.021		0.004	6.0	0.6	7.0	5.2
160177	Pigeon River															
	5/19/2005	Т	0.006		0.042		0.002	0.260		0.015	ND W		3.0	0.6	4.0	3.9
	7/20/2005	Т	0.006		0.027		0.002	0.280		0.016	Т	0.001	4.0	0.7	5.0	4.3
	9/12/2005	Т	0.004		0.017	Т	0.001	0.200		0.006	Т	0.001	4.0	0.7	5.0	4.1
	10/25/2005	Т	0.004		0.075	ND		0.120	W	0.003	ND		5.0	0.7	5.0	3.3
No. o	f Samples:		4		4		4	4		4		4	4	4	4	4
	Mean:		0.005		0.040	*	0.002	0.215		0.010	*	0.001	4.0	0.7	4.8	3.9
	Median:	#	0.005		0.035	#	0.002	0.230		0.011	#	0.001	4.0	0.7	5.0	4.0
490006	Pine River															
	5/17/2005		0.027		0.011		0.017	0.660		0.098		0.046	4.0	1.1	3.0	2.4
	7/18/2005	Т	0.007	ND W			0.009	0.340		0.052		0.021	2.0	0.9	1.0	1.7
	8/15/2005		0.014	Т	0.006		0.010	0.350		0.051		0.022	3.0	0.8	2.0	1.4
	10/25/2005		0.015	Т	0.003	ND		0.390		0.052	ND		6.0	0.8	5.0	3.6
No. o	f Samples:		4		4		4	4		4		4	4	4	4	4
	Mean:		0.016	*	0.006	*	0.009	0.435		0.063	*	0.023	3.8	0.9	2.8	2.3
	Median:		0.015	#	0.006		0.010	0.370		0.052		0.022	3.5	0.9	2.5	2.1

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Ammonia (mg N/L)	Nitrate	Nitrite	Kjeldahl Nitrogen	Phosphorus	Ortho Phosphate	Sulfate	Pota	ssium	Chloride	Sodium
STORET	D	(ing WE)	(IIIg IV)	(ing N/L)	(mg N/L)	(ing i /L)	(mg P/L)	(119/٢)	(II	ig/L)	(119/1)	(IIIg/L)
580046	River Raisin											
	4/18/2005	0.027	1.080	0.017	1.000	0.050	0.006	57.0		3.0	50.0	25.3
	6/22/2005	0.014	1.710	0.018	0.750	0.049	0.006	72.0		3.6	58.0	28.5
	8/8/2005	T 0.008	0.310	0.016	0.840	0.061	0.009	40.0		2.9	32.0	16.2
	10/3/2005	T 0.004	0.093	0.011	0.570	0.073	0.027	34.0		2.3	27.0	16.4
No. of	Samples:	4	4	4	4	4	4	4		4	4	4
	Mean:	0.013	0.798	0.016	0.790	0.058	0.012	50.8		3.0	41.8	21.6
	Median:	0.011	0.695	0.017	0.795	0.056	0.008	48.5		3.0	41.0	20.9
820070	River Rouge											
	3/14/2005	0.021	0.400	H 0.003	0.170	0.009	H 0.003	13.0		1.2	23.0	15.6
	4/5/2005	0.028	0.530	0.008	0.250	0.022	0.010	18.0		2.1	44.0	24.7
	4/27/2005	0.820	0.850	H 0.039	2.000	0.153	H 0.034	D 48.0	D	6.1	D 256.0	D 162.0
	5/25/2005	0.220	1.180	0.043	0.900	0.092	0.040	D 32.0	D	10.9	D 184.0	98.0
	6/14/2005	0.210	0.820	0.045	0.740	0.094	0.026	26.0	D	8.0	92.0	48.9
	7/11/2005	0.123	0.660	0.024	0.600	0.079	0.023	22.0	D	6.2	91.0	48.2
	7/25/2005	0.148	0.610	0.024	0.550	0.072	0.027	23.0	D	7.7	78.0	42.6
	8/15/2005	0.143	0.850	0.027	0.510	0.090	0.047	23.0	D	6.4	77.0	39.4
	9/1/2005	0.154	0.530	0.023	0.520	0.063	0.033	23.0	D	7.3	64.0	33.3
	10/3/2005	0.153	0.760	0.024	0.600	0.108	0.051	25.0	D	7.9	74.0	38.0
	11/8/2005	0.102	0.930	0.013	0.470	0.084	0.021	26.0	D	10.3	75.0	36.7
	1/22/2005	0.156	0.780	0.011	0.670	0.118	0.038	35.0	D	6.8	84.0	45.4
No. of	Samples:	12	12	12	12	12	12	12		12	12	12
	Mean:	0.190	0.742	0.024	0.665	0.082	0.029	26.2		6.7	95.2	52.7
	Median:	0.151	0.770	0.024	0.575	0.087	0.030	24.0		7.1	77.5	41.0

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

	Ammonia (mg N/L)	Nitrate	Nitrite	Kjeldahl Nitrogen	Phosphorus (mg P/L)	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORET ID	(119102)	(119102)	(119142)	(mg N/L)	(iiig 1 / 2)	(mg P/L)	(1119/12)	(119/2)	(119/2)	(119/2)
090177 Saginaw River										
3/14/2005	Р	Р	H 0.033	P 0.900	P 0.079	H 0.035	32.0	3.6	70.0	36.3
4/4/2005	0.076	1.890	0.022	0.790	0.077	0.024	28.0	2.7	34.0	16.2
4/27/2005	D 0.120	2.200	0.032	1.100	0.095	0.031	33.0	3.4	82.0	42.9
5/24/2005	0.101	1.280	0.035	1.010	0.091	0.016	33.0	2.8	73.0	36.1
6/15/2005	D 0.170	2.700	0.082	1.030	0.121	0.041	27.0	3.4	54.0	24.9
7/11/2005	0.029	0.710	0.032	1.130	0.081	0.003	31.0	3.8	103.0	56.4
7/25/2005	0.125	0.590	0.036	1.070	0.125	0.045	36.0	4.0	98.0	55.5
8/16/2005	0.145	0.710	0.042	1.080	0.116	0.052	30.0	3.6	97.0	51.3
8/31/2005	0.102	0.720	0.039	1.260	0.118	0.034	D 32.0	4.4	D 135.0	77.1
9/21/2005	0.175	1.160	0.052	1.310	0.106	0.023	40.0	4.6	D 136.0	78.0
10/19/2005	0.138	1.320	0.028	1.020	0.100	0.017	37.0	4.6	D 113.0	65.1
11/29/2005	0.144	1.640	0.017	0.760	0.055	0.011	D 42.0	4.0	D 87.0	47.2
No. of Samples:	12	12	12	12	12	12	12	12	12	12
Mean:	0.120	1.356	0.038	1.038	0.097	0.028	33.4	3.7	90.2	48.9
Median:	0.125	1.280	0.034	1.050	0.098	0.028	32.5	3.7	92.0	49.3

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Am (m	monia a N/L)	Nitrate	Nitrite	Kjeldahl	Phosphorus	Ortho	Sulfate	Potassium	Chloride	Sodium
STORET	. ID	(11)	g N/L)	(IIIg N/L)	(iiig N/L)	(mg N/L)	(ing F/L)	(mg P/L)	(IIIg/L)	(IIIg/L)	(IIIg/L)	(mg/L)
730023	Shiawassee River											
	4/4/2005		0.012	0.940	0.007	0.610	0.045	0.006	31.0	2.6	50.0	23.6
	4/28/2005		0.010	1.630	0.019	0.990	0.071	0.010	30.0	3.7	66.0	32.2
	5/24/2005		0.030	0.600	0.013	0.720	0.046	0.007	51.0	2.8	70.0	35.8
	6/15/2005		0.045	1.930	0.029	0.830	0.121	0.051	30.0	4.0	68.0	32.5
	7/12/2005		0.046	0.760	0.014	0.650	0.071	0.026	30.0	4.0	D 77.0	40.5
	7/26/2005		0.019	0.520	0.010	0.630	0.100	0.041	26.0	3.8	75.0	41.8
	8/16/2005		0.031	0.250	0.010	0.700	0.062	0.023	26.0	3.8	91.0	46.9
	8/31/2005		0.041	0.300	0.010	0.730	0.047	0.008	D 33.0	D 5.3	D 107.0	61.1
	9/21/2005		0.031	0.410	0.009	0.790	0.065	0.007	40.0	D 5.7	D 110.0	63.6
	0/19/2005		0.034	0.270	0.010	0.520	0.026	0.003	27.0	4.5	83.0	46.3
	11/3/2005	Т	0.007	0.550	0.009	0.580	0.024	T 0.001	35.0	D 5.6	33.0	58.4
	1/29/2005		0.015	0.750	0.012	0.610	0.032	0.005	D 27.0	3.8	D 107.0	58.2
No. of	Samples:		12	12	12	12	12	12	12	12	12	12
	Mean:		0.027	0.743	0.013	0.697	0.059	0.016	32.2	4.1	78.1	45.1
	Median:		0.031	0.575	0.010	0.675	0.055	0.008	30.0	3.9	76.0	44.1
631036	Shiawassee River (Hea	dwaters)										
	4/19/2005		0.015	0.076	0.003	0.350	0.014	ND W	14.0	1.6	47.0	23.4
	6/23/2005		0.010	0.022	0.002	0.360	0.011	ND W	6.0	1.0	47.0	22.4
	8/9/2005	Т	0.007	0.020	0.002	0.370	0.010	T 0.001	10.0	1.5	50.0	23.1
	10/4/2005	Т	0.008	0.033	0.003	0.290	0.012	T 0.001	3.0	1.6	47.0	21.7
No. of	Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:		0.010	0.038	0.003	0.343	0.012	* 0.001	8.3	1.4	47.8	22.7
	Median:	#	0.009	0.028	0.003	0.355	0.012	# 0.001	8.0	1.6	47.0	22.8

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

	Ammonia (mg N/L)	Nitrate (mg N/L)	Nitrite (ma N/L)	Kjeldahl Nitrogen	Phosphorus (mg P/L)	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORET ID	(11914)	(11910/2)	(119142)	(mg N/L)	(iiig 1 / ב)	(mg P/L)	(119/2)	(1119/2)	(1119/12)	(1119/12)
110628 St. Joseph River (Lower)										
3/28/2005	0.011	2.200	H 0.011	0.460	0.034	0.004	40.0	2.0	29.0	13.0
5/5/2005	T 0.006	1.730	0.011	0.500	0.036	0.004	32.0	2.0	32.0	15.9
6/2/2005	T 0.007	1.180	0.016	0.780	0.062	0.006	33.0	2.0	33.0	16.6
6/29/2005	T 0.008	0.950	0.013	0.680	0.058	0.009	35.0	2.2	37.0	18.8
7/21/2005	0.011	0.960	0.017	0.690	0.085	T 0.002	35.0	2.4	37.0	20.2
8/4/2005	0.011	0.770	0.011	0.770	0.062	T 0.002	38.0	2.6	34.0	17.8
8/25/2005	T 0.005	1.060	0.016	0.590	0.056	0.006	35.0	2.7	39.0	20.6
9/15/2005	0.015	0.950	0.011	0.600	0.054	T 0.002	37.0	2.6	45.0	22.8
9/29/2005	0.046	1.350	0.013	0.440	0.065	0.024	38.0	2.6	39.0	20.4
10/19/2005	0.021	1.430	0.013	0.320	0.042	0.017	38.0	2.6	39.0	20.9
11/3/2005	T 0.006	1.640	0.005	0.310	0.054	0.026	36.0	2.5	40.0	22.6
11/16/2005	0.018	1.610	0.008	0.370	0.042	0.013	38.0	2.6	39.0	19.8
No. of Samples:	12	12	12	12	12	12	12	12	12	12
Mean:	0.014	1.319	0.012	0.543	0.054	0.010	36.3	2.4	36.9	19.1
Median:	0.011	1.265	0.012	0.545	0.055	0.006	36.5	2.6	38.0	20.0
750273 St. Joseph River (Upper)										
3/29/2005	0.016	1.940	H 0.010	0.490	0.024	T 0.002	33.0	1.7	22.0	9.4
5/10/2005	0.040	1.710	0.014	0.580	0.032	T 0.002	29.0	1.6	25.0	11.1
7/21/2005	0.065	0.870	0.022	0.610	0.044	0.005	28.0	1.7	22.0	10.5
10/5/2005	0.040	1.190	0.013	0.490	0.034	ND W	21.0	1.9	26.0	12.1
No. of Samples:	4	4	4	4	4	4	4	4	4	4
Mean:	0.040	1.428	0.015	0.543	0.034	* 0.003	27.8	1.7	23.8	10.8
Median:	0.040	1.450	0.014	0.535	0.033	# 0.002	28.5	1.7	23.5	10.8

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

	Ammonia (mg N/L)	Nitrate	Nitrite	Kjeldahl Nitrogen	Phosphorus	Ortho Phosphate	Sulfate	Potassium	Chloride	Sodium
STORET ID	(119 10 2)	(iiig 10/2)		(mg N/L)	(iiig 1 / ב)	(mg P/L)	(1119/12)	(119/2)	(119/2)	(119/2)
210032 Sturgeon River										
4/18/2005	0.014	0.062	0.005	0.530	0.029	0.004	20.0	0.5	2.0	2.0
6/13/2005	0.020	0.068	0.004	0.410	0.016	ND W	26.0	0.8	2.0	1.6
8/15/2005	T 0.008	T 0.006	0.003	0.260	0.011	ND W	14.0	0.8	2.0	1.8
10/19/2005	0.017	0.055	0.004	0.610	0.017	W 0.001	46.0	0.7	2.0	1.4
No. of Samples:	4	4	4	4	4	4	4	4	4	4
Mean:	0.015	0.048	0.004	0.453	0.018	* 0.002	26.5	0.7	2.0	1.7
Median:	0.016	0.059	0.004	0.470	0.017	# 0.002	23.0	0.8	2.0	1.7
170141 Tahquamenon River										
4/20/2005	0.015	0.017	0.005	0.650	0.026	0.003	7.0	0.7	2.0	1.9
6/20/2005	T 0.008	0.097	0.004	0.440	0.020	T 0.001	5.0	0.6	2.0	1.4
8/16/2005	T 0.007	0.049	0.004	0.310	0.015	0.003	10.0	0.6	3.0	2.6
10/26/2005	0.025	0.082	ND	0.590	0.016	ND	13.0	0.7	3.0	2.4
No. of Samples:	4	4	4	4	4	4	4	4	4	4
Mean:	0.014	0.061	* 0.004	0.498	0.019	* 0.002	8.8	0.7	2.5	2.1
Median:	0.012	0.066	0.004	0.515	0.018	# 0.002	8.5	0.7	2.5	2.2

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

- J = Analyte was positively identified. Value is an estimate.
- ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Am (m	monia g N/L)	N (m	itrate ng N/L)	(Nitrite (mg N/L)	Kjeldahl Nitrogen	Phosphoru (mg P/L)	s Ph	Ortho osphate	Sulfate (mg/L)	Potassium (mg/L)	Chloride (mg/L)	Sodium (mg/L)
STORET	ID							(mg N/L)		(1	ng P/L)				
040123	Thunder Bay River														
	4/4/2005		0.017		0.149		0.006	0.500	0.029		0.005	7.0	1.2	6.0	4.0
	4/26/2005		0.023		0.034		0.003	0.500	0.015	ND W		5.0	1.0	8.0	7.8
	5/18/2005		0.027		0.032		0.004	0.530	0.018		0.003	3.0	0.9	8.0	5.8
	6/8/2005		0.011		0.015		0.003	0.430	0.017		0.004	5.0	0.8	7.0	6.1
	6/27/2005		0.017		0.025		0.003	0.540	0.026		0.004	4.0	0.6	7.0	6.7
	7/19/2005		0.026		0.014		0.003	0.410	0.022		0.006	4.0	0.4	6.0	6.7
	7/27/2005		0.024		0.010		0.004	0.380	0.020		0.005	6.0	0.3	7.0	6.1
	8/22/2005		0.020		0.019		0.003	0.310	0.020		0.004	5.0	0.4	8.0	5.8
	9/13/2005		0.011	Т	0.007		0.002	0.400	0.012	Т	0.002	5.0	0.5	7.0	5.9
	9/27/2005	Р	0.018					P 0.320	P 0.016					9.0	
1	0/24/2005		0.015		0.007		0.004	0.350	0.011	Т	0.001	6.0	1.0	6.0	6.0
	11/8/2005	Т	0.007	т	0.002		0.002	0.320	0.015	Т, Н	0.001	5.0	0.9	6.0	5.6
No. of	Samples:		12		12		12	12	12		12	12	12	12	12
	Mean:		0.018		0.029		0.003	0.416	0.018	*	0.003	5.0	0.7	7.1	6.0
	Median:		0.018		0.015		0.003	0.405	0.018		0.004	5.0	0.8	7.0	6.0
600051	Thunder Bay River (Hea	adwaters)													
	5/18/2005	Т	0.008		0.012	Т	0.001	0.260	0.012	ND W		4.0	0.6	6.0	5.6
	7/19/2005		0.015		0.015		0.002	0.290	0.010	Т	0.002	3.0	0.6	6.0	5.0
	9/13/2005	Т	0.009		0.012	Т	0.001	0.290	0.009	ND W		3.0	0.6	6.0	4.8
1	0/25/2005	Т	0.009		0.008		0.003	0.170	0.009	Т	0.002	5.0	0.6	6.0	4.9
No. of	Samples:		4		4		4	4	4		4	4	4	4	4
	Mean:		0.010		0.012		0.002	0.253	0.010	*	0.002	3.8	0.6	6.0	5.1
	Median:	#	0.009		0.012	#	0.002	0.275	0.010	#	0.002	3.5	0.6	6.0	5.0

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

	Ammonia (mg N/L)	Nitrate (mg N/L)	Nitrite (mg N/L)	Kjeldahl Nitrogen (mg N/L)	Phosphorus (mg P/L)	Ortho Phosphate (mg P/L)	Sulfate (mg/L)	Potassium (mg/L)	Chloride (mg/L)	Sodium (mg/L)
730025 Littabawassee River										
4/4/2005	0.073	1.330	0.020	0.830	0.083	0.024	21.0	2.6	30.0	14.7
5/24/2005	0.054	0.370	0.013	0.690	0.048	0.008	52.0	2.2	68.0	35.9
7/26/2005	0.071	0.290	0.013	0.810	0.085	0.017	31.0	3.1	110.0	64.9
10/19/2005	0.054	0.370	0.017	0.650	0.030	0.008	35.0	3.6	D 155.0	91.3
No. of Samples:	4	4	4	4	4	4	4	4	4	4
Mean:	0.063	0.590	0.016	0.745	0.062	0.014	34.8	2.9	90.8	51.7
Median:	0.063	0.370	0.015	0.750	0.066	0.013	33.0	2.9	89.0	50.4

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

- A = Value reported is the mean of two or more determinations.
- D = Analyte value quantified from a dilution(s); quantification level raised.
- H = Recommended laboratory holding time was exceeded.
- I = Dilution required due to matrix interference; quantification level raised.
- J = Analyte was positively identified. Value is an estimate.
- ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Su	spended Solids	Dissolved Solids	Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORE	ΓID	((mg/L)	(mg/L)	(mg/L)		(mg/L)					
350061	Au Sable Ri	ver										
	4/5/2005	ND	0.0	210.0	2.7	304	12.9	8.2	2.7	145	ND	138.00
	4/27/2005	ND	-1.0	180.0	4.7	272	10.6	8.1	8.7	122	ND	116.00
	5/18/2005	ND	1.0	190.0	4.4	292	9.4	8.1	12.4	137	ND	119.00
	6/9/2005	ND	-1.0	200.0	4.2	312	8.7	8.1	19.8	143	ND	134.00
	6/28/2005	ND	0.0	200.0	2.9	310	7.4	8.1	23.1	148	ND	134.00
	7/19/2005	ND	3.0	200.0	3.7	316	7.1	8.2	25.6	152	ND	131.00
	7/26/2005	ND	1.0	200.0	3.1	309	7.1	8.2	25.9	153	ND	135.00
	8/23/2005	ND	0.0	190.0	3.2	301	7.5	8.0	22.7	139	ND	131.00
	9/14/2005	ND H	1.0	190.0	3.4	294	7.4	8.0	22.8	144	ND	125.00
	9/28/2005				P 2.4	293	7.9	8.0	19.8	141		
	10/25/2005	ND	2.0	200.0	2.1	304	8.9		12.9	152	ND	134.00
	11/9/2005	ND	1.0	210.0	3.1	311	9.8	8.0	9.9	156	ND	135.00
No. of	Samples:		12	12	12	12	12	11	12	12	12	12
	Mean:		0.6	197.3	3.3	302	8.7	8.1	17.2	144	* 0.5	130.18
	Median:	#	1.0	200.0	3.2	304	8.3	8.1	19.8	145	# 0.5	134.00
740385	Black River											
	4/19/2005		14.0	490.0	11.0	733	11.8	8.3	14.0	333	12.0	223.00
	6/14/2005		13.0	280.0	6.1	409	7.5	7.9	24.3	187	9.8	132.00
	8/9/2005		11.0	210.0	2.4	297	7.0	8.0	25.9	128	9.2	104.00
	10/4/2005		11.0	250.0	2.0	381	7.4	8.0	19.5	136	9.1	100.00
No. of	Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:		12.3	307.5	5.4	455	8.4	8.1	20.9	196	10.0	139.75
	Median:		12.0	265.0	4.3	395	7.5	8.0	21.9	162	9.5	118.00

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

070057		Sus S	spended Solids mg/L)	Dissolved Solids (mg/L)	Organic Carbon (mg/L)	Conductance (umho/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Tui (1	rbidity NTU)	Alkalinity (mg CaCO3/L)
STORET			• •	,	,		,						
280014	Boardman Riv	/er		070.0		070	10 5	7.0	7.0	100		o =	100.00
	4/12/2005	ND	2.0	270.0	4.1	270	13.5	7.8	7.8	160		2.5	136.00
	5/16/2005	ND	1.0	220.0	2.7	295	11.0	8.5	10.0	167	ND		142.00
	7/6/2005		6.0	220.0	2.4	293	12.6	8.0	18.9	162	ND H		152.00
	9/7/2005		6.0	230.0	2.4	344	8.6	7.6	15.1	168	ND		158.00
No. of	Samples:		4	4	4	4	4	4	4	4		4	4
	Mean:		3.8	235.0	2.9	301	11.4	8.0	13.0	164	*	1.0	147.00
	Median:		4.0	225.0	2.6	294	11.8	7.9	12.6	165	#	0.5	147.00
520258	Bryan Creek												
	4/18/2005		5.0	100.0	12.0	155	10.1	7.4	9.2	82		2.7	72.00
	6/21/2005		6.0	160.0	6.5	239	7.6	7.7	19.2	73		2.6	D 110.00
	8/17/2005	ND	1.0	170.0	2.9	258	8.9	8.0	15.6	139		2.2	120.00
	10/19/2005		4.0	160.0	7.7	245	10.3	7.4	7.4	126		1.7	103.00
No. of	Samples:		4	4	4	4	4	4	4	4		4	4
	Mean:		4.0	147.5	7.3	224	9.2	7.6	12.9	105		2.3	101.25
	Median:		4.5	160.0	7.1	242	9.5	7.6	12.4	104		2.4	106.50
730024	Cass River												
	4/4/2005		14.0	350.0	9.0	505	13.6	8.0	6.6	270		14.0	168.00
	5/24/2005		18.0	430.0	9.2	645	7.8	8.1	15.6	310		14.0	234.00
	7/26/2005		28.0	320.0	7.9	486	5.6	7.8	27.0	212		17.0	160.00
	10/19/2005		59.0	500.0	8.2	719	7.8	7.9	11.9	268		57.0	213.00
No. of	Samples:		4	4	4	4	4	4	4	4		4	4
	Mean:		29.8	400.0	8.6	589	8.7	8.0	15.3	265		25.5	193.75
	Median:		23.0	390.0	8.6	575	7.8	8.0	13.8	269		15.5	190.50

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Sus	pended	Dissolved	Organic	Conductance	Dissolved	pH	Temperature	Hardness	Tur	oidity	Alkalinity
STORET	- ID	(1	mg/L)	(mg/L)	(mg/L)	(unno/cni)	(mg/L)	(3.0.)	(0)	(IIIg/L)	(N	10)	(ing CacOS/L)
160073	Cheboygar	n River											
	4/4/2005	ND	-1.0	200.0	6.2	2 288	11.9	7.9	3.6	147		3.2	130.00
	4/26/2005	ND	2.0	220.0	6.5	5 329	11.8	8.2	6.3	155		1.1	142.00
	5/17/2005	ND	2.0	210.0	5.2	2 320	11.2	8.3	10.3	162	ND		136.00
	6/8/2005	ND	0.0	220.0	5.8	3 328	8.8	8.3	21.2	160	ND		142.00
	6/27/2005	ND	3.0	200.0	5.0) 314	8.4	8.3	24.3	154	ND		132.00
	7/18/2005		4.0	200.0	4.8	3 309	8.2	8.4	28.1	145	ND		130.00
	7/27/2005		4.0	210.0	4.7	321	7.2	8.2	24.1	158	ND		139.00
	8/22/2005		7.0	200.0	5.8	3 300	7.8	8.2	20.7	145		2.6	129.00
	9/12/2005	ND H	3.0	200.0	4.()			22.0	151	ND H		129.00
	9/27/2005				P 3.8	3 316	7.9	8.1	18.5	143			
	10/24/2005		4.0	210.0	2.7	320	9.2		11.2	161	ND		135.00
	11/8/2005		6.0	210.0	4.9	323	10.2	8.1	8.4	161	ND		142.00
No. of	Samples:		12	12	12	11	11	10	12	12		12	12
	Mean:		3.1	207.3	5.0) 315	9.3	8.2	16.6	154	*	1.0	135.09
	Median:	#	3.0	210.0	5.0) 320	8.8	8.2	19.6	155	#	0.5	135.00

Negative values should be interpreted as equivalent to zero.

- * = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.
- # = Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.
- A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

- H = Recommended laboratory holding time was exceeded.
- I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Suspended	Dissolved	Organic	Conductance	Dissolved	pH	Temperature	Hardness	Turbidity	Alkalinity
STORET	ĪD	(mg/L)	(mg/L)	(mg/L)	(umno/cm)	(mg/L)	(5.0.)	(*C)	(mg/L)	(NTU)	(mg CaCO3/L)
500233	Clinton River										
	3/14/2005	9.0	1260.0	5.3	1070	13.3	7.8	2.4	335	6.5	214.00
	4/5/2005	11.0	670.0	6.6	952	10.8	8.3	7.8	272	8.7	198.00
	4/27/2005	46.0	600.0	8.8	900	9.4	7.8	8.8	225	32.0	D 145.00
	5/25/2005	15.0	670.0	7.3	1040	7.8	7.8	13.7	267	12.0	D 198.00
	6/14/2005	13.0	690.0	8.8	1030	4.1	7.5	22.6	251	13.0	D 163.00
	7/11/2005	6.0	700.0	6.2	1020	5.3	7.7	24.0	258	7.9	181.00
	7/25/2005	100.0	350.0	5.9	527	6.6	7.6	24.3	136	65.0	97.00
	8/15/2005	20.0	590.0	9.8	830	5.4	7.6	22.3	200	14.0	134.00
	9/1/2005	13.0	730.0	7.6	915	5.2	7.5	21.2	266	18.0	D 161.00
	10/4/2005	45.0	440.0	6.1	680	6.0	7.7	19.4	172	49.0	116.00
	11/3/2005	6.0	590.0	6.0	923	7.4	7.8	10.2	254	6.4	175.00
	1/22/2005	5.0	620.0	6.5	964	10.1	7.8	5.4	290	10.0	200.00
No. of	Samples:	12	12	12	12	12	12	12	12	12	12
	Mean:	24.1	659.2	7.1	904	7.6	7.7	15.2	244	20.2	165.17
	Median:	13.0	645.0	6.6	938	7.0	7.8	16.6	256	12.5	169.00

Negative values should be interpreted as equivalent to zero.

- * = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.
- # = Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.
- A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

- H = Recommended laboratory holding time was exceeded.
- I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Su	spended Solids	Dissolved Solids	Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORET	D	(mg/L)	(mg/L)	(mg/L)		(mg/L)					
210102	Escanaba Ri	iver										
	4/7/2005		10.0	110.0	14.0	161	13.7	7.3	3.1	61	7.6	51.00
	4/21/2005	ND	0.0	160.0	16.0	248	11.7	7.1	10.7	82	2.8	70.00
	5/24/2005	ND	1.0	200.0	16.0	303	9.9	8.1	15.3	96	3.8	96.00
	6/13/2005		4.0	220.0	14.0	349	7.3	8.0	25.8	101	3.8	114.00
	6/16/2005	ND	3.0	180.0	13.0	281	8.6	8.0	18.8	99	4.4	103.00
	8/1/2005		5.0	400.0	20.0					142	3.5	160.00
	8/25/2005	ND	3.0	410.0	18.0	642	6.3	8.0	21.2	126	3.3	173.00
	9/15/2005	Н	4.0	410.0	20.0	628	6.2	7.8	21.1	132	3.3	157.00
	10/3/2005	ND	2.0	320.0	14.0	485	8.0	8.2	17.2	134	4.3	141.00
	10/6/2005		9.0	220.0	11.0	334	8.1	8.6	18.3	117	6.1	106.00
	10/27/2005	ND	-1.0	270.0	17.0	420	10.8	7.8	8.2	105	4.5	111.00
	11/22/2005	ND	1.0	280.0	17.0	422	12.9	6.8	1.1	106	4.1	121.00
No. of	Samples:		12	12	12	11	11	11	11	12	12	12
	Mean:		3.4	265.0	15.8	388	9.4	7.8	14.6	108	4.3	116.92
	Median:	#	3.0	245.0	16.0	349	8.6	8.0	17.2	106	4.0	112.50
730285	Flint River											
	4/4/2005		6.0	400.0	7.6	582	12.7	8.5	6.6	262	4.6	186.00
	5/24/2005		35.0	500.0	9.2	748	8.1	8.1	14.8	277	17.0	214.00
	7/26/2005		54.0	340.0	5.9	524	7.5	7.7	26.1	174	8.3	124.00
	10/19/2005		7.0	520.0	7.1	750	9.0	8.4	13.1	262	4.7	184.00
No. of	Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:		25.5	440.0	7.5	651	9.3	8.2	15.2	244	8.7	177.00
	Median:		21.0	450.0	7.4	665	8.6	8.3	14.0	262	6.5	185.00

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Suspended Solids (mg/L)	Dissolved Solids (mg/L)	Organic Carbon (mg/L)	Conductance (umho/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORET ID		(1119/12)	(1119/2)	(119, 2)		(
700123 Gr	and River (Lo	wer)									
3/22/	/2005	9.0	460.0	7.4	666	12.1	8.0	2.3	281	6.5	210.00
4/11/	/2005	28.0	450.0	8.5	552	12.6	8.2	13.7	262	11.0	188.00
5/11/	/2005	18.0	460.0	8.8	646	10.3	8.3	18.2	302	8.1	233.00
6/8/	/2005	32.0	420.0	8.2	649	10.0	8.1	24.1	273	17.0	204.00
6/27/	/2005	34.0	410.0	8.2	633	14.3	8.5	27.4	252	3.9	174.00
7/19/	/2005	51.0	390.0	7.5	590	14.8	8.9	27.6	225	16.0	141.00
8/2/	/2005	38.0	360.0	7.7	565	13.4	8.6	27.5	208	19.0	144.00
8/23/	/2005	35.0	410.0	7.1	651	16.9	8.7	22.5	237	14.0	174.00
9/20/	/2005	18.0	460.0	5.1	705	8.4	8.1	20.4	267	11.0	183.00
10/4/	/2005	18.0	450.0	5.9	675	12.2	8.5	20.3	282	9.5	186.00
10/26/	/2005	7.0	490.0	4.0	716	10.2	8.1	9.9	312	5.2	223.00
11/21/	/2005	H 7.0	450.0	6.2	671	12.0	7.9	4.4	281	4.7	207.00
No. of Samp	ples:	12	12	12	12	12	12	12	12	12	12
Μ	ean:	24.6	434.2	7.1	643	12.3	8.3	18.2	265	10.5	188.92
Med	dian:	23.0	450.0	7.5	650	12.2	8.3	20.4	270	10.3	187.00
340025 Gr	and River (Up	per)									
3/29/	/2005	10.0	360.0	8.8	505	13.2	8.1	5.2	249	9.5	184.00
6/1/	/2005	18.0	480.0	8.2	738	8.0	8.0	18.3	306	12.0	256.00
8/2/	/2005	19.0	410.0	7.6	630	8.8	8.3	25.5	226	9.2	183.00
10/19/	/2005	19.0	480.0	5.1	713	11.7	8.6	12.9	296	10.0	214.00
No. of Samp	ples:	4	4	4	4	4	4	4	4	4	4
Μ	ean:	16.5	432.5	7.4	647	10.4	8.3	15.5	269	10.2	209.25
Med	dian:	18.5	445.0	7.9	672	10.3	8.2	15.6	273	9.8	199.00

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Suspended	Dissolved	Organic	Conductance	Dissolved	pH	Temperature	Hardness	Turbidity	Alkalinity
STORET ID		Solids (mg/L)	(mg/L)	Carbon (mg/L)	(umho/cm)	(mg/L)	(5.0.)	(*C)	(mg/L)	(NTU)	(mg CaCO3/L)
580364	Huron River										
	4/18/2005	14.0	660.0	7.5	1020	9.2	7.7	12.7	456	5.9	D 199.00
	6/22/2005	11.0	680.0	6.0	950	7.2	7.8	22.6	432	8.1	D 194.00
	8/8/2005	13.0	690.0	P 6.3	985	6.4	7.8	25.3	374	9.9	155.00
	10/3/2005	13.0	620.0	6.5	976	7.9	8.0	19.8	311	11.0	D 154.00
No. of Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:	12.8	662.5	6.6	983	7.7	7.8	20.1	393	8.7	175.50
	Median:	13.0	670.0	6.4	981	7.6	7.8	21.2	403	9.0	174.50
821417	Johnson Drain										
	4/18/2005	12.0	1100.0	6.4	1710	9.4	7.6	15.2	382	11.0	D 227.00
	6/22/2005	36.0	960.0	5.2	1460	8.1	7.6	21.2	358	33.0	D 218.00
	8/8/2005	20.0	810.0	1.9	1200	7.6	7.7	19.0	366	15.0	277.00
	10/3/2005	16.0	770.0	4.9	1201	8.8	7.7	18.3	265	18.0	D 199.00
No. o	f Samples:	4	4	4	4	4	4	4	4	4	4
	Mean:	21.0	910.0	4.6	1393	8.5	7.7	18.4	343	19.3	230.25
	Median:	18.0	885.0	5.1	1331	8.5	7.7	18.7	362	16.5	222.50

Negative values should be interpreted as equivalent to zero.

- * = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.
- # = Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.
- A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

- H = Recommended laboratory holding time was exceeded.
- I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

STORET ID		Suspended Solids		Dissolved Solids	Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
		((ing/L)	(IIIg/E)	(IIIg/L)		(IIIg/L)					
030077	Kalamazoo	mazoo River (Lower)										
	3/21/2005	ND	2.0	390.0	5.8	565	12.4	8.0	2.5	260	H 4.5	202.00
	5/4/2005		20.0	400.0	5.2	586	13.7	8.8	9.4	275	6.3	198.00
	6/1/2005		32.0	390.0	6.2	587	10.6	8.0	19.0	242	14.0	204.00
	6/28/2005		38.0	360.0	5.8	533	6.8	7.5	25.8	217	4.6	181.00
	7/20/2005		43.0	410.0	5.1	523	8.9	7.9	25.9	239	17.0	186.00
	8/3/2005		31.0	370.0	5.9	545	8.1	7.9	25.5	225	14.0	189.00
	8/24/2005		25.0	410.0	3.8	597	8.3	8.0	21.1	243	11.0	193.00
	9/14/2005	Н	16.0	410.0	3.6	570	7.1	8.0	23.3	234	6.8	181.00
	9/27/2005		24.0	420.0	3.1	624	9.4	8.1	18.0	244	9.8	193.00
	10/18/2005		18.0	440.0	3.1	632	10.7	8.4	13.6	268	6.4	232.00
	11/2/2005		10.0	450.0	3.9	698	11.5	8.2	9.2	275	4.4	224.00
	11/22/2005		4.0	450.0	3.9	652	11.7	8.5	3.9	294	3.8	238.00
No. of	Samples:		12	12	12	12	12	12	12	12	12	12
	Mean:		21.9	408.3	4.6	593	9.9	8.1	16.4	251	8.6	201.75
	Median:		22.0	410.0	4.5	587	10.0	8.0	18.5	244	6.6	195.50
390057	Kalamazoo	River (Up	oper)									
	3/28/2005		11.0	360.0	7.2	504	11.5	8.0	5.7	253	3.1	207.00
	5/10/2005		19.0	440.0	5.7	674	6.8	7.9	18.4	301	6.5	247.00
	8/4/2005		16.0	440.0	5.1	673	9.2	8.0	25.6	301	2.1	252.00
	10/5/2005		10.0	450.0	3.5	683	7.4	8.1	19.6	298	3.9	241.00
No. of	Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:		14.0	422.5	5.4	634	8.7	8.0	17.3	288	3.9	236.75
	Median:		13.5	440.0	5.4	674	8.3	8.0	19.0	300	3.5	244.00

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Suspended Solids (mg/L)	Dissolved Solids (mg/L)	Organic Carbon (mg/L)	Conductance (umho/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORE	ID			(3)		()					
510088	Manistee River										
	4/11/2005	8.0	260.0	4.3	287	12.5	8.0	10.2	145	6.5	121.00
	6/9/2005	5.0	230.0	2.0	341	8.2	8.0	20.7	166	3.8	144.00
	7/6/2005	12.0	240.0	2.6	318	10.2	8.2	21.4	162	H 4.1	149.00
	9/7/2005	11.0	220.0	2.9	338	8.0	7.9	20.4	157	3.8	141.00
No. of	Samples:	4	4	4	4	4	4	4	4	4	4
	Mean:	9.0	237.5	3.0	321	9.7	8.0	18.2	158	4.6	138.75
	Median:	9.5	235.0	2.8	328	9.2	8.0	20.6	160	4.0	142.50
770073	Manistique Rive	er									
	5/9/2005	ND 3.0	100.0	9.7	171	8.5	7.2	12.8	77	3.2	60.00
	6/13/2005	ND 2.0	130.0	7.5	206	7.2	7.7	23.7	98	3.9	82.00
	8/15/2005	5.0	140.0	5.9	222	7.7	7.8	21.4	106	3.1	71.00
	10/19/2005	ND 3.0	120.0	13.0	182	9.8	7.5	9.9	83	5.4	59.00
No. of	Samples:	4	4	4	4	4	4	4	4	4	4
	Mean:	3.3	122.5	9.0	195	8.3	7.6	17.0	91	3.9	68.00
	Median:	# 3.0	125.0	8.6	194	8.1	7.6	17.1	91	3.6	65.50
550038	Menominee Riv	er									
	4/19/2005	4.0	130.0	12.0	198	10.1	7.7	13.3	88	ND	80.00
	6/15/2005	7.0	160.0	9.8	253	6.4	7.8	23.9	110	4.2	89.00
	8/17/2005	4.0	190.0	8.3	302	7.6	8.2	24.5	121	2.1	114.00
	10/17/2005	4.0	160.0	13.0	242	9.4	7.6	12.9	106	H 2.3	80.00
No. of	Samples:	4	4	4	4	4	4	4	4	4	4
	Mean:	4.8	160.0	10.8	249	8.4	7.8	18.7	106	* 2.3	90.75
	Median:	4.0	160.0	10.9	248	8.5	7.8	18.6	108	2.2	84.50

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

	Suspended Solids (mg/L)		Suspended Dissolved Solids Solids (mg/l.) (mg/l.)		Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORET ID		((IIIg/L)	(IIIg/L)	(mg/L)		(mg/L)					
610273	Muskegon	River (Lower)										
	3/22/2005	ND	0.0	240.0	6.3	350	13.4	8.0	2.0	165	ND	130.00
	5/4/2005		4.0	200.0	6.8	294	11.1	8.0	7.8	139	ND	103.00
	6/8/2005	ND	3.0	230.0	5.7	350	8.2	8.0	22.1	165	2.1	129.00
	6/27/2005		11.0	240.0	5.0	357	10.4	8.0	23.6	162	ND	126.00
	7/19/2005		8.0	240.0	4.8	363	8.9	8.2	24.0	164	1.1	130.00
	8/2/2005		4.0	240.0	5.0	373	9.1	8.1	25.1	165	2.4	141.00
	8/23/2005		4.0	250.0	5.1	380	10.8	8.1	20.0	170	2.9	141.00
	9/14/2005	Н	5.0	260.0	5.0	354	7.7	8.0	21.7	168	2.0	141.00
	9/27/2005		29.0	250.0	4.1	360	8.0	7.7	18.0	159	10.0	133.00
	10/18/2005		5.0	260.0	4.8	367	9.5	8.1	13.4	174	2.1	156.00
	11/2/2005	ND	0.0	260.0	4.4	401	12.2	8.2	11.5	171	1.5	151.00
	11/21/2005	ND H	3.0	260.0	4.8	378	11.0	8.0	6.8	179	1.4	151.00
No. of	Samples:		12	12	12	12	12	12	12	12	12	12
	Mean:		6.3	244.2	5.2	361	10.0	8.0	16.3	165	* 2.3	136.00
	Median:		4.0	245.0	5.0	362	10.0	8.0	19.0	165	1.8	137.00
670008	Muskegon	River (Upp	per)									
	4/12/2005		7.0	320.0	8.7	217	13.3	7.8	9.5	116	4.6	95.00
	5/17/2005		4.0	230.0	6.7	327	10.6	8.2	9.6	161	1.3	132.00
	7/7/2005		14.0	250.0	4.1	340	9.9	8.2	18.8	172	H 4.2	159.00
	9/6/2005		12.0	260.0	4.0	385	8.7	7.9	17.1	185	3.0	168.00
No. of	Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:		9.3	265.0	5.9	317	10.6	8.0	13.8	159	3.3	138.50
	Median:		9.5	255.0	5.4	334	10.3	8.1	13.4	167	3.6	145.50

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Sus	spended Solids	Dissolved Solids	Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORET ID		(mg/L)	(mg/L)	(mg/L)		(mg/L)					
660038	Ontonagon	River										
	5/2/2005		15.0	88.0	11.0	133	10.8	7.5	7.8	60	28.0	53.00
	6/22/2005		22.0	90.0	15.0	137	7.2	7.6	24.0	54	35.0	55.00
	8/18/2005		13.0	110.0	5.3	177	8.0	8.0	20.6	78	9.8	72.00
	10/18/2005		12.0	87.0	13.0	134	10.0	7.6	10.2	61	26.0	54.00
No. of	Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:		15.5	93.8	11.1	145	9.0	7.7	15.7	63	24.7	58.50
	Median:		14.0	89.0	12.0	136	9.0	7.6	15.4	61	27.0	54.50
530027	Pere Marqu	ette River	•									
	3/23/2005	А	4.0	230.0	3.9	301	12.1	8.1	3.1	163	3.9	133.00
	4/11/2005		7.0	310.0	5.8	294	12.6	8.0	11.2	157	4.9	126.00
	5/16/2005		12.0	220.0	5.0	297	9.9	7.9	9.6	167	3.5	130.00
	6/9/2005		27.0	240.0	3.7	367	7.2	7.6	21.0	176	16.0	150.00
	6/27/2005		24.0	250.0	2.7	374	9.6	7.7	20.3	171	2.2	133.00
	7/19/2005		18.0	240.0	2.9	364	9.4	8.0	21.2	175	4.3	138.00
	8/2/2005		11.0	240.0	3.2	380	8.3	7.9	20.8	174	5.9	154.00
	8/23/2005		11.0	240.0	4.0	360	10.8	7.8	15.6	173	6.0	146.00
	9/20/2005		4.0	250.0	1.1	387	9.5	7.9	15.4	176	3.3	152.00
	10/4/2005		12.0	240.0	4.9	355	7.9	7.9	16.2	167	5.2	138.00
	10/26/2005	ND	0.0	250.0	1.7	345	11.8	8.1	7.2	183	ND	150.00
	11/17/2005	ND	2.0	220.0	5.4	327	12.1	7.8	2.8	160	2.5	132.00
No. of	Samples:		12	12	12	12	12	12	12	12	12	12
	Mean:		11.0	244.2	3.7	346	10.1	7.9	13.7	170	* 4.9	140.17
	Median:		11.0	240.0	3.8	358	9.8	7.9	15.5	172	4.1	138.00

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.
		Su	spended Solids	Dissolved Solids	Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORE	T ID	((iiig/Ľ)	(mg/E)	(iiig/L)		(119/2)					
430578	Pere Marquet	te River	r (Hea									
	4/12/2005		8.0	230.0	3.9	255	12.3	7.9	8.5	155	2.0	127.00
	5/17/2005	ND	3.0	200.0	3.8	284	11.0	8.0	8.0	158	1.0	130.00
	7/7/2005		7.0	210.0	3.3	297	14.0	8.1	15.6	158	H 2.5	148.00
	9/6/2005		7.0	220.0	2.0	316	11.1	8.2	16.2	160	ND	146.00
No. of	f Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:		6.3	215.0	3.3	288	12.1	8.1	12.1	158	* 1.5	137.75
	Median:		7.0	215.0	3.6	291	11.7	8.1	12.1	158	1.5	138.00
160177	Pigeon River											
	5/19/2005		4.0	250.0	4.7	383	9.8	8.3	12.6	190	1.6	181.00
	7/20/2005	ND	3.0	250.0	3.8	390	8.3	8.2	19.2	202	3.7	186.00
	9/12/2005	н	6.0	250.0	3.8	399	9.5	8.2	21.3	203	ND H	185.00
	10/25/2005	ND	-1.0	260.0	3.3	384	12.2		7.4	211	1.8	195.00
No. of	f Samples:		4	4	4	4	4	3	4	4	4	4
	Mean:		3.0	252.5	3.9	389	10.0	8.2	15.1	202	* 1.9	186.75
	Median:	#	3.5	250.0	3.8	387	9.7	8.2	15.9	203	1.7	185.50
490006	Pine River											
	5/17/2005		44.0	100.0	16.0	152	11.2	7.9	7.4	81	48.0	58.00
	7/18/2005		24.0	160.0	5.9	245	6.9	8.1	26.1	128	13.0	110.00
	8/15/2005		17.0	140.0	8.4	219	9.0	8.4	20.2	108	25.0	92.00
	10/25/2005		26.0	140.0	9.4	200	11.3		6.4	102	27.0	84.00
No. of	f Samples:		4	4	4	4	4	3	4	4	4	4
	Mean:		27.8	135.0	9.9	204	9.6	8.1	15.0	105	28.3	86.00
	Median:		25.0	140.0	8.9	210	10.1	8.1	13.8	105	26.0	88.00

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Sus S	spended Solids	Dissolved Solids	Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORET	D	(1	mg/∟)	(mg/L)	(mg/L)		(mg/L)					
580046	River Raisin											
	4/18/2005		13.0	420.0	8.4	628	8.8	8.0	14.9	282	8.3	182.00
	6/22/2005		8.0	460.0	6.3	688	10.7	8.2	24.2	298	3.9	184.00
	8/8/2005		7.0	290.0	5.5	420	9.9	8.6	28.4	175	5.5	136.00
	10/3/2005		7.0	240.0	3.0		8.6	8.2	21.7	142	9.1	101.00
No. of	Samples:		4	4	4	3	4	4	4	4	4	4
	Mean:		8.8	352.5	5.8	579	9.5	8.3	22.3	224	6.7	150.75
	Median:		7.5	355.0	5.9	628	9.4	8.2	23.0	229	6.9	159.00
820070	River Rouge											
	3/14/2005	ND	1.0	190.0	1.4	238	13.9	7.8	0.2	109	ND	73.00
	4/5/2005		6.0	240.0	2.5	337	12.1	8.1	5.4	117	6.5	85.00
	4/27/2005		35.0	770.0	5.6	1170	7.4	8.3	11.6	229	17.0	D 128.00
	5/25/2005		23.0	610.0	4.5	942	6.4	7.6	16.0	214	19.0	D 141.00
	6/14/2005		16.0	370.0	5.0	495	4.7	7.4	25.5	156	22.0	98.00
	7/11/2005		16.0	370.0	3.0	545	6.1	7.7	27.4	144	16.0	96.00
	7/25/2005		10.0	320.0	4.0	530	3.9	7.6	29.0	134	5.0	90.00
	8/15/2005		10.0	340.0	3.2	456	4.5	7.6	28.8	138	9.5	88.00
	9/1/2005		8.0	300.0	2.7	374	4.3	7.6	28.1	135	13.0	84.00
	10/3/2005		32.0	340.0	3.6	501	6.0	7.6	21.2	145	37.0	96.00
	11/8/2005		36.0	340.0	3.0	500	7.4	7.5	14.9	150	25.0	97.00
	1/22/2005		30.0	380.0	4.1	590	8.6	7.4	8.9	164	33.0	107.00
No. of	Samples:		12	12	12	12	12	12	12	12	12	12
	Mean:		18.6	380.8	3.6	557	7.1	7.7	18.1	153	* 17.0	98.58
	Median:		16.0	340.0	3.4	501	6.3	7.6	18.6	145	16.5	96.00

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Suspended Solids	Dissolved	Orga Carb	nic	Conductance	Dissolved	pH (STL)	Temperature	Hardness		Alkalinity
STORE	T ID	(mg/L)	(mg/L)	(mg	/L)	(unino/citry	(mg/L)	(0.0.)	(0)	(119/2)	(110)	(ing babbone)
090177	Saginaw River											
	3/14/2005	7.0	420.0	Р	5.9	538	12.5	7.5	0.8	226	8.7	159.00
	4/4/2005	15.0	310.0		8.9	444	11.4	8.1	6.4	203	19.0	143.00
	4/27/2005	20.0	440.0		9.7	660	10.0	7.8	8.9	231	17.0	161.00
	5/24/2005	22.0	440.0		9.1	657	8.2	8.1	16.2	252	20.0	194.00
	6/15/2005	32.0	370.0		8.7	545	5.1	7.4	23.5	225	29.0	167.00
	7/11/2005	7.0	490.0		9.4	707	10.4	8.5	26.5	238	7.9	180.00
	7/25/2005	16.0	470.0		7.4	709	6.0	8.1	28.1	238	14.0	180.00
	8/16/2005	20.0	470.0		8.4	660	6.3	7.8	25.5	221	19.0	169.00
	8/31/2005	24.0	550.0		7.8	735	6.1	8.1	23.2	235	25.0	D 168.00
	9/21/2005	19.0	550.0		7.3	853	6.5	7.8	21.4	225	18.0	153.00
	10/19/2005	26.0	510.0		6.9	730	7.3	8.0	13.6	239	19.0	173.00
	11/29/2005	10.0	480.0		7.6	756	12.6	8.0	1.7	281	7.0	198.00
No. of	Samples:	12	12		12	12	12	12	12	12	12	12
	Mean:	18.2	458.3		8.1	666	8.5	7.9	16.3	235	17.0	170.42
	Median:	19.5	470.0		8.1	684	7.8	8.0	18.8	233	18.5	168.50

Negative values should be interpreted as equivalent to zero.

- * = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.
- # = Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.
- A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

- H = Recommended laboratory holding time was exceeded.
- I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Su	spended Solids	Dissolved Solids	Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turb (N	oidity TU)	Alkalinity (mg CaCO3/L)
STORET	ĪD		(IIIg/L)	(IIIg/L)	(IIIg/L)		(IIIg/L)						
730023	Shiawasse	e River											
	4/4/2005		10.0	390.0	7.0	561	11.5	8.3	7.3	270		6.4	190.00
	4/28/2005		18.0	450.0	9.7	638	10.5	8.3	8.7	271		4.8	209.00
	5/24/2005		13.0	460.0	8.5	692	8.6	8.2	15.0	293		6.7	232.00
	6/15/2005		26.0	420.0	7.4	618	7.9	8.1	23.9	253	2	20.0	188.00
	7/12/2005		16.0	460.0	5.5	665	6.1	8.1	26.1	248	1	11.0	202.00
	7/26/2005		29.0	420.0	6.8	642	6.7	8.2	26.9	233		5.2	191.00
	8/16/2005		19.0	460.0	7.1	647	8.1	8.1	23.5	236		9.4	184.00
	8/31/2005		15.0	510.0	6.4	680	6.6	8.2	21.2	259	1	10.0	D 210.00
	9/21/2005		29.0	520.0	6.0	810	8.1	8.0	19.7	252	1	10.0	181.00
	10/19/2005	ND	0.0	470.0	5.0	670	9.9	8.3	12.4	259		1.6	215.00
	11/3/2005	ND	3.0	520.0	5.9	810	8.5	8.2	10.5	270		2.3	219.00
	11/29/2005		7.0	520.0	6.6	808	12.3	8.3	3.9	265		2.3	212.00
No. of	Samples:		12	12	12	12	12	12	12	12		12	12
	Mean:		15.4	466.7	6.8	687	8.7	8.2	16.6	259		7.5	202.75
	Median:		15.5	460.0	6.7	668	8.3	8.2	17.4	259		6.6	205.50
631036	Shiawasse	e River (H	eadwa										
	4/19/2005	ND	3.0	400.0	4.8	602	10.0	8.0	16.1	276	ND		243.00
	6/23/2005	ND	0.0	390.0	4.5	544	7.8	7.6	18.4	264	ND		233.00
	8/9/2005	ND	0.0	400.0	4.9	580	7.6	6.3	24.9	256	ND		241.00
	10/4/2005	ND	0.0	410.0	5.0	637	7.6	7.9	20.8	259	ND		244.00
No. of	Samples:		4	4	4	4	4	4	4	4		4	4
	Mean:		0.8	400.0	4.8	591	8.3	7.5	20.1	264	*	0.5	240.25
	Median:	#	0.0	400.0	4.9	591	7.7	7.8	19.6	262	#	0.5	242.00

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Su:	spended Solids ma/L)	Dissolved Solids (mg/L)	Organic Carbon (mg/L)	Conductance (umho/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORET II	D	(iiig/ ⊑)	(119/2)	(119/2)		(119/2)					
110628	St. Joseph	River (Lov	ver)									
3	/28/2005		6.0	380.0	5.4	527	12.2	8.2	6.4	269	3.0	212.00
	5/5/2005		8.0	400.0	5.1	597	10.6	8.2	11.1	297	2.6	218.00
	6/2/2005		11.0	390.0	4.0	590	9.4	8.0	20.6	266	6.3	221.00
6	/29/2005		15.0	390.0	5.1	566	7.0	7.9	26.8	262	4.8	216.00
7.	//21/2005		19.0	400.0	4.6	551	7.3	8.2	26.4	260	13.0	201.00
	8/4/2005		18.0	360.0	5.4	550	12.2	8.2	27.0	241	7.2	203.00
8	/25/2005		8.0	380.0	3.5	548	8.9	8.1	23.0	246	6.5	205.00
9	/15/2005	Н	11.0	400.0	4.2	572	7.1	7.9	21.5	266	7.4	207.00
9	/29/2005		18.0	390.0	2.4	574	7.9	8.1	17.6	251	11.0	202.00
10	/19/2005		8.0	400.0	3.5	596	9.3	8.3	14.4	280	3.7	228.00
1	1/3/2005		4.0	410.0	2.4	627	10.5	8.0	10.9	289	3.2	226.00
11.	/16/2005		12.0	410.0	3.6	623	10.8	7.9	7.9	295	3.2	234.00
No. of S	amples:		12	12	12	12	12	12	12	12	12	12
	Mean:		11.5	392.5	4.1	577	9.4	8.1	17.8	269	6.0	214.42
	Median:		11.0	395.0	4.1	573	9.4	8.1	19.1	266	5.6	214.00
750273	St. Joseph	River (Up	per)									
3	/29/2005		7.0	340.0	5.7	471	12.9	8.2	7.3	254	3.2	198.00
5	/10/2005		5.0	360.0	5.0	551	8.8	8.2	18.9	271	4.4	204.00
7.	//21/2005		4.0	330.0	5.9	463	7.2	7.9	27.3	237	3.5	180.00
1	0/5/2005		10.0	340.0	4.5	507	8.7	8.0	20.0	239	3.8	181.00
No. of S	amples:		4	4	4	4	4	4	4	4	4	4
	Mean:		6.5	342.5	5.3	498	9.4	8.1	18.4	250	3.7	190.75
	Median:		6.0	340.0	5.4	489	8.8	8.1	19.5	247	3.7	189.50

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Sus	spended Solids	Dissolved Solids	Organic Carbon	Conductance (umho/cm)	Dissolved Oxygen	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
STORE	T ID	(mg/L)	(mg/L)	(mg/L)		(mg/L)					
210032	Sturgeon F	River										
	4/18/2005		12.0	85.0	15.0	128	10.2	7.2	9.6	62	5.6	44.00
	6/13/2005	ND	3.0	160.0	11.0	257	7.5	7.8	22.6	124	3.8	86.00
	8/15/2005	ND	0.0	170.0	7.5	220	7.4	8.0	19.8	120	1.9	98.00
	10/19/2005		5.0	150.0	19.0	240	9.8	7.3	8.9	110	3.8	63.00
No. o	f Samples:		4	4	4	4	4	4	4	4	4	4
	Mean:		5.0	141.3	13.1	211	8.7	7.6	15.2	104	3.8	72.75
	Median:		4.0	155.0	13.0	230	8.7	7.6	14.7	115	3.8	74.50
170141	Tahquame	non River										
	4/20/2005	ND	3.0	50.0	19.0	74	9.8	7.1	12.8	37	3.2	33.00
	6/20/2005		5.0	110.0	9.1	168	8.4	7.8	21.5	64	2.5	66.00
	8/16/2005	ND	0.0	130.0	5.9	215	10.4	8.1	21.5	100	4.1	78.00
	10/26/2005	ND	2.0	100.0	19.0	156	11.9		7.3	82	3.8	56.00
No. o	f Samples:		4	4	4	4	4	3	4	4	4	4
	Mean:		2.5	97.5	13.3	153	10.1	7.7	15.8	71	3.4	58.25
	Median:	#	2.5	105.0	14.1	162	10.1	7.8	17.2	73	3.5	61.00

Negative values should be interpreted as equivalent to zero.

- * = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.
- # = Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.
- A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

- H = Recommended laboratory holding time was exceeded.
- I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

		Sus S	spended Solids ma/L)	Dissolved Solids (mg/L)	Organic Carbon (mg/L)	Conductance (umho/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	IUT 1)	bidity NTU)	Alkalinity (mg CaCO3/L)
STORET	ĪD	(<u>g</u> , <u>_</u>)	(1119/2)	(1119/2)		(119, 2)						
040123	Thunder B	Bay River											
	4/4/2005	ND	3.0	170.0	11.0	240	13.2	7.8	2.0	123		6.4	104.00
	4/26/2005	ND	3.0	240.0	12.0	364	11.2	8.1	6.8	166		1.7	160.00
	5/18/2005	ND	3.0	240.0	9.8	383	9.3	8.2	11.8	193	ND		163.00
	6/8/2005	ND	0.0	240.0	8.8	381	8.1	8.2	22.4	193		1.9	178.00
	6/27/2005		4.0	230.0	10.0	355	7.9	8.2	24.4	177		1.1	160.00
	7/19/2005		4.0	220.0	6.6	344	6.2	8.0	26.3	173	ND		145.00
	7/27/2005	ND	3.0	210.0	6.8	319	6.4	8.1	24.2	151	ND		142.00
	8/22/2005		7.0	210.0	5.3	330	7.1	8.0	20.7	156	ND		145.00
	9/13/2005	ND	2.0	220.0	6.7	340	7.5	8.4	23.1	162	ND		146.00
	9/27/2005				P 6.3	341	7.5	7.9	18.7	158			
	10/24/2005		5.0	240.0	6.8					172	ND		172.00
	11/8/2005		4.0	240.0	6.5	365	9.8	8.0	7.9	181		2.6	174.00
No. of	Samples:		12	12	12	11	11	11	11	12		12	12
	Mean:		3.5	223.6	8.1	342	8.6	8.1	17.1	167	*	1.5	153.55
	Median:	#	3.0	230.0	6.8	344	7.9	8.1	20.7	169	#	0.5	160.00
600051	Thunder B	Bay River (H	leadw										
	5/18/2005		5.0	240.0	3.8	380	9.6	8.3	13.7	182	ND		171.00
	7/19/2005		6.0	240.0	3.0	381	7.7	8.1	25.6	190		1.2	175.00
	9/13/2005		6.0	240.0	5.0	372	7.9	8.0	21.1	191		1.5	172.00
	10/25/2005	ND	1.0	250.0	3.6	379	11.7		8.1	193	ND		184.00
No. of	Samples:		4	4	4	4	4	3	4	4		4	4
	Mean:		4.5	242.5	3.9	378	9.2	8.1	17.1	189	*	0.9	175.50
	Median:		5.5	240.0	3.7	380	8.8	8.1	17.4	191	#	0.9	173.50

Negative values should be interpreted as equivalent to zero.

* = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.

= Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.

A = Value reported is the mean of two or more determinations.

D = Analyte value quantified from a dilution(s); quantification level raised.

H = Recommended laboratory holding time was exceeded.

I = Dilution required due to matrix interference; quantification level raised.

J = Analyte was positively identified. Value is an estimate.

ND = Observed result was below the quantification level.

P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.

PI = Possible interference may have affected the accuracy of the laboratory result.

T = Reported value is less than the quantification level.

STORET ID	Suspended Solids (mg/L)	Dissolved Solids (mg/L)	Organic Carbon (mg/L)	Conductance (umho/cm)	Dissolved Oxygen (mg/L)	рН (S.U.)	Temperature (°C)	Hardness (mg/L)	Turbidity (NTU)	Alkalinity (mg CaCO3/L)
730025 Tittabawass	see River									
4/4/2005	26.0	270.0	9.4	383	16.3	7.5	5.8	168	19.0	127.00
5/24/2005	18.0	380.0	8.8	563	8.4	8.0	15.2	215	9.1	155.00
7/26/2005	37.0	450.0	6.1	700	6.2	7.8	27.3	206	13.0	143.00
10/19/2005	ND -1.0	580.0	6.4	835	8.8	8.1	12.9	239	3.1	167.00
No. of Samples:	4	4	4	4	4	4	4	4	4	4
Mean:	20.0	420.0	7.7	620	9.9	7.9	15.3	207	11.1	148.00
Median:	22.0	415.0	7.6	632	8.6	7.9	14.1	211	11.1	149.00

Negative values should be interpreted as equivalent to zero.

- * = Mean includes censored value(s), which for calculation purposes was assigned a value equal to 1/2 the quantification level.
- # = Median was obtained using reported value(s) below quantification and/or censored value(s) assigned a value equal to 1/2 the quantification level.
- A = Value reported is the mean of two or more determinations.
- D = Analyte value quantified from a dilution(s); quantification level raised.
- H = Recommended laboratory holding time was exceeded.
- I = Dilution required due to matrix interference; quantification level raised.
- J = Analyte was positively identified. Value is an estimate.
- ND = Observed result was below the quantification level.
- P = Recommended sample collection/preservation technique not used; reported result(s) is an estimate.
- PI = Possible interference may have affected the accuracy of the laboratory result.
- T = Reported value is less than the quantification level.
- W = Reported value is less than the method detection level.

STORET IE)	Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)
350061	Au Sable River				
	4/5/2005	0.280	0.015	CCB 0.310	0.040
	4/27/2005	0.670	-0.016	0.374	0.062
	5/18/2005	0.870	-0.129	0.316	0.039
	6/9/2005	0.660	0.003	0.588	0.036
	6/28/2005	0.410	-0.086	0.316	0.030
	7/19/2005	0.300	-0.071	0.306	0.025
	7/26/2005	0.330	-0.154	0.297	0.019
	8/23/2005	0.210	0.023	0.321	0.036
	9/14/2005	0.170	CCB 0.008	0.318	0.025
	9/28/2005	0.230	CCB -0.025	0.310	0.042
	10/25/2005	0.220	-0.048	0.275	0.039
	11/9/2005	0.330	0.021	0.367	0.053
	No. of Samples:	12	12	12	12
	Mean:	0.390	-0.038	0.342	0.037
	Median:	0.315	-0.021	0.316	0.037
740385	Black River				
	4/19/2005	1.700	CCB 0.279	2.460	0.547
	6/14/2005	1.060	0.299	2.520	0.493
	8/9/2005	0.920	0.231	1.910	0.529
	10/4/2005	1.210	0.507	1.780	0.559
	No. of Samples:	4	4	4	4
	Mean:	1.223	0.329	2.168	0.532
	Median:	1.135	0.289	2.185	0.538
280014	Boardman River				
	4/12/2005	1.170	CCB 0.058	0.414	0.120
	5/16/2005	0.600	-0.107	0.318	0.066
	7/6/2005	0.700	-0.125	0.331	0.055
	9/7/2005	0.360	0.005	0.316	0.028
	No. of Samples:	4	4	4	4
	Mean:	0.708	-0.042	0.345	0.067
	Median:	0.650	-0.051	0.325	0.060
520258	Bryan Creek				
	4/18/2005	3.300	0.171	CCB 0.410	0.116
	6/21/2005	1.500	0.177	0.234	0.082
	8/17/2005	0.310	0.062	0.265	0.020
	10/19/2005	1.350	0.306	0.313	0.043
	No. of Samples:	4	4	4	4
	Mean:	1.615	0.179	0.306	0.065
	Median:	1.425	0.174	0.289	0.063

Negative values should be interpreted as equivalent to zero.

BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.

CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis. ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID			Mercury (ng/L)	(Chro (L	omium ıg/L)		Copper (ug/L)	Lead (ug/L)	
730024	Cass River									
	4/4/2005		2.920	CC	в	0.362		2.030	0.538	
	5/24/2005	LCQC	2.070			0.187		1.690	0.447	
	7/26/2005		2.070			0.517		2.250	0.509	
	10/19/2005		4.980			2.070		2.730	2.390	
	No. of Samples:		4			4		4	4	
	Mean:		3.010			0.784		2.175	0.971	
	Median:		2.495			0.440		2.140	0.524	
160073	Cheboygan River									
	4/4/2005		1.060			0.153	С	CB 0.740	0.074	
	4/26/2005		0.680			0.079		0.651	0.034	
	5/17/2005		0.360			-0.089		0.502	0.025	
	6/8/2005		0.500			-0.022		0.767	0.036	
	6/27/2005		0.440			-0.056		0.604	0.041	
	7/18/2005		0.420			-0.114		0.620	0.032	
	7/27/2005		0.420			-0.123		0.564	0.029	
	8/22/2005		0.710			0.105		0.610	0.078	
	9/12/2005		0.290	CC	в	0.060		0.581	0.035	
	9/27/2005		0.380	CC	в	0.064		0.557	0.051	
	10/24/2005		0.270			0.024		0.526	0.090	
	11/8/2005		0.390			0.016		0.645	0.043	
	No. of Samples:		12			12		12	12	
	Mean:		0.493			0.008		0.614	0.047	
	Median:		0.420			0.020		0.607	0.039	
500233	Clinton River									
	3/14/2005		1.790	CC	В	0.798		2.900	0.940	
	4/5/2005	MSD	2.090	CC	В	0.612		2.480	0.753	
	4/27/2005		7.860	CC	В	2.679		4.490	2.800	
	5/25/2005	LCQC	2.670			0.597		2.280	1.540	
	6/14/2005		2.510			0.759		8.030	1.470	
	7/11/2005		1.690			0.506		2.650	1.100	
	7/25/2005		18.830			5.010		8.370	9.380	
	8/15/2005		4.290			2.200		5.320	3.370	
	9/1/2005		2.460			1.100		3.540	1.830	
	10/4/2005		8.110			2.750		5.330	3.440	
	11/3/2005		1.780			0.819		2.720	0.852	
	11/22/2005		1.580			0.656		2.520	0.831	
	No. of Samples:		12			12		12	12	
	Mean:		4.638			1.541		4.219	2.359	
	Median:		2.485			0.809		3.220	1.505	

Negative values should be interpreted as equivalent to zero.

BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.

CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID		I	Mercury (ng/L)	Chro (เ	omium Jg/L)	Copp (ug/	er Lead _) (ug/L)	
210102	Escanaba River							
	4/7/2005		6.700		0.438	CCB 0.80	0 0.403	
	4/21/2005		4.010		0.215	0.63	0.134	
	5/24/2005	LCQC	3.580		0.129	0.55	68 0.111	
	6/13/2005		2.740		0.195	2.18	0.129	
	6/16/2005		2.990		0.172	1.58	0.160	
	8/1/2005		2.470		0.355	0.76	0.114	
	8/25/2005		1.550		0.432	0.84	8 0.109	
	9/15/2005		1.620	CCB	0.607	0.94	5 0.130	
	10/3/2005		1.780		0.653	0.75	6 0.151	
	10/6/2005		2.410		0.488	0.69	0.214	
	10/27/2005		2.850		0.413	0.69	0.123	
	11/22/2005		2.430		0.349	0.77	0.144	
	No. of Samples:		12		12	1	2 12	
	Mean:		2.928		0.371	0.93	0.160	
	Median:		2.605		0.384	0.77	0 0.132	
730285	Flint River							
	4/4/2005		2.170	CCB	0.923	1.77	0 0.568	
	5/24/2005	LCQC	5.310		1.260	3.07	2.810	
	7/26/2005		5.520		1.390	2.93	2.590	
	10/19/2005		1.120		0.438	1.99	0 0.718	
	No. of Samples:		4		4		4 4	
	Mean:		3.530		1.003	2.44	0 1.672	
	Median:		3.740		1.092	2.46	60 1.654	
700123	Grand River (Lower)							
	3/22/2005		2.240	CCB	0.359	2.44	0 0.597	
	4/11/2005		4.950	CCB	0.683	2.49	0 1.260	
	5/11/2005		2.630		0.388	RI	1.640	
	6/8/2005		5.080		1.170	4.28	2.170	
	6/27/2005		1.140		0.147	1.87	0 0.501	
	7/19/2005		5.130		0.397	1.76	60 1.080	
	8/2/2005		3.630		0.356	1.81	0 0.924	
	8/23/2005		1.270		0.381	1.50	0.583	
	9/20/2005		1.880	CCB	0.447	1.52	0 0.753	
	10/4/2005		1.850		0.533	1.62	0.708	
	10/26/2005		0.920		0.296	1.33	0.410	
	11/21/2005		1.180		0.204	1.66	0.439	
	No. of Samples:		12		12	1	1 12	
	Mean:		2.658		0.447	2.03	0.922	
	Median:		2.060		0.385	1.76	0.731	

- Negative values should be interpreted as equivalent to zero.
- BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.
- CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.
- HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.

- ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.
- MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID		Mercury (ng/L)	Chro (ເ	omium ıg/L)	Copper (ug/L)	Lead (ug/L)
340025	Grand River (Upper)					
	3/29/2005	3.010	CCB	0.219	2.600	0.500
	6/1/2005	2.270		0.440	3.410	0.851
	8/2/2005	1.490		0.293	2.010	0.700
	10/19/2005	1.440		0.485	1.760	0.577
	No. of Samples:	4		4	4	4
	Mean:	2.053		0.359	2.445	0.657
	Median:	1.880		0.367	2.305	0.639
580364	Huron River					
	4/18/2005	1.050	CCB	0.094	1.590	1.090
	6/22/2005	1.240		0.204	3.630	1.220
	8/8/2005	1.310		0.502	1.450	1.480
	10/3/2005	1.840		0.537	1.500	1.760
	No. of Samples:	4		4	4	4
	Mean:	1.360		0.334	2.043	1.388
	Median:	1.275		0.353	1.545	1.350
821417	Johnson Drain					
	4/18/2005	1.620	CCB	0.500	2.000	1.140
	6/22/2005	2.850		1.390	10.300	2.500
	8/8/2005	1.570		0.810	1.870	1.040
	10/3/2005	1.920		0.904	2.660	1.140
	No. of Samples:	4		4	4	4
	Mean:	1.990		0.901	4.208	1.455
	Median:	1.770		0.857	2.330	1.140
030077	Kalamazoo River (Lower)					
	3/21/2005	3.480	CCB	0.166	1.630	0.804
	5/4/2005	3.040		0.222	CCB 1.140	1.110
	6/1/2005	7.090		0.701	2.580	2.070
	6/28/2005	7.300		0.391	1.390	1.370
	7/20/2005	9.160		0.471	1.550	2.040
	8/3/2005	6.500		0.346	1.370	1.520
	8/24/2005	5.840		0.349	1.340	1.370
	9/14/2005	3.880	CCB	0.227	1.210	0.739
	9/27/2005	4.170	CCB	0.274	1.260	1.190
	10/18/2005	3.060		0.376	1.140	0.927
	11/2/2005	2.240		0.197	1.020	0.590
	11/22/2005	2.010		0.050	1.100	0.632
	No. of Samples:	12		12	12	12
	Mean:	4.814		0.314	1.394	1.197
	Median:	4.025		0.310	1.300	1.150

Negative values should be interpreted as equivalent to zero.

BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.

CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID		Mercury (ng/L)	Chr (เ	omium ug/L)	Copper (ug/L)	Lead (ug/L)	
390057	Kalamazoo River (Upper)						
	3/28/2005	3.250	CCB	0.542	1.400	0.745	
	5/10/2005	5.600		0.894	1.510	1.630	
	8/4/2005	3.730		0.989	1.610	1.290	
	10/5/2005	2.290		0.621	1.240	0.803	
	No. of Samples:	4		4	4	4	
	Mean:	3.718		0.762	1.440	1.117	
	Median:	3.490		0.758	1.455	1.047	
510088	Manistee River						
	4/11/2005	1.210	CCB	0.208	0.583	0.214	
	6/9/2005	3.390		0.128	0.755	0.152	
	7/6/2005	0.770		0.006	0.482	0.157	
	9/7/2005	0.610		0.132	0.482	0.127	
	No. of Samples:	4		4	4	4	
	Mean:	1.495		0.119	0.576	0.163	
	Median:	0.990		0.130	0.533	0.155	
770073	Manistique River						
	5/9/2005	1.850		0.168	0.332	0.122	
	6/13/2005	1.110		0.170	0.401	0.084	
	8/15/2005	1.110		0.095	0.397	0.078	
	10/19/2005	2.390		0.467	0.432	0.198	
	No. of Samples:	4		4	4	4	
	Mean:	1.615		0.225	0.391	0.120	
	Median:	1.480		0.169	0.399	0.103	
550038	Menominee River						
	4/19/2005	4.270		0.220	0.902	0.119	
	6/15/2005	3.710		0.227	1.250	0.165	
	8/17/2005	2.020		0.118	0.995	0.101	
	10/17/2005	2.350		0.402	1.040	0.102	
	No. of Samples:	4		4	4	4	
	Mean:	3.088		0.242	1.047	0.122	
	Median:	3.030		0.224	1.018	0.111	

Values may not be rounded to the appropriate number of significant figures. Negative values should be interpreted as equivalent to zero.

- BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.

CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID		Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)	
610273	Muskegon River (Lower)					
	3/22/2005	0.970	CCB 0.010	0.904	0.080	
	5/4/2005	1.470	0.049	CCB 0.820	0.113	
	6/8/2005	1.100	0.078	1.130	0.105	
	6/27/2005	0.870	0.046	1.130	0.096	
	7/19/2005	0.600	-0.048	0.680	0.104	
	8/2/2005	0.700	0.094	0.720	0.117	
	8/23/2005	0.480	0.057	0.633	0.068	
	9/14/2005	0.560	CCB 0.049	0.561	0.089	
	9/27/2005	1.280	CCB 0.154	0.729	0.387	
	10/18/2005	0.640	0.209	0.581	0.112	
	11/2/2005	0.600	0.082	0.546	0.067	
	11/21/2005	0.530	-0.049	0.606	0.077	
	No. of Samples:	12	12	12	12	
	Mean:	0.817	0.061	0.753	0.118	
	Median:	0.670	0.053	0.700	0.100	
670008	Muskegon River (Upper)					
	4/12/2005	2.520	CCB 0.059	0.751	0.199	
	5/17/2005	0.870	-0.101	0.532	0.084	
	7/7/2005	1.120	-0.017	0.600	0.194	
	9/6/2005	0.670	0.086	0.495	0.094	
	No. of Samples:	4	4	4	4	
	Mean:	1.295	0.007	0.595	0.143	
	Median:	0.995	0.021	0.566	0.144	
660038	Ontonagon River					
	5/2/2005	3.800	0.721	3.320	0.261	
	6/22/2005	6.130	1.370	5.360	0.469	
	8/18/2005	0.600	0.524	1.840	0.095	
	10/18/2005	3.530	1.280	3.290	0.260	
	No. of Samples:	4	4	4	4	
	Mean:	3.515	0.974	3.453	0.271	
	Median:	3.665	1.001	3.305	0.261	

- Negative values should be interpreted as equivalent to zero.
- BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.
- CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID		Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)
530027	Pere Marquette River				
	3/23/2005	1.160	CCB 0.077	0.590	0.145
	4/11/2005	1.820	CCB 0.073	0.556	0.210
	5/16/2005	1.600	0.018	0.449	0.217
	6/9/2005	3.530	0.519	1.080	0.683
	6/27/2005	2.010	0.246	0.602	0.443
	7/19/2005	1.660	0.117	0.538	0.319
	8/2/2005	4.310	0.101	0.512	0.293
	8/23/2005	1.150	0.183	0.524	0.232
	9/20/2005	0.820	CCB 0.189	0.420	0.149
	10/4/2005	1.170	0.295	0.492	0.193
	10/26/2005	0.460	0.049	0.340	0.051
	11/17/2005	0.910	0.112	0.597	0.090
	No. of Samples:	12	12	12	12
	Mean:	1.717	0.165	0.558	0.252
	Median:	1.385	0.115	0.531	0.214
430578	Pere Marquette River (He	adwaters)			
	4/12/2005	1.710	CCB 0.062	0.400	0.190
	5/17/2005	1.010	-0.072	0.281	0.112
	7/7/2005	1.300	0.000	0.343	0.166
	9/6/2005	1.700	0.069	0.290	0.042
	No. of Samples:	4	4	4	4
	Mean:	1.430	0.015	0.329	0.127
	Median:	1.500	0.031	0.317	0.139
160177	Pigeon River				
	5/19/2005	1.040	-0.134	0.337	0.069
	7/20/2005	0.950	-0.052	0.389	0.073
	9/12/2005	0.520	CCB 0.020	0.801	0.026
	10/25/2005	0.430	0.038	0.343	0.020
	No. of Samples:	4	4	4	4
	Mean:	0.735	-0.032	0.468	0.047
	Median:	0.735	-0.016	0.366	0.047
490006	Pine River				
	5/17/2005	6.210	1.420	1.700	0.770
	7/18/2005	1.700	0.753	1.170	0.457
	8/15/2005	2.060	0.894	1.160	0.451
	10/25/2005	1.340	1.170	1.110	0.607
	No. of Samples:	4	4	4	4
	Mean:	2.828	1.059	1.285	0.571
	Median:	1.880	1.032	1.165	0.532

Negative values should be interpreted as equivalent to zero.

BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.

CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID		ļ	Mercury (ng/L)	Chro (u	omium Ig/L)	(Copper (ug/L)	Lead (ug/L)		
580046	River Raisin									
	4/18/2005		1.140	ССВ	0.096		1.890		0.308	
	6/22/2005		1.270		0.156		3.540		0.549	
	8/8/2005		1.150		0.209		2.670		0.344	
	10/3/2005		2.080		0.704		4.040		0.503	
	No. of Samples:		4		4		4		4	
	Mean:		1.410		0.291		3.035		0.426	
	Median:		1.210		0.183		3.105		0.424	
820070	River Rouge									
	3/14/2005		0.400	CCB	0.126		0.793		0.112	
	4/5/2005		1.240	CCB	0.377		1.300		0.579	
	4/27/2005		7.730	CCB	3.652		4.940		4.190	
	5/25/2005	LCQC	5.400		1.430		3.180		3.240	
	6/14/2005		6.320		1.480		5.830		2.830	
	7/11/2005		4.160		1.390		3.100		2.380	
	7/25/2005		2.810		0.744		2.550		1.840	
	8/15/2005		2.320		0.930		2.190		1.610	
	9/1/2005		3.180		0.998		2.570		2.130	
	10/3/2005		8.610		3.200		4.860		6.060	
	11/8/2005		6.860		2.700		4.410		4.210	
	11/22/2005		6.470		2.310		4.410		3.410	
	No. of Samples:		12		12		12		12	
	Mean:		4.625		1.611		3.344		2.716	
	Median:		4.780		1.410		3.140		2.605	
090177	Saginaw River									
	3/14/2005		2.300	CCB	0.324		2.370		0.467	
	4/4/2005		3.720	CCB	0.473		2.060		0.718	
	4/27/2005		3.380	CCB	0.730	CCB	2.340		0.990	
	5/24/2005	LCQC	2.430		0.455		1.840		1.160	
	6/15/2005		3.650		1.010		3.690		1.490	
	7/11/2005		0.950		0.140		1.970		0.475	
	7/25/2005		1.250		0.342		1.880		0.854	
	8/16/2005		1.500		0.525		2.220		1.010	
	8/31/2005		1.850		0.787		2.460		1.310	
	9/21/2005		1.440	CCB	0.534		2.300		1.030	
	10/19/2005		2.240		0.952		2.120		1.040	
	11/29/2005		1.070		0.247		1.610		0.359	
	No. of Samples:		12		12		12		12	
	Mean:		2.148		0.543		2.238		0.909	
	Median:		2.045		0.499		2.170		1.000	

Negative values should be interpreted as equivalent to zero.

BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.

CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID		Mercury (ng/L)	Chi (romium ug/L)	(Copper (ug/L)	Lead (ug/L)	
730023	Shiawassee River							
	4/4/2005		1.670	CCB	0.369		1.590	0.466
	4/28/2005		2.070	CCB	0.309		1.770	0.481
	5/24/2005	LCQC	1.880		0.168		1.980	0.485
	6/15/2005		4.680		0.790		3.480	1.160
	7/12/2005		1.900		0.396		1.830	0.703
	7/26/2005		2.600		0.401		1.700	0.745
	8/16/2005		1.370		0.374		1.730	0.568
	8/31/2005		1.380		0.281		1.620	0.462
	9/21/2005		1.750	CCB	0.267		1.520	0.435
	10/19/2005		0.590		0.132		1.180	0.202
	11/3/2005		0.700		0.154		1.300	0.191
	11/29/2005		0.850		0.243		1.400	0.381
	No. of Samples:		12		12		12	12
	Mean:		1.787		0.324		1.758	0.523
	Median:		1.710		0.295		1.660	0.474
631036	Shiawassee River (H	leadwate	ers)					
	4/19/2005		0.400	CCB	-0.089		0.486	0.026
	6/23/2005		0.420		-0.131		1.260	0.022
	8/9/2005		0.200		0.045		0.468	0.024
	10/4/2005		0.290		0.052		0.451	0.039
	No. of Samples:		4		4		4	4
	Mean:		0.328		-0.031		0.666	0.028
	Median:		0.345		-0.022		0.477	0.025
110628	St. Joseph River (Lo	wer)						
	3/28/2005		1.750	CCB	0.128		1.320	0.407
	5/5/2005		1.990		0.194	CCB	1.320	0.441
	6/2/2005		3.180		0.153		1.970	0.503
	6/29/2005		1.670		-0.020		1.470	0.404
	7/21/2005		2.920		0.300		1.880	1.060
	8/4/2005		2.250		0.261		1.670	0.549
	8/25/2005		1.570		0.191		1.400	0.446
	9/15/2005		1.710	CCB	0.225		1.520	0.626
	9/29/2005		3.040	CCB	0.310		1.610	0.849
	10/19/2005		1.260		0.285		1.120	0.338
	11/3/2005		0.960		0.215		1.120	0.367
	11/16/2005		1.850		0.170		1.280	0.456
	No. of Samples:		12		12		12	12
	Mean:		2.013		0.201		1.473	0.537
	Median:		1.800		0.205		1.435	0.451

- Negative values should be interpreted as equivalent to zero.
- BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.

CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID		Mercury (ng/L)	Chromium (ug/L)	Copper (ug/L)	Lead (ug/L)
750273	St. Joseph River (Upper)				
	3/29/2005	1.630	CCB 0.084	0.971	0.318
	5/10/2005	1.390	-0.054	0.702	0.322
	7/21/2005	1.320	-0.081	0.701	0.274
	10/5/2005	0.920	0.168	0.632	0.240
	No. of Samples:	4	4	4	4
	Mean:	1.315	0.029	0.752	0.289
	Median:	1.355	0.015	0.702	0.296
210032	Sturgeon River				
	4/18/2005	5.630	0.264	CCB 0.530	0.274
	6/13/2005	1.730	0.150	0.404	0.076
	8/15/2005	0.690	0.102	0.368	0.035
	10/19/2005	3.210	0.503	0.492	0.166
	No. of Samples:	4	4	4	4
	Mean:	2.815	0.255	0.449	0.138
	Median:	2.470	0.207	0.448	0.121
170141	Tahquamenon River				
	4/20/2005	6.550	0.158	0.472	0.228
	6/20/2005	1.660	0.133	0.416	0.092
	8/16/2005	0.630	-0.004	0.316	0.034
	10/26/2005	4.010	0.380	0.441	0.217
	No. of Samples:	4	4	4	4
	Mean:	3.213	0.167	0.411	0.143
	Median:	2.835	0.146	0.429	0.154
040123	Thunder Bay River				
	4/4/2005	2.580	0.164	CCB 0.760	0.167
	4/26/2005	1.370	0.060	0.591	0.090
	5/18/2005	0.920	-0.078	0.475	0.111
	6/8/2005	0.760	-0.003	0.646	0.136
	6/27/2005	0.720	-0.092	0.478	0.091
	7/19/2005	0.530	-0.125	0.411	0.108
	7/27/2005	0.640	-0.153	0.359	0.122
	8/22/2005	0.540	0.062	0.485	0.125
	9/13/2005	0.370	0.039	0.423	0.063
	9/27/2005	0.440	CCB 0.024	0.366	0.099
	10/24/2005	0.360	0.036	0.314	0.055
	11/8/2005	0.480	0.008	0.410	0.077
	No. of Samples:	12	12	12	12
	Mean:	0.809	-0.005	0.477	0.104
	Median:	0.590	0.016	0.449	0.104

Negative values should be interpreted as equivalent to zero.

BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.

CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.

HT = Recommended laboratory holding time was exceeded before analysis. ICB = Initial calibration blank exceeded level of detection.

ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.

MBQC = Method blank exceeded level of detection.

MS = Matrix spike exceeded quality control criteria.

STORET ID			Mercury Chromium (ng/L) (ug/L)		omium ıg/L)	Copper (ug/L)	Lead (ug/L)	
600051	Thunder Bay River	(Headwate	rs)					
	5/18/2005		0.720		-0.143	0.372	0.047	
	7/19/2005		0.660		-0.129	0.266	0.048	
	9/13/2005		0.470	CCB	0.015	0.306	0.034	
	10/25/2005		0.280		0.015	0.247	0.021	
	No. of Samples:		4		4	4	4	
	Mean:		0.533		-0.060	0.298	0.037	
	Median:		0.565		-0.057	0.286	0.041	
730025	Tittabawassee Rive	er						
	4/4/2005	MSD	5.300	CCB	0.566	2.120	0.886	
	5/24/2005	LCQC	2.600		0.287	1.590	0.640	
	7/26/2005		3.320		0.556	2.160	0.932	
	10/19/2005		0.630		0.194	1.460	0.163	
	No. of Samples:		4		4	4	4	
	Mean:		2.963		0.401	1.833	0.655	
	Median:		2.960		0.422	1.855	0.763	

- Negative values should be interpreted as equivalent to zero.
- BSQC = Batch spike exceeded quality control criteria. CCB = Continuing calibration blank exceeded detection level.
- CCV = Continuing calibration standard exceeded quality control criteria. ELOD = Matrix problem; elevated detection level reported.
- HT = Recommended laboratory holding time was exceeded before analysis.ICB = Initial calibration blank exceeded level of detection.
- ISQC = Internal standard exceeded quality control criteria. LCQC = Laboratory control exceeded quality control criteria.
- MBQC = Method blank exceeded level of detection.
- MS = Matrix spike exceeded quality control criteria.
- MSD = Matrix spike duplicate exceeded quality control criteria.

STORE	ΓID	Cong. 101 (ng/L)	Cong. 118 (ng/L)	Cong. 123+149 (ng/L)	Cong. 9 128 (ng/L)	Cong. 132+153+10 (ng/L)	Cong. 5 135+144 (ng/L)	Cong. 136 (ng/L)	Cong. 137+176 (ng/L)	Cong. 141 (ng/L)	Cong. 146 (ng/L)	Cong. 15+17 (ng/L)	Cong. 151 (ng/L)
520258	Bryan Creek												
	6/21/2005	MDL 0.004	UND 0.000	MDL 0.002	UND 0.000	MDL 0.003	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.014	UND 0.000
700123	Grand River (Lower)												
	3/22/2005	0.024	0.021	FBK 0.049	0.011	0.090	0.014	UND0.000	UND 0.000	NAI	NAI	0.016	0.014
	4/11/2005	0.023	0.051	FBK 0.078	0.024	0.159	0.020	UND0.000	UND 0.000	NAI	0.016	MDL0.015	0.023
	5/11/2005	CON 0.029	CON 0.032	CON 0.045	0.016	CON 0.092	CON 0.013	UND0.000	UND 0.000	NAI	NAI	MDL0.024	CON0.013
	6/8/2005	0.070	0.105	0.092	0.041	0.220	0.031	UND0.000	UND 0.000	0.023	0.026	0.030	0.029
	6/27/2005	0.039	0.039	0.043	0.017	0.101	0.016	UND0.000	UND 0.000	0.010	0.012	0.031	0.014
	7/19/2005	0.044	0.061	0.058	0.023	0.121	0.020	UND0.000	UND 0.000	0.011	NAI	0.034	0.019
	8/2/2005	CON 0.048	CON 0.058	CON 0.054	CON 0.023	CON 0.122	CON 0.020	UND0.000	UND 0.000	0.011	0.016	CON 0.033	CON0.016
	8/23/2005	0.052	0.037	0.040	0.017	0.084	0.015	UND0.000	UND 0.000	0.009	0.012	MDL0.022	0.013
	9/20/2005	0.043	0.040	0.038	0.014	0.078	0.014	UND0.000	UND 0.000	0.008	0.012	0.020	0.011
	10/4/2005	0.045	0.044	0.040	0.016	0.093	0.013	UND0.000	UND 0.000	0.009	0.011	0.023	0.012
	10/26/2005	0.024	0.025	0.029	0.010	0.057	0.009	UND0.000	UND 0.000	0.006	UND 0.000	MDL0.017	0.009
	11/21/2005	0.021	0.021	0.016	0.008	0.042	MDL0.005	UND 0.000	UND 0.000	0.005	UND 0.000	MDL0.011	MDL0.005
821417	Johnson Drain												
	6/22/2005	CON 0.059	CON 0.059	CON 0.127	0.023	CON 0.260	CON 0.043	UND 0.000	UND 0.000	CON 0.059	0.034	NAI	CON 0.048

- CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
- FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
- FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

		Cong. 101	Cong. 118	Cong. 123+149	Cong. 128	Cong. 132+153+10	Cong. 5 135+144	Cong. 136	Cong. 137+176	Cong. 141	Cong. 146	Cong. 15+17	Cong. 151
STORE	TID	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
030077	Kalamazoo River (Lower)												
	3/21/2005	CON 0.117	CON 0.114	NFBK 0.077	0.031	CON 0.178	CON 0.027	NAI	UND 0.000	0.021	0.026	CON0.181	CON 0.023
	5/4/2005	0.335	0.226	FBK 0.191	0.071	0.397	0.072	NAI	UND 0.000	NAI	0.082	0.454	0.065
	6/1/2005	0.647	0.358	0.235	0.086	0.498	0.091	0.110	UND 0.000	0.054	0.094	0.609	0.082
	6/28/2005	0.449	0.378	0.219	0.082	0.519	0.088	0.086	UND 0.000	NAI	0.103	0.502	0.082
	7/20/2005	0.602	0.457	0.274	0.111	0.632	0.110	0.100	UND 0.000	0.065	0.126	0.520	0.100
	8/3/2005	0.452	0.312	0.190	0.074	0.423	0.077	0.073	UND 0.000	0.044	0.072	0.467	0.069
	8/24/2005	0.349	0.277	0.164	0.069	0.374	0.066	0.072	UND 0.000	0.034	0.084	0.445	0.054
	9/14/2005	0.241	0.148	0.087	0.036	0.199	0.035	0.033	UND 0.000	0.019	0.041	0.275	0.029
	9/27/2005	0.416	0.243	0.152	0.061	0.347	0.062	0.060	UND 0.000	0.033	0.076	0.415	0.055
	10/18/2005	0.227	0.178	0.116	0.042	0.255	0.044	0.044	UND 0.000	0.029	0.055	0.350	0.038
	11/2/2005	CON 0.148	CON 0.140	CON 0.079	CON 0.031	CON 0.185	0.027	0.020	UND 0.000	0.018	0.034	CON 0.288	0.023
	11/22/2005	0.165	0.106	0.059	0.026	0.144	0.023	0.019	UND 0.000	0.014	0.027	0.244	0.019
430578	Pere Marquette River (Hea	dwaters)											
	9/6/2005	UND 0.000	MDL 0.004	MDL 0.003	MDL 0.001	MDL 0.008	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	CON 0.024	UND 0.000
160177	Pigeon River												
	7/20/2005	MDL0.004	UND 0.000	NAI	UND 0.000	MDL 0.006	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	0.021	UND 0.000
140110	Pokagon Creek												
	5/10/2005	UND 0.000	UND 0.000	0.011	UND 0.000	0.019	MDL0.003	UND 0.000	UND 0.000	0.006	NAI	0.027	MDL0.004
631036	Shiawassee River (Headwa	aters)											
	6/23/2005	UND 0.000	UND 0.000	MDL 0.003	UND 0.000	MDL 0.006	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	0.020	UND 0.000

+ = Calculated value; may not be rounded to appropriate number of significant figures.
 CON = Parameter confirmed using an auxiliary analytical technique.
 EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
 FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method.
 FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

	Cong. 101	Cong. 118	Cong. 123+149	Cong. 9 128	Cong. 132+153+10	Cong. 5 135+144	Cong. 136	Cong. 137+176	Cong. 141	Cong. 146	Cong. 15+17	Cong. 151
STORET ID	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
110628 St. Joseph River (Lower)												
3/28/2005	0.054	0.035	FBK 0.052	0.014	0.103	0.018	UND0.000	UND 0.000	NAI	0.011	0.021	0.018
5/5/2005	0.043	0.044	0.092	0.022	0.171	0.030	0.020	UND 0.000	0.037	0.019	0.023	0.033
6/2/2005	0.055	0.057	0.094	0.023	0.176	0.032	0.024	UND 0.000	0.033	0.020	0.029	0.034
6/29/2005	0.079	0.046	0.087	0.021	0.164	0.031	UND0.000	UND 0.000	NAI	0.020	0.038	0.031
7/21/2005	0.121	0.082	0.124	0.035	0.239	0.045	UND0.000	UND 0.000	0.043	0.031	0.036	0.045
8/4/2005	0.105	0.059	0.101	0.024	0.186	0.037	0.021	UND 0.000	0.032	0.025	0.037	0.037
8/25/2005	CON 0.082	CON 0.039	CON 0.076	0.019	CON 0.141	CON 0.028	UND0.000	UND 0.000	0.025	0.019	CON 0.035	CON 0.027
9/15/2005	0.091	0.053	0.087	0.022	0.164	0.032	0.018	UND 0.000	0.027	0.022	0.030	0.032
9/29/2005	CON 0.079	CON 0.065	CON 0.090	CON 0.025	CON 0.189	CON 0.032	MDL0.015	UND 0.000	CON0.029	0.024	0.023	CON 0.033
10/19/2005	0.040	0.032	0.042	0.009	0.085	0.010	UND0.000	UND 0.000	0.012	0.008	0.022	0.011
11/3/2005	0.052	0.037	0.047	0.014	0.099	0.016	UND0.000	UND 0.000	0.016	0.012	0.020	0.017
11/16/2005	0.060	0.036	0.048	0.015	0.100	0.018	UND0.000	UND 0.000	0.017	0.013	0.024	0.018
600051 Thunder Bay River (Headw	aters)											
9/13/2005	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL 0.005	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.014	UND 0.000

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.

FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

STORE	ΓID	Cong. 158 (ng/L)	Cong. 16+32 (ng/L)	Cong. 163+138 (ng/L)	Cong. 167 (ng/L)	Cong. 170+190 (ng/L)	Cong. 172 (ng/L)	Cong. 174 (ng/L)	Cong. 177 (ng/L)	Cong. 178 (ng/L)	Cong. 18 (ng/L)	Cong. 180 (ng/L)	Cong. 183 (ng/L)	Cong. 185 (ng/L)
520258	Bryan Creek													
	6/21/2005	UND 0.000	UND 0.000	MDL 0.003	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.002	UND 0.000	UND 0.000
700123	Grand River (Lower)												
	3/22/2005	0.010	0.081	0.090	UND 0.000	0.032	UND 0.000	0.028	0.018	0.011	0.016	FBK0.063	UND 0.000	UND 0.000
	4/11/2005	0.019	0.217	0.158	0.008	0.043	0.020	0.038	0.030	0.015	0.042	FBK0.098	NAI	UND0.000
	5/11/2005	MDL0.011	CON 0.049	CON 0.087	MDL 0.005	CON 0.015	MDL 0.005	CON 0.017	MDL0.008	MDL0.008	CON0.032	IFBK0.039	CON0.010	UND 0.000
	6/8/2005	0.032	0.045	0.215	0.007	0.038	0.026	0.030	0.024	0.015	0.031	FBK0.081	0.013	UND0.000
	6/27/2005	0.011	NAI	0.098	MDL 0.006	0.016	MDL 0.006	0.019	0.009	0.010	0.027	0.046	0.010	UND0.000
	7/19/2005	0.016	0.058	0.125	UND 0.000	0.013	MDL 0.008	0.019	0.015	0.010	0.033	0.039	0.014	UND 0.000
	8/2/2005	CON0.014	CON 0.052	CON0.123	UND 0.000	CON 0.014	MDL 0.007	CON 0.017	CON0.015	CON 0.008	CON 0.030	CON 0.037	CON0.013	UND 0.000
	8/23/2005	MDL0.009	0.026	0.089	MDL 0.003	0.010	MDL 0.008	0.011	UND0.000	MDL0.006	0.027	0.027	UND 0.000	UND 0.000
	9/20/2005	0.008	0.031	0.088	MDL 0.004	0.012	MDL 0.008	0.012	UND0.000	MDL0.006	0.026	0.028	0.008	UND 0.000
	10/4/2005	0.013	NAI	0.090	UND 0.000	UND 0.000	MDL 0.009	0.013	UND 0.000	0.009	0.031	0.027	0.009	UND 0.000
	10/26/2005	MDL0.006	NAI	0.054	MDL 0.004	MDL 0.003	MDL 0.005	0.011	UND 0.000	MDL0.007	0.022	0.021	0.008	UND 0.000
	11/21/2005	UND 0.000	0.152	0.043	UND 0.000	MDL 0.005	UND 0.000	0.007	UND 0.000	MDL0.004	0.009	0.017	MDL0.004	UND 0.000
821417	Johnson Drair	n												
	6/22/2005	CON 0.032	CON 0.353	CON 0.253	MDL 0.004	CON 0.077	CON 0.028	CON 0.084	CON 0.056	CON 0.032	CON 0.022	CON0.179	CON 0.049	CON 0.004

- CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
- FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
- FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

		Cong. 158	Cong. 16+32	Cong. 163+138	Cong. 167	Cong. 170+190	Cong. 172	Cong. 174	Cong. 177	Cong. 178	Cong. 18	Cong. 180	Cong. 183	Cong. 185
STORE	T ID	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
030077	Kalamazoo R	liver (Lower)												
	3/21/2005	CON0.019	CON 0.212	CON 0.161	CON 0.013	CON 0.028	CON 0.012	CON 0.027	CON 0.023	CON 0.012	CON0.177	IFBK0.061	CON0.013	UND 0.000
	5/4/2005	0.041	0.399	0.361	0.015	0.055	0.021	0.058	0.042	0.020	0.386	FBK0.125	0.025	0.005
	6/1/2005	0.053	0.429	0.461	0.018	0.061	0.022	0.065	0.055	0.026	0.516	FBK0.128	0.034	0.007
	6/28/2005	0.055	0.327	0.502	0.017	0.049	0.020	0.057	0.057	0.028	0.431	0.124	0.034	0.006
	7/20/2005	0.076	0.318	0.626	0.020	0.082	0.026	0.083	0.076	0.035	0.438	0.171	0.047	0.009
	8/3/2005	0.051	0.270	0.424	0.014	0.052	0.017	0.053	0.053	0.024	0.390	0.113	0.032	0.006
	8/24/2005	0.038	0.258	0.376	0.015	0.049	0.016	0.046	0.045	0.020	0.378	0.095	0.027	0.004
	9/14/2005	0.018	0.165	0.200	0.007	0.024	MDL 0.007	0.024	0.023	0.010	0.250	0.051	0.015	MDL0.002
	9/27/2005	0.033	0.256	0.343	0.015	0.041	0.013	0.042	0.039	0.017	0.363	0.088	0.026	MDL0.003
	10/18/2005	0.027	0.233	0.246	0.012	0.030	0.010	0.031	0.026	0.014	0.321	0.065	0.018	UND0.000
	11/2/2005	CON0.015	CON 0.200	CON 0.178	CON 0.010	CON 0.023	MDL 0.008	CON 0.023	CON0.019	CON 0.010	CON0.324	CON 0.048	CON0.012	MDL0.003
	11/22/2005	0.017	0.191	0.136	UND 0.000	0.020	MDL 0.006	0.019	0.016	MDL0.007	0.219	0.045	0.012	UND 0.000
430578	Pere Marquet	tte River (Head	dwaters)											
	9/6/2005	UND 0.000	CON 0.019	MDL 0.008	UND 0.000	MDL 0.002	UND 0.000	UND 0.000	MDL0.001	UND 0.000	CON 0.019	MDL0.004	MDL 0.001	UND 0.000
160177	Pigeon River													
	7/20/2005	UND 0.000	NAI	MDL0.004	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	0.010	MDL0.003	UND 0.000	UND 0.000
140110	Pokagon Cre	ek												
	5/10/2005	UND 0.000	NAI	0.020	UND 0.000	0.010	UND 0.000	0.011	0.008	UND 0.000	0.018	FBK0.023	MDL0.006	UND 0.000
631036	Shiawassee I	River (Headwa	ters)											
	6/23/2005	UND 0.000	0.032	MDL0.004	UND 0.000	MDL 0.002	UND 0.000	MDL0.004	UND0.000	UND 0.000	0.018	0.014	MDL0.003	UND 0.000

+ = Calculated value; may not be rounded to appropriate number of significant figures.
 CON = Parameter confirmed using an auxiliary analytical technique.
 EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
 FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method.
 FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

)	Cong. 158 (ng/L)	Cong. 16+32 (ng/L)	Cong. 163+138 (ng/L)	Cong. 167 (ng/L)	Cong. 170+190 (ng/L)	Cong. 172 (ng/L)	Cong. 174 (ng/L)	Cong. 177 (ng/L)	Cong. 178 (ng/L)	Cong. 18 (ng/L)	Cong. 180 (ng/L)	Cong. 183 (ng/L)	Cong. 185 (ng/L)
110628	St. Joseph R	iver (Lower)												
3/2	28/2005	0.011	NAI	0.097	MDL 0.004	0.025	MDL 0.007	0.024	0.012	0.009	0.016	FBK0.055	0.012	UND0.000
5	5/5/2005	0.024	0.029	0.174	0.007	0.068	0.020	0.060	0.044	0.017	0.028	FBK0.139	0.037	0.006
6	6/2/2005	0.025	0.036	0.168	0.006	0.043	0.013	0.041	0.024	0.016	0.039	FBK0.092	0.027	MDL0.003
6/2	29/2005	0.022	NAI	0.156	MDL 0.007	0.032	0.011	0.040	0.022	0.016	0.036	0.087	0.026	MDL0.003
7/2	21/2005	0.037	0.041	0.236	0.008	0.057	0.017	0.058	0.033	0.023	0.031	0.125	0.037	0.006
8	3/4/2005	0.026	0.038	0.191	MDL 0.006	0.043	0.013	0.044	0.026	0.017	0.033	0.097	0.028	MDL0.004
8/2	25/2005	CON0.018	CON 0.041	CON0.141	MDL 0.005	CON 0.033	CON 0.010	CON 0.035	CON0.019	CON 0.013	CON0.033	CON0.074	CON0.023	MDL0.003
9/*	15/2005	0.019	0.028	0.173	MDL 0.006	0.042	0.012	0.040	0.031	0.015	0.025	0.092	0.027	0.004
9/2	29/2005	CON 0.028	NAI	CON0.182	UND 0.000	CON 0.045	CON 0.013	CON 0.046	CON 0.038	CON 0.018	CON0.027	CON0.102	CON 0.030	UND 0.000
10/	19/2005	0.010	0.027	0.083	MDL 0.005	0.024	MDL 0.004	0.021	0.017	MDL0.006	0.110	0.048	0.012	UND0.000
11	/3/2005	0.011	0.059	0.101	MDL 0.005	0.028	0.008	0.023	0.015	0.009	0.026	0.058	0.016	MDL0.002
11/	16/2005	0.011	NAI	0.104	UND 0.000	0.031	0.009	0.026	0.021	0.011	0.019	0.070	0.019	UND 0.000
600051	Thunder Bay	River (Headwa	aters)											
9/*	13/2005	UND 0.000	UND 0.000	MDL 0.004	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.003	UND 0.000	UND 0.000

- CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
- FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
- FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

STORE	ΓID	Cong. 187+182 (ng/L)	Cong. 19 (ng/L)	Cong. 193 (ng/L)	Cong. 194 (ng/L)	Cong. 198 (ng/L)	Cong. 199 (ng/L)	Cong. 201 (ng/L)	Cong. 202+171 (ng/L)	Cong. 203+196 (ng/L)	Cong. 206 (ng/L)	Cong. 207 (ng/L)	Cong. 208+195 (ng/L)	Cong. 22 (ng/L)
520258	Bryan Creek													
	6/21/2005	MDL0.002	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.002	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000
700123	Grand River (Lower)												
	3/22/2005	0.026	UND 0.000	UND 0.000	0.017	UND 0.000	UND 0.000	0.021	0.012	0.023	0.009	UND 0.000	0.007	NAI
	4/11/2005	0.040	NAI	UND 0.000	0.023	UND 0.000	UND 0.000	0.022	0.016	0.040	0.014	UND 0.000	0.011	NAI
	5/11/2005	CON0.018	UND 0.000	UND 0.000	CON 0.010	UND 0.000	UND 0.000	CON 0.017	0.013	CON 0.026	CON 0.008	UND 0.000	MDL 0.006	NAI
	6/8/2005	0.033	UND 0.000	UND 0.000	0.022	UND 0.000	UND 0.000	0.048	0.024	0.047	0.023	UND 0.000	0.013	NAI
	6/27/2005	0.018	UND 0.000	MDL0.003	0.014	UND 0.000	UND 0.000	0.026	0.013	0.036	0.008	UND 0.000	0.007	NAI
	7/19/2005	0.020	UND 0.000	UND 0.000	NAI	FPC 0.000	UND 0.000	0.020	0.017	0.030	0.014	UND 0.000	0.009	NAI
	8/2/2005	CON0.018	UND 0.000	UND 0.000	NAI	FPC 0.000	UND 0.000	CON 0.020	0.019	CON 0.024	CON0.012	UND 0.000	0.008	NAI
	8/23/2005	0.013	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	0.016	NAI	0.020	UND 0.000	UND 0.000	MDL 0.005	NAI
	9/20/2005	0.013	0.006	UND 0.000	UND 0.000	UND 0.000	UND 0.000	0.013	0.016	0.017	UND 0.000	UND 0.000	0.005	0.026
	10/4/2005	0.012	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	0.014	0.016	0.020	0.009	UND 0.000	MDL0.004	NAI
	10/26/2005	0.013	UND 0.000	UND 0.000	MDL 0.005	UND 0.000	UND 0.000	MDL0.010	0.011	MDL0.014	0.004	UND 0.000	UND 0.000	NAI
	11/21/2005	0.009	UND 0.000	UND 0.000	0.007	UND 0.000	UND 0.000	0.011	0.007	MDL0.011	0.007	UND 0.000	MDL0.004	0.015
821417	Johnson Drair	n												
	6/22/2005	CON 0.082	UND 0.000	CON 0.012	0.050	UND 0.000	CON 0.007	CON 0.084	0.026	CON 0.100	CON 0.020	UND 0.000	CON 0.022	NAI

- CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
- FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
- FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

		Cong. 187+182	Cong. 19	Cong. 193	Cong. 194	Cong. 198	Cong. 199	Cong. 201	Cong. 202+171	Cong. 203+196	Cong. 206	Cong. 207	Cong. 208+195	Cong. 22
STORE	TID	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
030077	Kalamazoo R	iver (Lower)												
	3/21/2005	CON 0.032	0.012	UND 0.000	CON 0.016	UND 0.000	UND 0.000	CON 0.025	0.007	CON 0.027	CON0.010	UND 0.000	CON 0.007	CON0.107
	5/4/2005	0.067	0.025	0.008	0.031	UND 0.000	UND 0.000	0.055	0.019	0.053	0.017	UND 0.000	0.013	0.164
	6/1/2005	0.073	0.026	0.012	0.031	UND 0.000	0.006	0.068	0.019	0.073	0.022	UND 0.000	0.017	0.297
	6/28/2005	0.070	0.028	0.008	0.029	UND 0.000	MDL 0.004	0.060	0.017	0.081	0.021	UND 0.000	0.017	0.239
	7/20/2005	0.093	0.027	0.013	0.049	FPC 0.000	0.006	0.100	0.025	0.100	0.033	UND 0.000	0.025	0.236
	8/3/2005	0.063	0.024	0.009	0.032	FPC 0.000	MDL 0.004	0.063	0.016	0.066	0.021	UND 0.000	0.016	0.191
	8/24/2005	0.053	0.023	0.009	0.026	UND 0.000	MDL 0.003	0.058	0.016	0.057	0.021	UND 0.000	0.015	0.183
	9/14/2005	0.029	0.019	MDL0.004	0.014	UND 0.000	MDL 0.002	0.019	0.007	0.024	0.008	UND 0.000	0.007	0.107
	9/27/2005	0.049	0.028	MDL0.007	0.023	UND 0.000	MDL 0.003	0.048	0.013	0.047	0.015	UND 0.000	0.012	0.159
	10/18/2005	0.039	0.014	MDL0.005	0.016	UND 0.000	UND 0.000	0.036	0.011	0.036	0.012	UND 0.000	0.009	0.146
	11/2/2005	CON 0.034	0.095	UND 0.000	CON 0.017	UND 0.000	UND 0.000	CON 0.025	0.007	CON 0.034	CON0.013	UND 0.000	CON 0.009	NAI
	11/22/2005	0.023	0.013	MDL0.003	0.022	UND 0.000	UND 0.000	0.029	0.006	0.034	0.018	UND 0.000	0.008	0.098
430578	Pere Marquet	tte River (Head	waters)											
	9/6/2005	MDL0.003	UND 0.000	UND 0.000	MDL 0.001	UND 0.000	UND 0.000	MDL0.003	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000
160177	Pigeon River													
	7/20/2005	MDL0.003	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000
140110	Pokagon Cree	ek												
	5/10/2005	0.010	UND 0.000	UND 0.000	0.009	UND 0.000	UND 0.000	0.012	UND 0.000	MDL0.015	MDL0.004	UND 0.000	MDL0.004	MDL0.013
631036	Shiawassee F	River (Headwat	ters)											
	6/23/2005	0.007	UND 0.000	UND 0.000	0.009	UND 0.000	UND 0.000	0.016	UND 0.000	0.017	0.006	UND 0.000	MDL0.004	UND 0.000

+ = Calculated value; may not be rounded to appropriate number of significant figures.
 CON = Parameter confirmed using an auxiliary analytical technique.
 EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.

FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

STORET	ĪD	Cong. 187+182 (ng/L)	Cong. 19 (ng/L)	Cong. 193 (ng/L)	Cong. 194 (ng/L)	Cong. 198 (ng/L)	Cong. 199 (ng/L)	Cong. 201 (ng/L)	Cong. 202+171 (ng/L)	Cong. 203+196 (ng/L)	Cong. 206 (ng/L)	Cong. 207 (ng/L)	Cong. 208+195 (ng/L)	Cong. 22 (ng/L)
110628	St. Joseph F	River (Lower)												
	3/28/2005	0.028	UND 0.000	UND 0.000	0.015	UND 0.000	UND 0.000	0.026	0.012	0.022	0.010	UND 0.000	0.007	0.018
	5/5/2005	0.052	UND 0.000	0.010	0.031	UND 0.000	0.005	0.050	0.023	0.066	0.014	UND 0.000	0.015	NAI
	6/2/2005	0.045	0.006	MDL0.007	0.019	UND 0.000	MDL 0.003	0.033	0.020	0.047	0.010	UND 0.000	0.010	NAI
	6/29/2005	0.049	UND 0.000	UND 0.000	0.025	UND 0.000	MDL 0.003	0.043	0.018	0.052	0.014	UND 0.000	0.012	NAI
	7/21/2005	0.061	UND 0.000	0.011	0.029	FPC 0.000	MDL 0.004	0.055	0.029	0.056	0.019	UND 0.000	0.015	NAI
	8/4/2005	0.047	UND 0.000	MDL0.007	0.021	UND 0.000	MDL 0.002	0.040	0.022	0.045	0.014	UND 0.000	0.011	0.024
	8/25/2005	CON 0.037	UND 0.000	MDL0.005	CON 0.016	UND 0.000	UND 0.000	CON 0.034	0.017	CON 0.038	CON0.014	UND 0.000	CON0.010	UND 0.000
	9/15/2005	0.044	UND 0.000	MDL0.006	0.021	UND 0.000	UND 0.000	0.039	0.021	0.043	0.012	UND 0.000	0.012	0.018
	9/29/2005	CON 0.053	UND 0.000	MDL0.007	CON 0.024	UND 0.000	UND 0.000	CON 0.044	0.023	CON 0.053	CON0.016	UND 0.000	CON0.013	0.038
1	0/19/2005	0.030	NAI	UND 0.000	0.010	UND 0.000	UND 0.000	0.013	0.010	0.027	0.005	UND 0.000	0.007	NAI
	11/3/2005	0.026	UND 0.000	UND 0.000	0.014	UND 0.000	UND 0.000	0.019	0.012	0.026	0.009	UND 0.000	0.008	0.040
1	1/16/2005	0.030	UND 0.000	UND 0.000	0.035	UND 0.000	UND 0.000	0.042	0.013	0.049	0.032	UND 0.000	0.013	0.023
600051	Thunder Bay	y River (Headwa	iters)											
	9/13/2005	MDL0.003	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.003	UND 0.000	MDL0.003	UND 0.000	UND 0.000	UND 0.000	UND 0.000

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

 ^{+ =} Calculated value; may not be rounded to appropriate number of significant figures.
 CON = Parameter confirmed using an auxiliary analytical technique.
 EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
 FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method.
 FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

STORE	ΓID	Cong. 24+27 (ng/L)	Cong. 25 (ng/L)	Cong. 26 (ng/L)	Cong. 28+31 (ng/L)	Cong. 3 (ng/L)	Cong. 33 (ng/L)	Cong. 37+42 (ng/L)	Cong. 4+10 (ng/L)	Cong. 40 (ng/L)	Cong. 41+71+64 (ng/L)	Cong. 44 (ng/L)	Cong. 45 (ng/L)	Cong. 46 (ng/L)
520258	Bryan Creek													
	6/21/2005	UND 0.000	UND 0.000	UND 0.000	MDL 0.007	UND 0.000	MDL 0.006	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000
700123	Grand River (Lower)												
	3/22/2005	UND 0.000	UND 0.000	UND 0.000	MDL 0.019	UND 0.000	0.035	NAI	UND 0.000	UND 0.000	0.018	0.035	UND 0.000	UND 0.000
	4/11/2005	0.015	UND 0.000	UND 0.000	0.051	UND 0.000	0.053	NAI	NAI	UND 0.000	0.042	0.032	0.005	UND 0.000
	5/11/2005	UND 0.000	UND 0.000	UND 0.000	CON 0.049	UND 0.000	CON 0.017	NAI	UND 0.000	0.020	CON0.019	CON 0.033	UND 0.000	UND 0.000
	6/8/2005	UND 0.000	UND 0.000	UND 0.000	0.094	UND 0.000	0.023	0.179	UND 0.000	0.159	0.031	0.078	0.011	UND 0.000
	6/27/2005	UND 0.000	UND 0.000	UND 0.000	0.076	UND 0.000	NAI	NAI	UND 0.000	UND 0.000	0.020	0.058	0.006	UND 0.000
	7/19/2005	UND 0.000	UND 0.000	UND 0.000	0.096	UND 0.000	0.021	NAI	UND 0.000	UND 0.000	0.024	0.058	NAI	NAI
	8/2/2005	UND 0.000	UND 0.000	UND 0.000	CON 0.094	UND 0.000	NAI	NAI	NAI	UND 0.000	CON 0.023	CON 0.055	NAI	UND 0.000
	8/23/2005	NAI	UND 0.000	UND 0.000	0.069	UND 0.000	0.014	UND 0.000	UND 0.000	NAI	0.021	0.052	UND 0.000	UND 0.000
	9/20/2005	UND 0.000	UND 0.000	UND 0.000	0.067	UND 0.000	0.011	NAI	UND 0.000	UND 0.000	0.019	0.051	UND 0.000	UND 0.000
	10/4/2005	UND 0.000	UND 0.000	UND 0.000	0.074	UND 0.000	0.018	NAI	UND 0.000	0.024	0.023	0.058	NAI	UND 0.000
	10/26/2005	UND 0.000	UND 0.000	UND 0.000	0.057	UND 0.000	0.016	NAI	UND 0.000	0.055	0.036	0.044	NAI	UND 0.000
	11/21/2005	UND 0.000	UND 0.000	UND 0.000	MDL 0.018	UND 0.000	0.062	NAI	UND 0.000	UND 0.000	0.015	0.027	UND 0.000	UND 0.000
821417	Johnson Drair	ו ו												
	6/22/2005	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	NAI	NAI	CON 0.046	UND 0.000	CON0.023	CON0.042	UND 0.000	UND 0.000

- CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
- FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
- FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

		Cong. 24+27	Cong. 25	Cong. 26	Cong. 28+31	Cong. 3	Cong. 33	Cong. 37+42	Cong. 4+10	Cong. 40	Cong. 41+71+64	Cong. 44	Cong. 45	Cong. 46
STORE	TID	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
030077	Kalamazoo R	iver (Lower)												
	3/21/2005	CON 0.020	CON 0.031	CON 0.064	CON 0.589	UND 0.000	CON 0.065	0.298	NAI	NAI	CON 0.209	NAI	CON 0.046	CON0.023
	5/4/2005	0.038	0.082	0.173	1.225	UND 0.000	0.168	0.403	UND 0.000	0.100	0.479	0.597	0.112	0.064
	6/1/2005	0.053	0.161	0.240	2.040	UND 0.000	0.178	0.585	NAI	0.206	0.671	0.812	0.149	0.079
	6/28/2005	0.037	0.092	0.201	1.597	UND 0.000	0.157	0.407	NAI	0.082	0.524	0.622	0.103	0.060
	7/20/2005	0.042	0.098	0.195	1.798	UND 0.000	0.199	0.543	0.114	0.093	0.531	0.709	0.110	0.064
	8/3/2005	0.038	0.073	0.153	1.384	UND 0.000	0.163	0.479	0.123	0.065	0.418	0.556	0.102	0.059
	8/24/2005	0.034	0.074	0.148	1.301	UND 0.000	0.147	0.384	0.115	0.076	0.423	0.527	0.089	0.052
	9/14/2005	0.029	0.040	0.084	0.765	UND 0.000	0.086	0.222	0.076	0.041	0.232	0.308	0.057	0.032
	9/27/2005	0.042	0.073	0.153	1.218	UND 0.000	0.146	0.335	0.108	0.074	0.386	0.494	0.090	0.056
	10/18/2005	0.035	0.059	0.127	0.931	UND 0.000	0.079	0.261	NAI	0.067	0.303	0.381	0.074	0.042
	11/2/2005	CON 0.038	CON 0.052	CON 0.097	CON 0.770	UND 0.000	0.066	0.203	0.063	0.082	CON0.254	CON0.321	CON 0.059	CON 0.032
	11/22/2005	0.023	0.041	0.086	0.636	UND 0.000	0.078	0.163	0.041	0.031	0.201	0.254	0.047	0.030
430578	Pere Marquet	te River (Head	dwaters)											
	9/6/2005	UND 0.000	UND 0.000	UND 0.000	CON 0.026	UND 0.000	0.009	MDL0.009	UND 0.000	UND 0.000	MDL0.005	0.009	UND 0.000	UND 0.000
160177	Pigeon River													
	7/20/2005	UND 0.000	UND 0.000	UND 0.000	0.036	UND 0.000	0.012	NAI	UND 0.000	UND 0.000	UND 0.000	0.014	UND 0.000	UND 0.000
140110	Pokagon Cree	ek												
	5/10/2005	UND 0.000	UND 0.000	UND 0.000	MDL 0.023	UND 0.000	0.015	NAI	UND 0.000	UND 0.000	UND 0.000	0.013	UND 0.000	UND 0.000
631036	Shiawassee F	River (Headwa	ters)											<u> </u>
	6/23/2005	UND 0.000	UND 0.000	UND 0.000	MDL 0.024	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.004	0.009	UND 0.000	UND 0.000

+ = Calculated value; may not be rounded to appropriate number of significant figures.
 CON = Parameter confirmed using an auxiliary analytical technique.
 EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
 FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method.
 FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

STORET	ĪD	Cong. 24+27 (ng/L)	Cong. 25 (ng/L)	Cong. 26 (ng/L)	Cong. 28+31 (ng/L)	Cong. 3 (ng/L)	Cong. 33 (ng/L)	Cong. 37+42 (ng/L)	Cong. 4+10 (ng/L)	Cong. 40 (ng/L)	Cong. 41+71+64 (ng/L)	Cong. 44 (ng/L)	Cong. 45 (ng/L)	Cong. 46 (ng/L)
110628	St. Joseph F	River (Lower)												
	3/28/2005	UND 0.000	UND 0.000	0.011	0.047	UND 0.000	0.020	NAI	UND 0.000	UND 0.000	0.026	NAI	UND 0.000	UND 0.000
	5/5/2005	UND 0.000	UND 0.000	UND 0.000	0.057	UND 0.000	0.011	0.026	UND 0.000	UND 0.000	0.023	0.038	0.006	UND 0.000
	6/2/2005	0.006	UND 0.000	UND 0.000	0.060	UND 0.000	0.012	0.038	UND 0.000	UND 0.000	0.033	0.044	0.008	UND 0.000
	6/29/2005	UND 0.000	UND 0.000	UND 0.000	0.073	UND 0.000	NAI	NAI	UND 0.000	UND 0.000	0.027	0.044	UND 0.000	0.006
	7/21/2005	UND 0.000	UND 0.000	UND 0.000	0.081	UND 0.000	NAI	NAI	NAI	UND 0.000	0.027	0.058	0.009	0.007
	8/4/2005	UND 0.000	UND 0.000	UND 0.000	0.075	UND 0.000	UND 0.000	NAI	UND 0.000	UND 0.000	0.027	0.047	NAI	NAI
	8/25/2005	UND 0.000	UND 0.000	UND 0.000	CON 0.066	UND 0.000	NAI	NAI	CON 0.030	UND 0.000	CON0.022	CON 0.049	NAI	NAI
	9/15/2005	UND 0.000	UND 0.000	UND 0.000	0.069	UND 0.000	0.010	0.040	MDL0.029	UND 0.000	0.023	0.041	UND 0.000	UND 0.000
	9/29/2005	UND 0.000	UND 0.000	UND 0.000	CON 0.056	UND 0.000	UND 0.000	NAI	UND 0.000	UND 0.000	CON 0.026	NAI	UND 0.000	UND 0.000
1	0/19/2005	NAI	UND 0.000	UND 0.000	0.038	UND 0.000	UND 0.000	UND 0.000	UND 0.000	0.033	0.030	NAI	NAI	UND 0.000
	11/3/2005	UND 0.000	UND 0.000	UND 0.000	0.039	UND 0.000	0.023	NAI	UND 0.000	UND 0.000	0.018	0.032	UND 0.000	UND 0.000
1	1/16/2005	UND 0.000	UND 0.000	UND 0.000	0.051	UND 0.000	0.015	NAI	UND 0.000	UND 0.000	0.016	0.038	UND 0.000	UND 0.000
600051	Thunder Bay	y River (Headwa	aters)											
	9/13/2005	UND 0.000	UND 0.000	UND 0.000	MDL 0.006	UND 0.000	MDL 0.008	NAI	UND 0.000	UND 0.000	UND 0.000	0.012	UND 0.000	UND 0.000

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.

FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method.

FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

STORE	ΓID	Cong. 47+48 (ng/L)	Cong. 49 (ng/L)	Cong. 51 (ng/L)	Cong. 52 (ng/L)	Cong. 53 (ng/L)	Cong. 56+60 (ng/L)	Cong. 6 (ng/L)	Cong. 63 (ng/L)	Cong. 66 (ng/L)	Cong. 7+9 (ng/L)	Cong. 70+76 (ng/L)	Cong. 74 (ng/L)	Cong. 77+110 (ng/L)
520258	Bryan Creek													
	6/21/2005	MDL0.004	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.005				
700123	Grand River (I	_ower)												
	3/22/2005	0.011	0.013	UND 0.000	0.426	NAI	0.010	UND 0.000	UND 0.000	0.027	UND 0.000	0.015	UND 0.000	0.073
	4/11/2005	MDL0.009	0.024	UND 0.000	0.649	NAI	0.019	UND 0.000	UND 0.000	0.092	0.078	0.050	UND 0.000	0.183
	5/11/2005	UND 0.000	CON 0.022	UND 0.000	CON 0.232	UND 0.000	CON 0.015	UND 0.000	UND 0.000	CON 0.027	CON 0.030	CON 0.022	UND 0.000	CON 0.100
	6/8/2005	UND 0.000	0.050	0.005	0.741	UND 0.000	0.038	UND 0.000	UND 0.000	0.051	0.011	0.045	UND 0.000	0.186
	6/27/2005	UND 0.000	0.029	0.005	0.175	UND 0.000	0.017	UND 0.000	UND 0.000	0.028	NAI	0.026	UND 0.000	0.094
	7/19/2005	NAI	0.042	NAI	0.379	0.006	0.027	UND 0.000	UND 0.000	0.054	0.027	0.040	UND 0.000	0.141
	8/2/2005	NAI	CON 0.036	0.006	CON 0.239	NAI	CON 0.022	UND 0.000	UND 0.000	CON 0.049	UND 0.000	CON 0.035	UND 0.000	CON 0.129
	8/23/2005	NAI	0.034	UND 0.000	0.195	0.014	0.025	UND 0.000	UND 0.000	0.039	UND 0.000	0.031	0.012	0.092
	9/20/2005	UND 0.000	0.025	UND 0.000	0.013	0.006	0.015	UND 0.000	UND 0.000	0.064	UND 0.000	0.039	UND 0.000	0.086
	10/4/2005	0.023	0.029	UND 0.000	0.190	0.005	0.023	UND 0.000	UND0.000	0.029	NAI	0.027	UND 0.000	0.105
	10/26/2005	0.017	0.021	UND 0.000	0.121	UND 0.000	0.018	UND 0.000	UND 0.000	0.049	UND 0.000	0.028	UND 0.000	0.063
	11/21/2005	UND 0.000	NAI	UND 0.000	0.392	UND 0.000	0.014	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.012	UND 0.000	0.050
821417	Johnson Drair	יייי ו												
	6/22/2005	NAI	CON 0.026	UND 0.000	CON 0.363	0.012	CON 0.023	UND 0.000	UND 0.000	CON 0.045	UND 0.000	CON 0.036	CON0.010	CON 0.163

- CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
- FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
- FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

		Cong. 47+48	Cong. 49	Cong. 51	Cong. 52	Cong. 53	Cong. 56+60	Cong. 6	Cong. 63	Cong. 66	Cong. 7+9	Cong. 70+76	Cong. 74	Cong. 77+110
STORE	TID	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
030077	Kalamazoo R	River (Lower)												
	3/21/2005	CON0.131	CON 0.227	0.014	CON 0.417	0.019	CON 0.118	CON 0.017	CON 0.014	CON 0.397	NAI	CON0.179	CON0.071	CON0.220
	5/4/2005	0.349	0.498	0.038	0.869	0.109	0.217	0.028	0.028	0.747	0.016	0.400	0.138	0.468
	6/1/2005	0.474	0.754	0.039	0.860	0.075	0.327	NAI	0.039	0.930	NAI	0.470	0.228	0.742
	6/28/2005	0.390	0.571	0.023	0.779	0.078	0.279	0.073	0.032	0.916	NAI	0.458	0.181	0.676
	7/20/2005	0.428	0.631	0.022	1.026	0.117	0.325	0.082	0.035	1.020	NAI	0.505	0.210	0.841
	8/3/2005	0.330	0.495	0.023	0.829	0.100	0.233	0.073	0.026	0.781	0.020	0.391	0.155	0.634
	8/24/2005	0.300	0.455	0.023	0.750	0.075	0.220	0.082	0.024	0.711	NAI	0.361	0.142	0.557
	9/14/2005	0.171	0.293	0.013	0.454	0.057	0.121	0.050	0.013	0.401	UND0.000	0.201	0.083	0.260
	9/27/2005	0.289	0.435	0.024	0.723	0.088	0.191	0.082	0.023	0.614	UND 0.000	0.318	0.135	0.496
	10/18/2005	0.206	0.353	0.015	0.544	0.026	0.140	NAI	0.017	0.531	NAI	0.259	0.094	0.365
	11/2/2005	CON0.167	CON 0.298	0.007	CON 0.411	0.023	CON 0.129	UND 0.000	0.017	CON 0.414	NAI	CON0.154	CON 0.054	CON0.273
	11/22/2005	0.129	0.215	0.011	0.391	0.036	0.101	0.055	MDL0.013	0.321	UND 0.000	0.156	0.061	0.219
430578	Pere Marque	tte River (Head	dwaters)											
	9/6/2005	UND 0.000	NAI	UND 0.000	NAI	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.006	UND 0.000	MDL0.006	UND 0.000	MDL0.006
160177	Pigeon River													
	7/20/2005	0.012	UND 0.000	UND 0.000	0.016	0.007	MDL 0.004	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.008
140110	Pokagon Cre	ek												
	5/10/2005	UND 0.000	UND 0.000	UND 0.000	0.012	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	NAI	UND 0.000	UND 0.000	MDL0.009
631036	Shiawassee I	River (Headwa	iters)											<u> </u>
	6/23/2005	0.016	0.007	UND 0.000	0.029	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.005

+ = Calculated value; may not be rounded to appropriate number of significant figures.
 CON = Parameter confirmed using an auxiliary analytical technique.
 EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
 FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method.
 FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

STORET	ID	Cong. 47+48 (ng/L)	Cong. 49 (ng/L)	Cong. 51 (ng/L)	Cong. 52 (ng/L)	Cong. 53 (ng/L)	Cong. 56+60 (ng/L)	Cong. 6 (ng/L)	Cong. 63 (ng/L)	Cong. 66 (ng/L)	Cong. 7+9 (ng/L)	Cong. 70+76 (ng/L)	Cong. 74 (ng/L)	Cong. 77+110 (ng/L)
110628	St. Joseph	River (Lower)												
	3/28/2005	MDL0.009	0.020	0.004	0.095	UND 0.000	0.015	UND 0.000	UND0.000	0.042	NAI	0.029	0.009	0.075
	5/5/2005	0.017	0.029	UND 0.000	0.054	UND 0.000	0.016	UND 0.000	UND 0.000	0.058	UND 0.000	0.031	0.007	0.096
	6/2/2005	0.020	0.040	UND 0.000	0.101	UND 0.000	0.020	UND 0.000	UND 0.000	0.071	NAI	0.037	UND 0.000	0.120
	6/29/2005	0.022	0.031	0.005	0.054	NAI	0.015	UND 0.000	UND 0.000	0.045	0.014	0.028	UND 0.000	0.103
	7/21/2005	NAI	0.032	0.005	0.126	NAI	0.024	UND 0.000	UND 0.000	0.062	UND 0.000	0.040	0.011	0.168
	8/4/2005	NAI	0.034	0.005	0.069	NAI	0.020	UND 0.000	UND 0.000	0.057	UND 0.000	0.038	UND 0.000	0.119
	8/25/2005	CON 0.021	CON 0.030	UND 0.000	CON 0.065	0.008	CON 0.016	UND 0.000	UND 0.000	0.045	UND 0.000	0.031	UND 0.000	CON 0.091
	9/15/2005	0.018	0.024	0.004	0.065	NAI	0.016	UND 0.000	UND 0.000	0.059	UND 0.000	0.036	0.009	0.105
	9/29/2005	CON 0.021	CON 0.029	UND 0.000	CON 0.108	NAI	CON 0.023	UND 0.000	UND 0.000	CON 0.049	UND 0.000	CON 0.036	CON 0.008	CON0.111
1	0/19/2005	UND 0.000	0.017	UND 0.000	0.036	UND 0.000	0.011	UND 0.000	UND 0.000	0.076	NAI	0.017	UND 0.000	0.071
	11/3/2005	0.012	0.016	UND 0.000	0.022	UND 0.000	0.016	UND 0.000	UND 0.000	0.033	UND 0.000	0.022	UND 0.000	0.081
1	1/16/2005	0.013	NAI	UND 0.000	0.070	UND 0.000	0.016	UND 0.000	UND 0.000	0.025	UND 0.000	0.022	UND 0.000	0.077
600051	Thunder B	ay River (Headwa	aters)											
	9/13/2005	UND 0.000	UND 0.000	UND 0.000	0.010	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000

- + = Calculated value; may not be rounded to appropriate number of significant figures.
 CON = Parameter confirmed using an auxiliary analytical technique.
 EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
 FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method.
 FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
- FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

STORE	ΓID	Cong. 8+5 (ng/L)	Cong. 82 (ng/L)	Cong. 83 (ng/L)	Cong. 85 (ng/L)	Cong. 87 (ng/L)	Cong. 89 (ng/L)	Cong. 91 (ng/L)	Cong. 92+84 (ng/L)	Cong. 95 (ng/L)	Cong. 97 (ng/L)	Cong. 99 (ng/L)
520258	Bryan Creek											
	6/21/2005	0.041	UND 0.000	0.008	UND 0.000	UND 0.000						
700123	Grand River (I	Lower)										
	3/22/2005	NAI	MDL0.003	UND 0.000	UND 0.000	0.017	0.004	UND 0.000	NAI	0.034	0.012	0.010
	4/11/2005	0.042	NAI	0.005	0.014	0.038	0.011	UND 0.000	0.068	0.087	0.025	0.025
	5/11/2005	NAI	MDL0.005	MDL 0.005	UND 0.000	CON 0.023	0.010	UND 0.000	0.037	CON 0.053	CON0.013	CON0.016
	6/8/2005	NAI	0.012	0.006	0.007	0.064	0.012	UND 0.000	0.146	0.125	0.038	0.039
	6/27/2005	0.136	0.005	UND 0.000	UND 0.000	0.030	UND 0.000	UND 0.000	0.075	0.064	0.015	0.021
	7/19/2005	0.154	0.008	MDL 0.005	0.015	0.041	0.010	UND 0.000	0.123	0.087	0.021	0.030
	8/2/2005	NAI	CON 0.007	0.006	NAI	CON 0.034	UND 0.000	UND 0.000	NAI	CON 0.079	CON 0.018	CON 0.026
	8/23/2005	NAI	0.005	MDL 0.005	0.011	0.030	0.008	UND 0.000	NAI	0.070	0.018	NAI
	9/20/2005	0.099	0.006	0.006	0.010	0.033	0.008	UND 0.000	NAI	0.066	0.018	0.021
	10/4/2005	NAI	0.006	0.006	UND 0.000	0.031	0.008	UND 0.000	NAI	0.069	0.016	0.020
	10/26/2005	NAI	UND 0.000	UND 0.000	UND 0.000	0.017	0.008	UND 0.000	NAI	0.041	0.009	0.013
	11/21/2005	NAI	UND 0.000	UND 0.000	UND 0.000	0.013	0.004	UND 0.000	0.040	0.022	0.007	0.008
821417	Johnson Drair	า										
	6/22/2005	CON0.117	CON 0.006	CON 0.007	UND 0.000	CON 0.032	0.020	UND 0.000	NAI	CON 0.084	CON 0.012	CON0.019

CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.

FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

STORE	TID	Cong. 8+5 (ng/L)	Cong. 82 (ng/L)	Cong. 83 (ng/L)	Cong. 85 (ng/L)	Cong. 87 (ng/L)	Cong. 89 (ng/L)	Cong. 91 (ng/L)	Cong. 92+84 (ng/L)	Cong. 95 (ng/L)	Cong. 97 (ng/L)	Cong. 99 (ng/L)
030077	Kalamazoo	River (Lower)										
	3/21/2005	NAI	CON0.017	CON 0.016	CON 0.046	CON 0.062	0.006	CON 0.050	0.179	CON 0.182	CON 0.047	CON 0.079
	5/4/2005	0.412	0.039	0.044	0.107	0.141	0.018	0.121	0.433	0.516	0.109	0.211
	6/1/2005	NAI	0.052	0.055	0.139	0.186	0.024	0.120	0.637	0.580	0.150	0.268
	6/28/2005	0.494	0.057	0.041	0.132	0.168	0.015	0.152	0.574	0.504	0.126	0.262
	7/20/2005	0.524	0.071	0.050	0.147	0.190	0.018	0.097	0.607	0.560	0.139	0.295
	8/3/2005	0.500	0.043	0.034	0.105	0.142	UND 0.000	0.077	0.450	0.446	0.105	0.218
	8/24/2005	0.477	0.036	0.034	0.099	0.132	0.012	0.068	0.407	0.429	0.101	0.203
	9/14/2005	0.356	0.020	0.017	0.055	0.067	0.008	0.041	0.221	0.232	0.053	0.112
	9/27/2005	0.457	0.033	0.031	0.090	0.122	0.019	0.074	0.386	0.395	0.093	0.188
	10/18/2005	0.352	0.027	0.023	0.061	0.082	0.010	0.078	0.315	0.333	0.064	0.132
	11/2/2005	NAI	0.014	0.017	CON 0.052	CON 0.074	0.026	0.020	CON0.217	CON 0.210	CON 0.055	CON0.107
	11/22/2005	0.259	0.014	0.016	0.038	0.053	0.007	0.026	0.182	0.162	0.040	0.077
430578	Pere Marqu	ette River (Head	waters)									
	9/6/2005	CON0.116	UND 0.000	UND 0.000	UND 0.000	MDL 0.002	UND 0.000	UND 0.000	UND 0.000	CON 0.007	UND 0.000	UND 0.000
160177	Pigeon Rive	er										
	7/20/2005	NAI	UND 0.000	0.011	UND 0.000	UND 0.000						
140110	Pokagon C	reek										
	5/10/2005	0.128	UND 0.000	UND 0.000	UND 0.000	UND 0.000	MDL0.003	UND 0.000	MDL0.011	UND 0.000	UND 0.000	UND 0.000
631036	Shiawassee	e River (Headwate	ers)									
	6/23/2005	0.120	UND 0.000	UND 0.000	UND 0.000	UND 0.000						

CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.

FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.

FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.
STORET ID	Cong. 8+5 (ng/L)	Cong. 82 (ng/L)	Cong. 83 (ng/L)	Cong. 85 (ng/L)	Cong. 87 (ng/L)	Cong. 89 (ng/L)	Cong. 91 (ng/L)	Cong. 92+84 (ng/L)	Cong. 95 (ng/L)	Cong. 97 (ng/L)	Cong. 99 (ng/L)
110628 St. Joseph River (Lower)											
3/28/2005	UND 0.000	0.004	UND 0.000	0.012	0.024	UND 0.000	UND 0.000	0.050	0.060	0.012	0.016
5/5/2005	NAI	0.006	0.006	0.014	0.030	UND 0.000	UND 0.000	0.064	0.078	0.015	0.021
6/2/2005	NAI	0.008	0.006	0.018	0.036	0.005	NAI	0.074	0.104	0.019	0.027
6/29/2005	0.144	0.005	0.006	0.015	0.033	0.007	UND 0.000	NAI	0.078	0.014	0.024
7/21/2005	0.119	0.007	0.009	0.022	0.046	0.017	UND 0.000	0.070	0.108	0.021	0.035
8/4/2005	NAI	0.005	0.008	0.018	0.040	NAI	UND 0.000	0.080	0.098	0.019	0.029
8/25/2005	NAI	CON 0.004	CON 0.005	CON 0.014	CON 0.029	NAI	UND 0.000	0.071	0.080	CON0.014	CON 0.023
9/15/2005	0.084	0.005	0.005	0.017	0.036	0.007	0.007	0.072	0.089	0.016	0.027
9/29/2005	CON 0.082	CON 0.005	CON 0.007	CON 0.011	CON 0.034	0.010	UND 0.000	CON 0.064	CON 0.081	CON0.016	CON 0.025
10/19/2005	UND 0.000	UND 0.000	UND 0.000	NAI	NAI	0.009	UND 0.000	NAI	0.040	UND 0.000	0.005
11/3/2005	NAI	MDL0.003	MDL 0.005	0.012	0.024	0.007	UND 0.000	0.054	0.049	0.011	0.016
11/16/2005	NAI	UND 0.000	MDL 0.005	NAI	0.025	NAI	UND 0.000	0.043	0.051	0.011	0.016
600051 Thunder Bay River (Headwaters)											
9/13/2005	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	UND 0.000	0.011	UND 0.000	UND 0.000

+ = Calculated value; may not be rounded to appropriate number of significant figures.

- CON = Parameter confirmed using an auxiliary analytical technique. EST = Estimated value; analyte present above detection limit but not quantified within expected limits of precision.
- FBK = Analyte had a measurable value above the established quality control limit when blank was analyzed using the same equipment and analytical method. FMS = Failed matrix spike criteria; recovery of matrix spike was outside established quality control limits.
- FPC = Laboratory performance check failed acceptance criteria. NAI = Not analyzed due to uncontrollable interference.

NDD = Not detected due to dilution.

UND = Analyte not detected above noise.