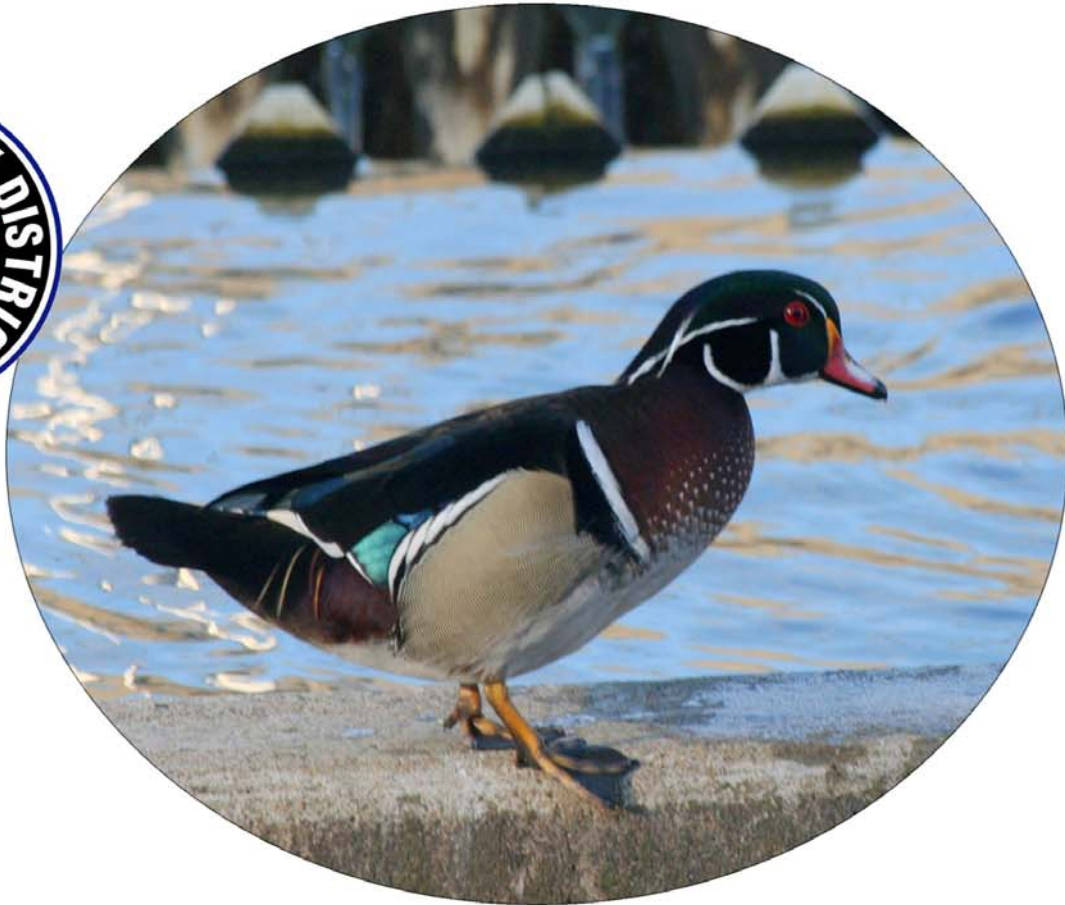


NPDES Permit No. IN 0025631



MUNCIE SANITARY DISTRICT'S BUREAU OF WATER QUALITY

ANNUAL PRETREATMENT REPORT 2010

Prepared by:
Rick Conrad, Director
Tom Bowling, Pretreatment Coordinator
March 2011

BUREAU OF WATER QUALITY



LOCAL WATER POLLUTION CONTROL

“WE HAVE ONLY ONE EARTH, LET’S ALL WORK FOR ITS PROTECTION”
- John M. Craddock

5150 W. Kilgore Avenue
Muncie, Indiana 47304-4710

RICK C. CONRAD
DIRECTOR

TEL. (765) 747-4896

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CONTENTS

Cover Letter	Page 1
Introduction	Page 3
BWQ Budget 2010	Page 6
BWQ Organizational Structure.....	Page 7
IDEM Required Documents	
Attachment I - Industrial Discharge Permits	Page 8
Attachement II - Inspection and Monitoring	Page 9
Attachement III - Compliance and Enforcement.....	Page 10
Attachement IV - Public Notification (SNC) Legal Notice.....	Page 11
Attachement V - Work Plan Proposed for 2011	Page 12
Attachement VI - Pretreatment Performance Summary	Page 13
Groundwater Remediation.....	Page 15
MWPCF Influent/Effluent - Metals and Cyanide.....	Page 17
MWPCF Biosolids - Metals and Cyanide.....	Page 21
Biomonitoring-Whole Effluent Toxicity Testing	Page 24
Toxic Organic Pollutant Monitoring	Page 24
Contaminants of Emerging Concern	Page 29
Stream Sampling.....	Page 31
Aquatic Community Sampling	Page 33

**Muncie Sanitary District's
BUREAU OF WATER QUALITY**

"We have only one earth,



let's all work for its protection"

John M. Craddock

March 23rd, 2011

Natalie Maupin, State Pretreatment Coordinator
Indiana Department of Environmental Management
Office of Water Quality, Mail Code 65-42
100 N. Senate Avenue
Indianapolis, IN 46204-2251

Bureau of Water Quality
5150 West Kilgore Avenue
Muncie, IN 47304-4710
Tel. (765) 747-4896
Fax (765) 213-6444
www.munciesanitary.org/bwq/

Re: 2010 Annual Pretreatment Report for Muncie, Indiana

Dear Ms. Maupin:

Please find attached the 2010 Annual Pretreatment Report for the City of Muncie, Indiana. Muncie's Pretreatment Program is administered by the Muncie Sanitary District's Bureau of Water Quality under the authority of the Indiana Department of Environmental Management and the US EPA Region V. Included in the order prescribed are the narrative, attachments, and completed report forms.

Please contact me or Thomas Bowling, Pretreatment Coordinator for the BWQ, should you have any questions.

Sincerely,

Riek Conrad, Director

Cc: Muncie Sanitary District Board of Sanitary Commissioners
Barbara Smith, MSD District Administrator
Ash Sajjad, EPA Region V



INTRODUCTION

Since the establishment of the Bureau of Water Quality (BWQ) in 1972, the Muncie Sanitary District has been a pioneer in local water pollution testing and enforcement. The implementation of cooperative industrial pretreatment programs, emergency spill response related to stream pollution control, chemical and microbial analysis of the Muncie Water Pollution Control Facility (MWPCF) and its feeding and receiving streams, and annual assessments of the health of fish, aquatic insects, mussels, and in-stream habitat continues to exceed the minimum legal requirements allocated by National Pollutant Discharge Elimination System (NPDES) permits. This commitment to acquiring a complete picture of water quality has led to dramatic improvements in the West Fork of White River in Delaware County and has made the Muncie Sanitary District's Bureau of Water Quality a model for local wastewater pretreatment and water quality management worldwide.

In the early 1970s, the White River in Muncie was terribly polluted. As with many cities in Indiana, widespread industrialization had taken a serious toll on water quality. Combined sewer overflows (CSOs), battery and transmission plants, tool and die shops, and many other point source stressors that discharged to the river either directly or indirectly had gone unregulated. The resulting water quality degradation was the consequence of chemical agents whose sources were most commonly associated with the practice of dumping untreated wastewater directly into the river. Toxic pollutants such as ammonia, cyanide, and lead were in such high concentrations in the White River it was once unsuitable for all but the most tolerant forms of aquatic life and unusable for human recreation.

Before the Clean Water Act gave municipalities the legal authority to require pretreatment standards, the BWQ was already working with local industries to maintain voluntary compliance with its pretreatment standards. Both the City of Muncie and its industries have invested greatly in their pretreatment programs. The industrial community has spent approximately \$14.5 million dollars within the Muncie Sanitary District for pretreatment equipment from the time the BWQ was

established in 1972 through 2010. Of the BWQ's \$1 million annual budget, approximately 80% is allocated specifically for the industrial pretreatment program. The BWQ maintains a Pretreatment Coordinator, a Chemistry Section for laboratory analyses, Surveillance Section for collection of water samples, and a Biological Section for assessing the health of aquatic life, each with specific roles related to the pretreatment program.

Even as early in its history as 1982, when many cities were just beginning to establish their own pretreatment programs, the BWQ was already seeing measurable improvements in the quality of wastewater being collected and discharged by the MWPCF. Some of the changes could only be seen through chemical analyses; the reduction in metal concentrations reaching the MWPCF equates to removing as much as 63 tons of metal every year. Some of the changes could be seen in the biology. Since the BWQ's first biological assessments over thirty years ago, the number of fish in White River downstream of the MWPCF has doubled, and sensitive species like the smallmouth bass, longear sunfish, and many freshwater mussels have returned. Some of the changes were easily visible to the naked eye; the White River, which once ran orange and whose stream bottom was once nothing but sludge, is now clear and its substrate once again contains a healthy mixture of gravel and cobble.

Pretreatment Section.—The BWQ's pretreatment program has been federally mandated through the United States Environmental Protection Agency (EPA) and the Indiana Department of Environmental Management (IDEM) to ensure the safe and effective operation of the MWPCF and to protect the quality of the facility's receiving stream. Publicly owned treatment works are designed to remove contaminants and harmful organisms commonly associated with residential wastewater; however, many facilities including the MWPCF also service local industries whose wastewaters may contain uniquely toxic compounds capable of interfering with, passing through, or accumulating in the sewage sludge of the treatment facility. Through the pretreatment program, the BWQ serves as the Control Authority responsible for ensuring that local industries comply with the regulatory require-

ments of the EPA, IDEM, and Muncie's local Pretreatment Ordinance. Major responsibilities of the program include

- permitting industries
- sampling and analyzing industrial wastewater
- requiring industries to self-monitor their wastewaters
- requiring industries to implement spill response plans and pollution prevention (P2) management plans
- sampling and analyzing the MWPCF's influent, effluent, and biosolids
- sampling and analyzing the MWPCF's receiving stream

Industrial compliance is maintained nearly entirely through cooperation; however, the Bureau has the authority to issue enforcement actions including administrative orders, fines, and/or the termination of service to the MWPCF.

Surveillance Section.—The BWQ's Surveillance Section is made up of three degreed personnel and is responsible for the collection of representative samples to be analyzed primarily by the in-house laboratory. Available sampling equipment allows the collection of grab or composite samples from industries, the MWPCF, and its receiving stream. The Surveillance Section has had capital equipment investments totaling approximately \$145,000 over the past 17 years. Available equipment includes 14 programmable ISCO auto samplers as well as a fleet of four vehicles available for obtaining samples and for emergency response.

During 2010, the Surveillance Section collected over 537 samples for the determination of water quality. A total of 292 samples were collected in conjunction with 172 scheduled and unscheduled sampling events associated with these industries. An additional 345 samples were collected during 175 sampling events from 9 non-permitted industries during 2010. Recorded contacts with the 16 permitted industries totaled 493. Included in these contacts were 55 telephone calls, 118 letters of correspondence, 104 visits/meetings/inspections, and 116 email contacts. Every effort is made to document each contact with our industries, but we realize that some verbal communications were not recorded.

Laboratory Section.—The Bureau's

laboratory is well equipped to ensure the accuracy, precision, and legal defensibility of its results. The qualified staff includes those with degrees in chemistry, biology, and environmental management. BWQ personnel attend professional seminars and workshops to stay up-to-date on current regulations, laboratory techniques, and other topics related to pretreatment. In the last ten years, over \$1 million has been invested in renovating and upgrading the laboratory. Equipment available to the staff includes a SmartChem 140 Discrete Chemical Analyzer (2005), Inductively Coupled Plasma Atomic Emission Spectrophotometer (ICP-AES), (2001), and trace-metal free digestion fume hoods.

In 2010, the BWQ Laboratory Section was awarded its 18th Indiana Water Environment Federation Laboratory Excellence Award based on quality assurance/quality control, record keeping, general procedures, safety, specific analytical procedures, facilities, and instrumentation. They also received across-the-board 100% scores on the EPA required Discharge Monitoring Report Quality Analysis evaluation. The Laboratory Section is responsible for analyzing daily samples (365 days per year) taken from the MWPCF influent, effluent, and process waters. The Laboratory Section also analyzes samples from industries, local streams and rivers, and various local community driven projects aimed at improving water quality in and around the White River. Samples are taken for a wide range of parameters including metals, nutrients, and bacteriological contaminants. In all, thousands of analyses are run in the BWQ's laboratory each year.

Biological Section.—The BWQ is also one of only a handful of pretreatment programs in the country that incorporates biological assessments as an integral component of its receiving stream monitoring. The biological section and its pair of degreed aquatic biologists monitor fish, aquatic insects, and mussels from sites throughout Muncie to investigate the response of the aquatic community to changes in water quality.

While chemical measures provide a snapshot of water quality, organisms that spend most or all of their lives in the water are indicative of the combined influences on a stream; therefore, assessment of the integrity of biologi-

cal communities represents a holistic measure of water quality with the ability to detect synergistic and antagonistic effects of the myriad compounds which may threaten the environment. Fish and benthic macroinvertebrates (i.e. aquatic insects and mussels), are core indicators of the biological integrity of streams. Community level analysis of these groups provides a measure of ecological sustainability that integrates all components of water pollution.

The biological section also conducts habitat assessments, thus incorporating all facets of water quality restoration as described by the Clean Water Act which has set the goal of restoring the “physical, chemical, and biological integrity” of the nation’s waterways.

Also in 2010, the Biological Section began research to determine the effects of endocrine disruptors, a “contaminant of emerging concern” found throughout the nation’s waters. The project will specifically look for unique responses of aquatic life to identify the extent of contamination in the White River and possible ways of reducing the transport of these chemicals into local waterways.

Public Outreach.—Education and outreach are fundamental components of improving water quality, and in 2010 the BWQ contributed to a number of activities designed to teach or involve the public with water quality restoration and conservation. These activities included organization and participation in the 2010 White River Cleanup that involved nearly 300 citizens, participation in the Living Lightly Fair sponsored by Minnetrista, contribution to Earth Day Fair at Ball State University, video taped interviews with Ball State University journalism students, demonstrations of biological sampling to Yorktown High School environmental science students, and maintenance of a permanent website hosted by the Muncie Sanitary District that describes the history of the BWQ and improvements in the water quality of the White River. Presentations to local industries have covered pretreatment regulations, sample collection and preservation techniques, laboratory quality assurance/quality control, storm water regulations, and many others. Additionally, the BWQ works to maintain a presence in the community through presentations for local civic, educational, and governmental groups.

Cooperative Projects.—In 2010 the BWQ continued or began work on cooperative projects with other City of Muncie, Muncie Sanitary District, or community organizations related to monitoring water quality. These include a 319 grant-funded project to investigate water quality in headwater streams in Delaware County, a Center for Disease Control grant-funded project to investigate the effectiveness of rain barrels and rain gardens, the Muncie Water Pollution Control Facility’s Long Term Control Plan requirement to investigate the impacts of combined sewer overflows in White River and Buck Creek, biennial biological monitoring for the City’s MS4 program, and annual monitoring for the Sanitation Department’s stormwater permit.

Future Initiatives.—In 2011, a specific focus will be placed on a few select goals. First, we incorporate the newly passed pretreatment ordinance which includes the EPA’s “Streamlining” changes and a grease control program. We will continue to proceed with the MS4 illicit discharge detection and elimination mandate. We will seek to find additional grant-funded projects that focus on removing endocrine disruptors from the Muncie Sanitary District collection system and local streams. We will continue to look for other various grant-funded projects that overlap work already being done by the BWQ or the Muncie Sanitary District. And we will continue to find new venues for public outreach and education.

Other initiatives include addressing new compounds of emerging concern. New compounds are continuously being developed for industry, medicine, and home use. As detection limits decrease, many of these chemicals have been found in wastewaters, surface waters, and even drinking waters across the country. Constant vigilance is required to keep pace with this increasingly diverse group of pollutants with as yet unknown impacts in the environment.

As it has for the past 39 years, the BWQ will continue to work with industries and private citizens to ensure that Muncie remains a leader in water quality management by ensuring that the resources of the White River remain healthy for the people of Muncie and Indiana.

BWQ 2010 Budget Information

Personnel Services

Salary and Wages	\$	601,964.72
Social Security	\$	36,378.06
Medicare Expense	\$	8,507.46
P.E.R.F.	\$	39,169.47
Health Insurance	\$	127,352.04
Life Insurance	\$	1,221.12
Unemployment Compensation	\$	4,723.78
Total	\$	819,316.65

Supplies

Office Supplies	\$	10,000.00
Material, Supplies, Equipment	\$	90,271.23
Vehicle Repair	\$	5,000.00
Safety Equipment	\$	3,000.00
Equipment Repair	\$	20,414.50
Clothing	\$	1,500.00
Computers, Parts and Support	\$	4,000.00
Fuels, Oils	\$	7,000.00
Total	\$	141,185.73

Other Services

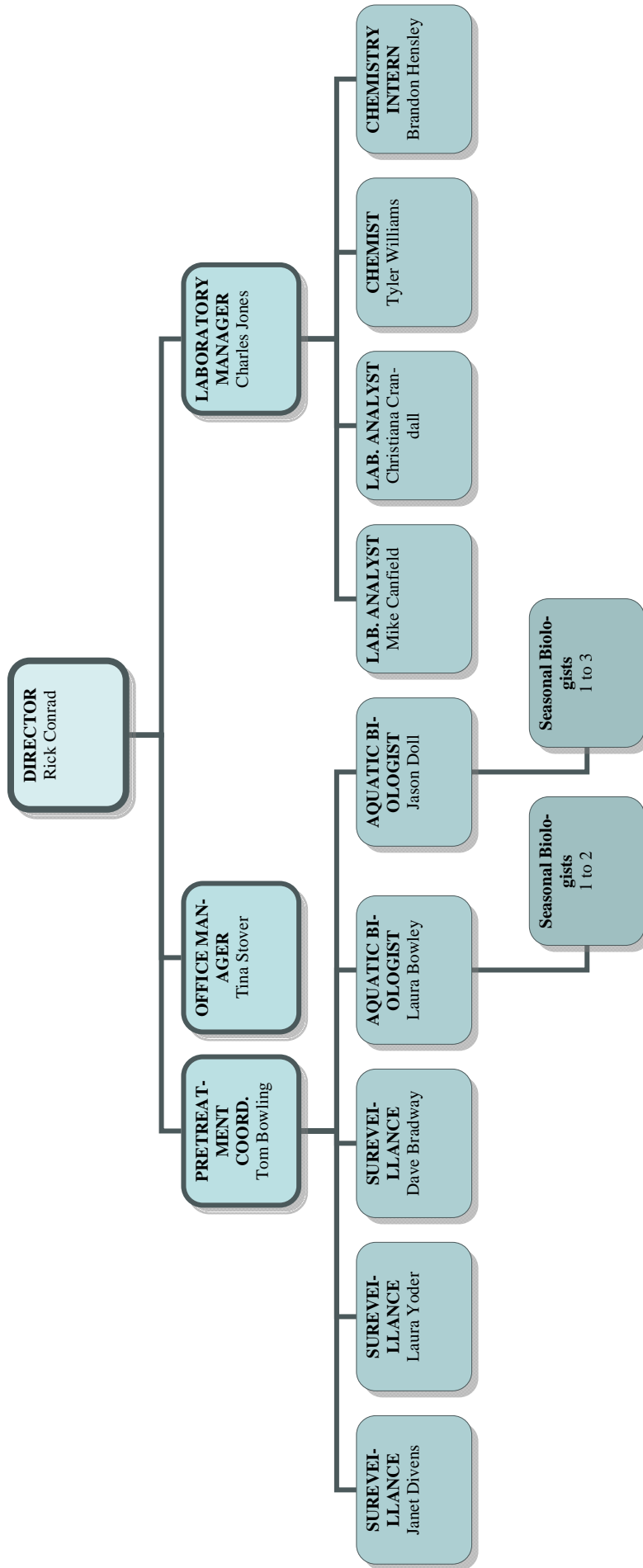
Travel Fees and Seminars	\$	15,000.00
Electric	\$	20,000.00
Gas	\$	-
Water	\$	-
Phone	\$	-
Laboratory Fees	\$	75,323.28
Promotion of Business	\$	5,000.00
Monthly Services	\$	10,000.00
Total	\$	125,323.28

GRAND TOTAL \$ 1,085,825.66



■ Personnel Services ■ Supplies ■ Other Services

BWQ Organizational Structure



Attachment I - Industrial Discharge Permits

SIU	Date Permit Issued	Date Modified	Date Permit Expires
C & J Plating Co.	4/5/2010		4/4/2015
CamTool, Inc.	2/20/2007		2/19/2012
Delaware Dynamics, L.L.C.	4/28/2008	12/22/2010	4/27/2013
East Central Recycling	5/13/2007		5/12/2012
Exide Technologies	10/15/2008		10/14/2013
GKN Aerospace Muncie, Inc.	9/17/2008		9/16/2013
GK Technologies/Indiana Steel & Wire	6/24/2010		6/23/2015
H& H Commercial Heat Treating Co., Inc.	5/26/2010		5/25/2015
Luick Quality Gage & Tool Co., Inc.	10/17/2008		10/16/2013
Magna Powertrain Muncie	8/1/2006		7/31/2011
Maxon Corporation	9/20/2009		9/19/2014
Mid-City Plating Co., Inc.	5/15/2006		5/14/2011
Mid-West Metal Products	6/13/2006		6/12/2011
Muncie Precision Hard Chrome	10/13/2008		10/12/2013
TFX Plating Company, L.L.C.	7/2/2008		7/1/2013
Witt Galvanizing-Muncie	7/30/2008		7/29/2013

The Bureau updates, revises, issues and/or reissues industrial permits when a change in the production processes occur or the industrial permit expires. This year it was necessary to issue one (1) new permit for a categorical industry, reissue (2) permits following their expiration, and modify one (1) permit due to a change in ownership. All permits are issued for a maximum of five (5) years. Muncie currently permits sixteen (16) industries as of January 1st, 2011.

Attachment II - Inspection and Monitoring

SIU	No. of BWQ Inspections	BWQ Compliance Monitoring	Industrial Self-Monitoring
C. & J. Plating Co. (C)	4	30	Bureau
CamTool, Inc.	1	17	40
Delaware Dynamics, L.L.C.	1	4	0
East Central Recycling	1	20	1096
Exide Technologies	1	25	1748
GKN Aerospace Muncie, Inc.	1	27	439
GK Technologies/Indiana Steel & Wire	1	72	1044
H & H Commercial Heat Treating Co., Inc.	1	29	48
Luick Quality Gage & Tool Co., Inc.	1	24	Bureau
Magna Powertrain Muncie	1	0	0
Maxon Corporation	1	14	1157
Mid-City Plating Co., Inc.	2	19	409
Mid-West Metals	1	22	58
Muncie Precision Hard Chrome (C)	1	11	Bureau
TFX Plating Company, LLC	1	17	308
Witt Galvanizing Muncie (C)	1	14	Bureau
Totals	20	345	6347

(C) Denotes facilities with closed loop systems. As of January 2011, 19% of our industries have closed loop systems as part of the pollution prevention (P2) program.

The Industrial Self-Monitoring column contains "Bureau" in some of the spaces. The Bureau conducts the required testing for those industries for a variety of reasons. An example would be a hard chrome-plating firm with a totally closed system. They are permitted but do not have a process discharge. The Bureau, in that case, does the required monitoring on the connection to the sanitary sewer to make sure there are not any spills or leaks. The industry is required to sample in the case a problem develops.

The Bureau worked with the stand-alone hard chrome-plating firms in Muncie to go to closed loop systems with no process wastewater discharges from these operations in the 1970s and 1980s.

Attachment III - Compliance and Enforcement

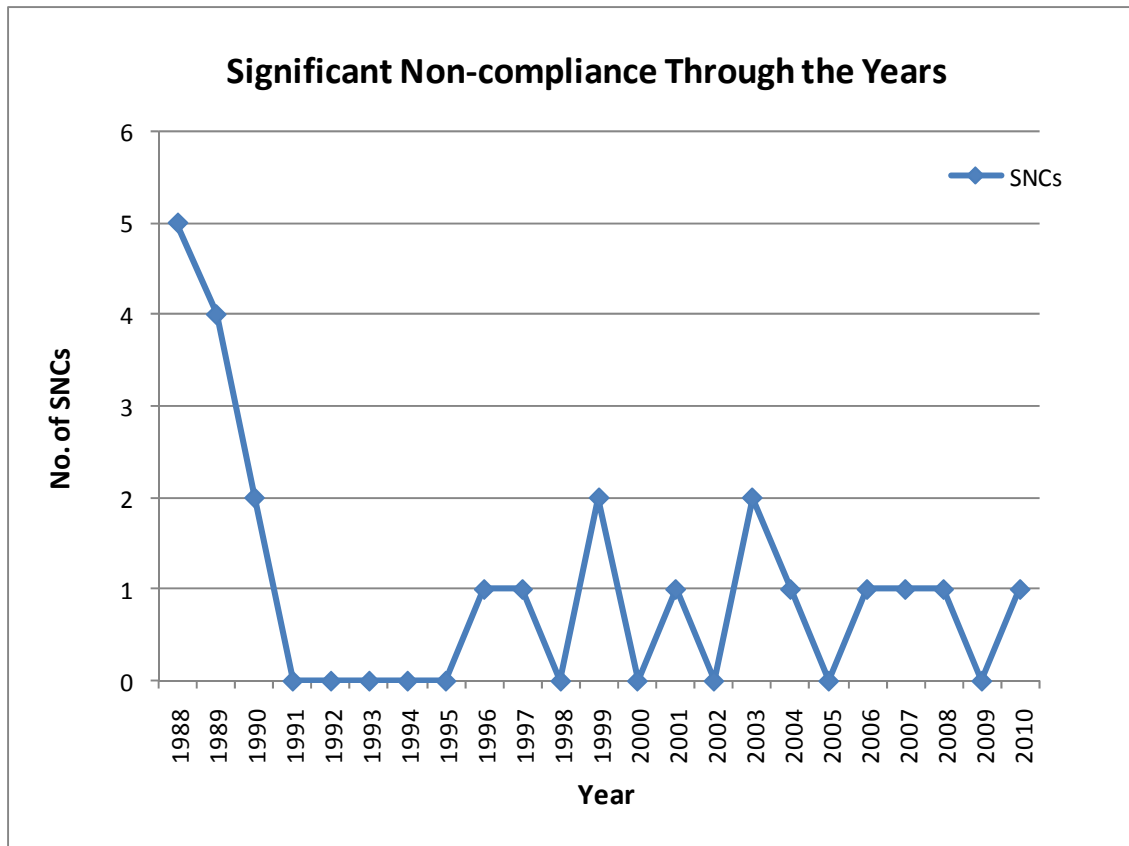
Significant Industrial User	Always Compliant	Minor Non-Compliance	Significant Non-Compliance	On Compliance Schedule	Back In Compliance	Publicized Non-Compliance
C. & J. Plating Co..	X					
CamTool, Inc.	X					
Delaware Dynamics, L.L.C.	X					
East Central Recycling	X					
Exide Technologies	X					
GKN Aerospace Muncie, Inc.	X					
GK Technologies/Indiana Steel & Wire	X					
H & H Commercial Heat Treating Co., Inc.	X					
Luick Quality Gage & Tool Co., Inc.	X					
Magna Powertrain Muncie	X					
Maxon Corporation	X					
Mid-City Plating Co., Inc.			X	X	X	X
Mid-West Metals	X					
Muncie Precision Hard Chrome	X					
TFX Plating Company, LLC	X					
Witt Galvanizing Muncie	X					

The always compliant column includes those permitted industries that may have exceeded their discharge permit limits a limited number of times in relation to all sample results for to that industry. It might be, for example, a few self-monitoring samples out of a total of 100 samples taken during the year. We would not consider this frequently in Minor Non-Compliance (MNC). MNC occurs when an industry develops a problem and the Bureau works with them to correct the problem before it becomes SNC. Muncie had 16 permitted industries during 2010.

Attachment IV – Public Notification (SNC) Legal Notice

During 2010, one permitted industry, Mid-City Plating Co., was in SNC status. This led to the issuance of one compliance schedule, one letter of violation, and one administrative fine of \$250.00. As required by the EPA Clean Water Act, notice was published in the newspaper indicating this industry’s significant noncompliance status. The Bureau works diligently to help industries avoid SNC status by ensuring that each facility is aware of the consequences of non-compliance before issues arise. However, the Bureau also believes that enforcement responses, including administrative fines, are a vital and effective tool to discourage future non-compliances. Beginning this year, the Bureau will also complement this strategy with an annual award which will be presented to those industries which maintain compliance throughout the year. Fifteen of sixteen permitted industries will receive the award this year.

Having only one industry in SNC, we believe the Bureau and the industrial community, through their time, efforts, concerns, and financial investments, have created a Pretreatment Program that is working effectively to protect the pollution control facility and the White River.



Attachment V - Work Plan Proposed for 2010

SIU	Permit Expiration Date	BWQ Compliance Monitoring	SIU Self-Monitoring	Minimum Inspection Frequency
C. & J. Plating Co.	4/4/2015	Quarterly	Bureau	Yearly
CamTool, Inc.	3/1/2012	Quarterly	Quarterly	Yearly
Delaware Dynamics, L.L.C.	4/27/2013	Quarterly	Each Batch	Yearly
East Central Recycling	5/12/2012	Quarterly	Monthly	Yearly
Exide Technologies	10/14/2013	Quarterly	Daily/Batch	Yearly
GKN Aerospace Muncie, Inc.	9/16/2013	Quarterly	Weekly	Yearly
GK Technologies/IN Steel & Wire	6/23/2015	Quarterly	Daily	Yearly
H & H Commercial Heat Treating	5/25/2015	Quarterly	Quarterly	Yearly
Luick Quality Gage & Tool Co.	10/16/2013	Quarterly	Bureau	Yearly
Magna Powertrain Muncie	7/31/2011	Quarterly	Quarterly	Yearly
Maxon Corporation	9/19/2014	Quarterly	Quarterly	Yearly
Mid-City Plating Co., Inc	5/14/2011	Quarterly	Weekly	Yearly
Mid-West Metal Products	6/12/2011	Quarterly	Each Batch	Yearly
Muncie Precision Hard Chrome	10/12/2013	Quarterly	Bureau	Yearly
TFX Plating Company, LLC	4/27/2013	Quarterly	4 Consecutive days monthly	Yearly
Witt Galvanizing Muncie	7/29/2013	Quarterly	Bureau	Yearly

The Compliance Monitoring Frequency column is only the minimum amount to be accomplished by the Bureau. During 2010, the Bureau conducted 100 sampling visits on the permitted industries that are both Categorical and Non-Categorical.

The Inspection Frequency column is the minimum only. During 2010, the Bureau conducted a total of 106 meetings, visits and inspections on the permitted industries.

Attachment VI - Pretreatment Performance Summary

I. GENERAL INFORMATION

Control Authority Name:	Bureau of Water Quality, MSD	NPDES No.:	IN 0025631
Address:	5150 W. Kilgore Ave.	Reporting Period:	2010
City:	Muncie	No. Categorical Users:	12
Contact Person:	Rick C. Conrad, Director	No. Non-categorical SIUs:	4
Contact Telephone:	765.747.4896		

II. SIU COMPLIANCE

	Categorical SIUs	Non-categorical SIUs
No. of SIUs Submitting BMRs/No. Required	1/1	0/0
No. of SIUs Submitting 90-day Compliance Reports/No. Required	1/1	0/0
No. of SIUs Submitting Semi-annual Reports/No. Required	10/10	4/4
No. of SIUs Meeting Compliance Schedule/No. Required	1/1	0/0
No. of SIUs in SNC/No. Of SIUs	1/12	0/4
Proportion of SNCs for all SIUs	1/16 = 6%	

III. COMPLIANCE MONITORING PROGRAM

No. of Control Documents Issued/No. Required	3/3	1/1
No. of Non-sampling Inspections Conducted	90	6
No. of Sampling Visits Conducted	75	25
No. of Facilities Inspected (Non-sampling)	12	4
No. of Facilities Sampled	12	4

IV. ENFORCEMENT ACTIONS

Compliance Schedules Issued/Schedules Required	1/1	0/0
Notices of Violation Issued to SIUs	1	0
Administrative Orders Issued to SIUs	0	0
Civil Suits Filed	0	0
Criminal Suits Filed	0	0
Significant Violators (newspaper list attached)	1	0
Amount of Penalties Collected (Total Amount/No. of Users assessed)	\$250/1	0
Verbal Notifications	1	0
Other Actions	0	0

I certify that the information contained is complete and accurate to the best of knowledge

 Authorized Representative
 Rick Conrad, Director

 Date

Notes

- Industries required by the Bureau to submit reports must do so quarterly. For industries not required to file reports, the Bureau performs all of the required monitoring for permitted parameters.
- During 2010, one (1) new categorical discharge permit was issued; two (2) industries, one (1) categorical and one (1) non-categorical, had their permits renewed; and one (1) categorical industry had its permit modified due to a change in ownership.
- Twenty-two (22) non-permitted, non-categorical facilities were contacted, visited, or inspected by the Bureau during 2010. This was to ensure that these industries did not require permitting and their discharge did not exceed local limits established in Muncie's Pretreatment Ordinance.
- Nine (9) non-permitted, non-categorical facilities were also sampled. This resulted in 175 sampling events at these non-permitted facilities. This brings the total industries sampled by the Bureau of Water Quality to twenty-five (25), including all permitted and non-permitted industries.

Groundwater Remediation

Another emphasis of the Bureau of Water Quality's Pretreatment Program is the permitting and monitoring of groundwater remediation projects within the Muncie Sanitary District (MSD). Although this function is not a part of our USEPA and IDEM approved Local Pretreatment Ordinance, the necessity to monitor these cleanup projects relates back to our objectives of protecting the Muncie WPCF and waters of the State of Indiana within the MSD jurisdictional boundaries. Currently there are five (5) permitted groundwater remediation projects discharging to the POTW in addition to a remediation project included in GK Technologies/Indiana Steel & Wire Industrial Discharge Permit. One (1) new underground remediation permit was issued in 2010. Two (2) previously active underground remediation sites were granted No Further Action status by the Indiana Department of Environmental Management and one underground remediation permit was terminated due to the facility closing. Of the remaining six (6) active remediation projects, five (5) projects involve the cleanup of contaminated groundwater associated with gasoline service stations and one (1) project is located in a permitted non-categorical industry for the cleanup of an industrial plume.

The Bureau typically requires these remediation projects be monitored for:

<u>Parameter</u>	<u>Typical Discharge Limit</u>
Flow	Varies (gallons/day)
Benzene	5.0 µg/L
Ethylbenzene	700 µg/L
Toluene	1000 µg/L
Total Xylene	10,000 µg/L
Total Lead	15.0 µg/L
Oil and Grease	10.0 mg/L
Napthalene	100 µg/L
MTBE	Report

The Bureau of Water Quality Director has the discretion of adding additional parameters to this list if deemed necessary to protect the Muncie WPCF, West Fork White River and its tributaries. All other parameters not specifically listed in the Groundwater Discharge Permits, but contained in the Muncie Code of Ordinances, Chapter 53 "PRETREATMENT ORDINANCE" are also in effect. However, no monitoring for any other parameters is required unless deemed necessary by the Director. Wastewater discharges from these underground remediation units to the POTW during 2010 totaled 824,801 gallons. During 2010, from the five (5) active underground wastewater discharge permitted facilities, a total of 243 samples were obtained with 522 parameter analyses performed. Underground Remediation Discharge permit limits have been exceeded a total of five (5) times in 2010, one (1) time in 2009, a total of three (3) times in 2008, a total of two (2) times in 2007 and a total of three (3) times in 2006, a significant reduction from the 10 documented during 2005. When these permit violations occur, the remediation units for these facilities are to shut down, have the problem corrected and submit acceptable analytical results to the Bureau prior to the Bureau granting permission to restart these underground remediation units.

The Bureau of Water Quality will continue to monitor groundwater remediation projects and make every attempt to ensure these types of discharges go to the Muncie WPCF rather than a receiving stream. This allows for additional treatment at the Muncie WPCF of any contaminants that may pass through the remediation units. Following is a summary of the groundwater remediation units currently permitted by the Bureau.

Underground Remediation Unit Permits

Facility Location	Permit Issued	Permit Expires	Monitoring Frequency
Duffy Tool & Stamping, L.L.C. 3224 S. Meeker Ave. UR 2005-009	3-Oct-05	2-Oct-10	Permit terminated due to facility closure
Gas America # 30 3300 E. Jackson St. UR 2008-001	25-Jul-08	24-Jul-13	Weekly
Gas America 4324 S. Madison Ave. UR 2010-001	8-Jul-10	7-Jul-15	Monthly
Hoosier Pete # 11 Port & Hoyt Hoosier Pete 2535 Hoyt Ave. UR 2009-001	29-Jan-09	28-Jan-14	Monthly
Marathon Petroleum Company-SSA 1301 E. Jackson St. UR 2007-001	11-Apr-07	10-Apr-11	IDEM-No Further Action
Southside Hoosier Pete- G. & G. Oil 1401 E. 29th St. UR 2008-002	26-Jan-08	25-Jan-13	Weekly
Speedway Super America Former SSA #6046 2720 S. Madison Ave. UR 2008-002	26-Jan-08	25-Jan-13	Weekly
Village Pantry # 441 Astbury Environmental 101 E. McGalliard Ave. UR 2005-008	5-Aug-05	4-Aug-10	IDEM-No Further Action
Village Pantry # 501- G. & G. Oil Co. 1800 W. Jackson St. UR 2008-007	7-Jul-08	6-Jul-13	Monthly

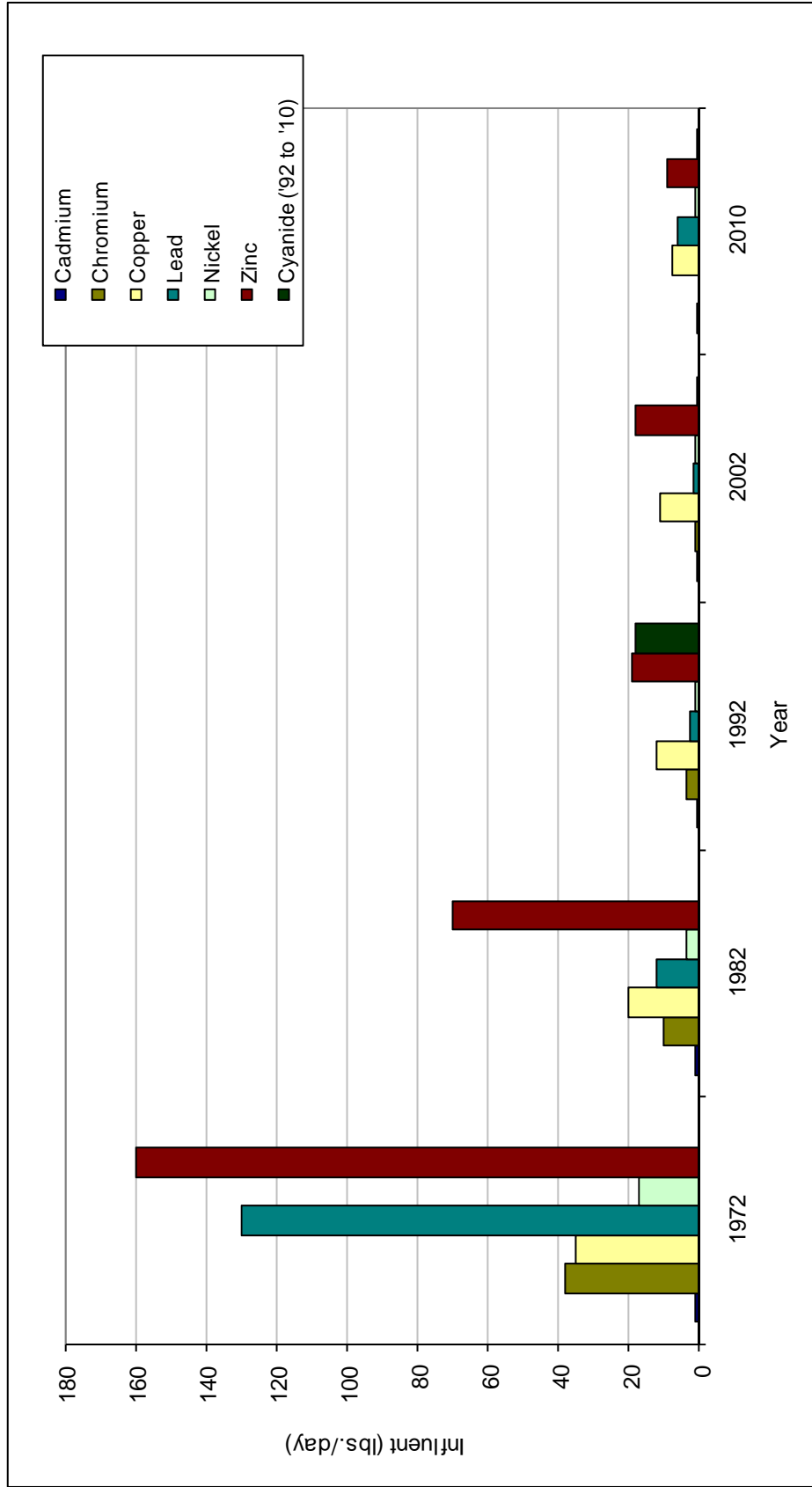
MWPCF Influent/Effluent Metals, Cyanide

One means of demonstrating the overall effectiveness of Muncie's Pretreatment Program is to graphically present data associated with industrially related parameters in the Muncie Water Pollution Control Facility's (MWPCF) Influent, Effluent and Biosolids. A major portion of the wastewater entering the MWPCF from our industrial base is from metal finishing processes. Muncie has plating firms, zinc coaters, phosphate coaters, automotive transmission plants, a secondary lead smelter, heat treat operations, hammer shops, tool and die operations and others. The following graphs illustrate (1) Individual parameter pounds per day entering and being discharged from the MWPCF, (2) Total metals pounds per day and (3) Percent removal (1972 – 2008). For the purposes of comparison, the Bureau uses the Method Detection Limit or Level of Detection (MDL or LOD) as the basis for reporting results at the low end of the analytical curve.

In 1972, the Bureau of Water Quality began working with the industrial community to reduce and/or eliminate the discharge of toxic chemicals to the POTW and to look for less toxic chemical replacements. An example of this would be requiring industries to replace chromium as an anticorrosive agent in cooling towers with a less toxic chemical. The overall effectiveness of a Pretreatment Program can be evaluated by determining the reduction in the regulated parameters from year to year. One can see in the following three sections, substantial reductions have taken place in the MWPCF Influent, Effluent and Biosolids. The graphs for the Influent and Effluent have units of pounds per day. Being directly related to flow measurements, pounds per day allows for a direct yearly comparison even though the flow at the MWPCF fluctuates from year to year. Using pounds per day, we can document the actual decrease in loadings to the MWPCF and West Fork White River. Biosolids concentrations are graphed using mg/Kg dry weight. Graphing dry weight concentrations for the Biosolids eliminates the percent moisture variable in the biosolid samples.

Following the creation of the Bureau of Water Quality in 1972, the amount of toxic metals entering the MWPCF has been reduced as a result of our Pretreatment Program by an average of approximately 133,000 pounds (66.5 tons) annually.

MWPCF Influent - Metals
1972 to 2010 Selected Years



MWPCF Effluent - Metals

Following the establishment of the Bureau in 1972, our Industrial Pretreatment Program has helped reduce toxic chemicals discharged to the West Fork White River by an estimated 60 tons annually. This greatly reduces pollution in the water, in the sediment of the streambed and in the tissue of aquatic life.

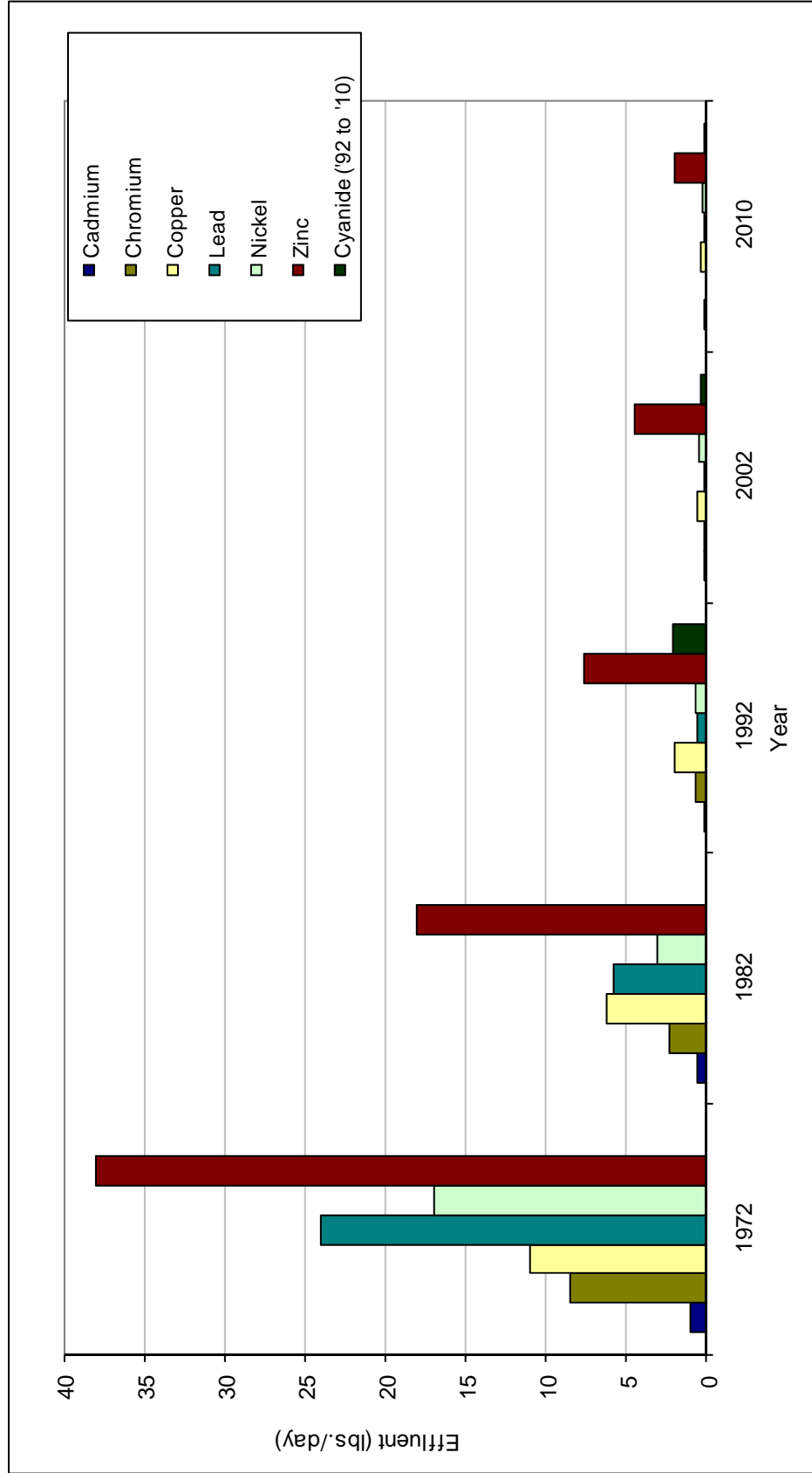
The graphs on the following pages describe trends in the concentrations of metals in the MWPCF effluent. We observe the concentrations of toxic metals discharged to the river are decreasing, demonstrating an effectively functioning industrial pretreatment program.

Below are the summary statistics for metals detected in the effluent in 2010.

Parameter	No. of Samples Analyzed	Percentage of Samples Greater than LOD	Laboratory LOD (mg/L)	LOD Used in Calculations (mg/L)*	Standard Deviation (mg/L)	Mean Daily Concentration (mg/L)	Maximum Daily Concentration (mg/L)	Daily Limit (mg/L)	Percent Removal
Cyanide, Amenable	9	11%	0.0016	0.0008	0.0003	0.0009	0.002	0.008	0%
Cyanide, Total	16	19%	0.003	0.0015	0.0007	0.0018	0.004	report	27%
Silver	10	30%	0.0002	0.0001	0.00004	0.0001	0.0002	report	89%
Cadmium	16	63%	0.00007	0.00007	0.0003	0.0003	0.001	0.004	35%
Chromium	13	23%	0.0015	0.00075	0.0014	0.0013	0.006	report	75%
Copper	13	100%	0.0004	0.0004	0.0044	0.0037	0.019	0.05	96%
Nickel	13	100%	0.0008	0.0008	0.0010	0.002	0.004	0.12	64%
Lead	16	50%	0.001	0.001	0.00040	0.0012	0.002	0.021	96%
Zinc	16	100%	0.0014	0.0014	0.0076	0.019	0.045	0.44	79%
Mercury	2	100%	1.0 (ng/L)	1.0 (ng/L)	-	1.56 (ng/L)	2.13 (ng/L)	report	97%

*To aid in calculations, when greater than one-half of the reported values for a parameter were greater than the LOD, results that were reported as "Below Detection Limit" (BDL) were replaced with the numeric limit of detection (LOD). When greater than one-half of the values reported were less than the LOD, results reported as BDL were replaced with one-half the numeric LOD.

MWPCF Effluent - Metals
1972 to 2008 Selected Years



MWPCF Biosolids – Metals

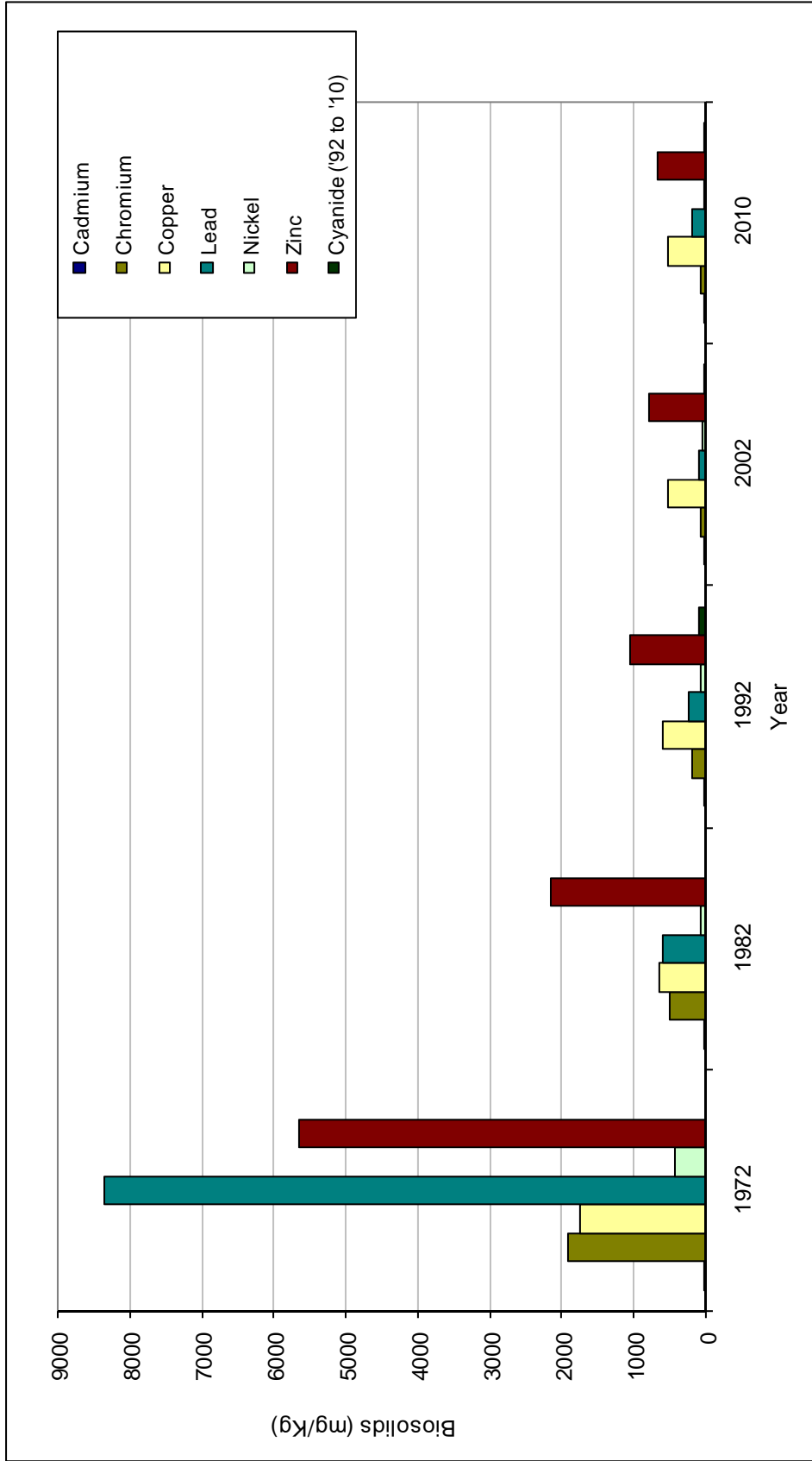
As discussed previously in this report, the MWPCF biosolids are one of the three sample types that can be evaluated to measure the effectiveness of the Industrial Pretreatment Program. Most metals adhere to solids in a treatment facility and accumulate in the biosolids. The concentrations of metals in the biosolids should be reduced as a Pretreatment Program becomes more effective, as demonstrated by the decrease in pound-loading of toxic chemicals entering the WPCF. This, coupled with pollution prevention efforts by the industrial community, e.g., chemical substitution, better housekeeping, changes in production methods and others, will result in decreased chemical concentrations in the Biosolids (sludge).

The results in the following graphs are expressed in milligrams per Kilogram (mg/Kg) dry weight, making them comparable with other municipality's biosolids concentrations. A comparison using milligrams per Liter (mg/L) on a wet weight basis would not give a true comparison of the concentration levels as the percent total solids (%TS) found in Biosolids samples fluctuates from sample to sample and also between communities depending on the processes used, e.g., sludge thickening, de-watering and others. As our local pretreatment program has matured, we now observe small yearly fluctuations in the biosolids metals. Because of the exceptional level of compliance by Muncie's industries, we hypothesize these fluctuations are due to natural events occurring within the Muncie Sanitary District. Examples of these would be either stormwater entering the MWPCF through combined sewers contributing more pounds of cadmium, lead, and zinc during wet years as opposed to dry years and/or elevated cyanide loadings resulting from the rock salt applied to roads and parking lots during years with more snowfall events. In previous years, many of the total toxic organics found not only in the biosolids, but also in the influent could be attributed to improper disposal of Household Hazardous Waste (HHW). With Muncie's aggressive recycling program, all residents of Delaware County are offered free disposal of hazardous waste, at the East-Central Recycling Facility (one of our permitted industries). As stated above, these yearly fluctuations are not due to a lack of diligence in operating our Pretreatment Program, but are small variations that are expected in a mature Pretreatment Program.

MWPCF Biosolids - Metals
Summary Statistics for 2010

Parameter	No. of Samples Taken in 2009	Limit of Detection	Standard Deviation (mg/Kg)	Mean (mg/Kg)	Maximum Result (mg/Kg)
Percent Total Solids	12	0.1	1.09	3.23	5.67
Percent Volatile Solids	12	0.1	5.54	47.93	58.1
Cyanide, Total in Sludge	12	2.48	2.83	1.02	9.7
Mercury in Sludge by CVAA	6	7.6	0.36	0.54	1.1
Silver in Sludge by ICP	12	0.004	2.09	9.57	13
Arsenic in Sludge by ICP	12	1.37	1.95	23.62	25.9
Cadmium in Sludge by ICP	12	0.003	0.55	4.40	5.75
Chromium in Sludge by ICP	12	0.006	8.19	54.98	75.8
Copper in Sludge by ICP	12	0.006	48.48	516.33	582
Molybdenum in Sludge by ICP	12	2.15	2.83	14.55	19.1
Nickel in Sludge by ICP	12	0.005	2.83	23.33	30.6
Lead in Sludge by ICP	12	0.021	113.93	190.25	421
Antimony in Sludge by ICP	11	2.05	1.33	4.87	7.8
Selenium in Sludge by ICP	12	3.51	0.87	6.89	8.1
Zinc in Sludge by ICP	12	0.006	102.93	672.92	965

MWPCF Biosolids - Metals
 1972 to 2008 Including Permit Values



Biomonitoring—Whole Effluent Toxicity Testing

Of all of the testing that we conduct, the whole effluent toxicity testing is perhaps the most straight-forward to understand. For over two decades, we have been conducting this form of biomonitoring in which we expose *Ceriodaphnia* sp., fathead minnows, and *Selenastrum* sp. to the effluent of the plant in an attempt to observe negative impacts. These tests are conducted on these three species on a biannual basis, surpassing the minimum requirements of our permit. Since 1990, we have passed each of these tests with a rating of 100% No Observed Effect Level.

Toxic Organic Pollutant Monitoring

As part of the monitoring requirements detailed by our NPDES permit, the Bureau conducts an annual scan for organic pollutants in the influent, effluent, and biosolids of the pollution control facility. A summary of this report can be found on the following pages. Though the pollution control facility is not specifically designed to remove organic compounds, removal efficiencies appear to be relatively high as most of the compounds found in the influent are absent from the effluent.

The Bureau has long recognized the potential threat posed by organic pollutants and has continued to surpass the minimum monitoring required by law. This includes annual monitoring of a handful of industries, selected on a rotating basis, to ensure they are effectively prohibiting the discharge of these toxic organics in their wastestream. Periodic sampling of stormwater run-off, including run-off from large parking lots, are also included as these are each sources of organic compounds found in the wastewater treatment plant.

Finally, samples from the White River are also included in annual organic compound scans to estimate the influence on the receiving stream and to help locate potential sources.

Commonly detected compounds include chloroform and bromodichloromethane, which are byproducts of the chlorination of tap water. In most cases, the concentrations of compounds were below detection limits, but those few that were detected were extremely low in concentration (in the microgram per Liter range).

INFLUENT

Volatile Priority Pollutants - EPA 624	
Parameter	ug/L
x CHLOROFORM	8.5

Tentatively Identified Volatile Priority Pollutants - EPA 624	
Parameter	ug/L
x 1,2,4-TRIMETHYLBENZENE	12
METHANETHIOL	12
x ACETONE (2-PROPANONE)	65

Semi-Volatile Priority Pollutants (Base/Neutral/Acid) - EPA 625	
Parameter	ug/L
NONE DETECTED	-

Tentatively Identified Semi-Volatile Priority Pollutants (Base/Neutral/Acid) EPA 625	
Parameter	*ug/L
x TETRADECANOIC ACID	40
x 1-HEXADECENE	17
2-CYCLOHEXEN-1-ONE	17
4-ISOPROPYLTOLUENE (P-ISOPROPYLTOLUENE)	27
BENZENE ACETIC ACID	15
x DODECANOIC ACID	18
MENTHOL	7
4-METHYLPHENOL (P-CRESOL)	29
x CAFFEINE	11
x CHOLESTANOL	46
x CHOLESTEROL	82
x HEXADECANOIC ACID	310
x OCTADECANOIC ACID	190
UNKNOWN (8)	95.9

Polychlorinated biphenyls (PCBs) EPA 608	
Parameter	ug/L
NONE DETECTED	-

TOTAL 1002

*Values Estimated, TIC by GC/MS
x Indicates parameter was also detected in 2009

EFFLUENT

Volatile Priority Pollutants - EPA 624	
Parameter	ug/L
x CHLOROFORM	35
BROMODICHLOROMETHANE	7.1

Tentatively Identified Volatile Priority Pollutants - EPA 624	
Parameter	*ug/L
NONE DETECTED	-

Semi-Volatile Priority Pollutants (Base/Neutral/Acid) EPA 625	
Parameter	ug/L
NONE DETECTED	-

Tentatively Identified Semi-Volatile Priority Pollutants (Base/Neutral/Acid) EPA 625	
Parameter	*ug/L
2-CYCLOHEXEN-1-ONE	13
UNKNOWN	4.6

Polychlorinated biphenyls (PCBs) EPA 608	
Parameter	ug/L
NONE DETECTED	-

TOTAL 59.7

*Values Estimated, TIC by GC/MS
x Indicates parameter was also detected in 2009

BIOSOLIDS

Volatle Priority Pollutants - EPA 624

Parameter	mg/Kg	mg/Kg (dry)
NONE DETECTED	-	-

Tentatively Identified Volatile Priority Pollutants - EPA 624

Parameter	mg/Kg	mg/Kg (dry)
NONE DETECTED	-	-

Semi-Volatile Priority Pollutants (Base/Neutral/Acid) - EPA 625

Parameter	mg/Kg	mg/Kg (dry)
NONE DETECTED	-	-

Tentatively Identified Semi-Volatile Priority Pollutants (Base/Neutral/Acid)
EPA 625

Parameter	*ug/L
HEXADECANOIC ACID	3300
OCTADECANOIC ACID	720
GAMMA-TOCOPHENOL	1100
VITAMIN E	1800
CHOLEST-4-EN-3-ONE	900
x CHOLESTANOL (twice)	15900
x UNKNOWN (6)	33910

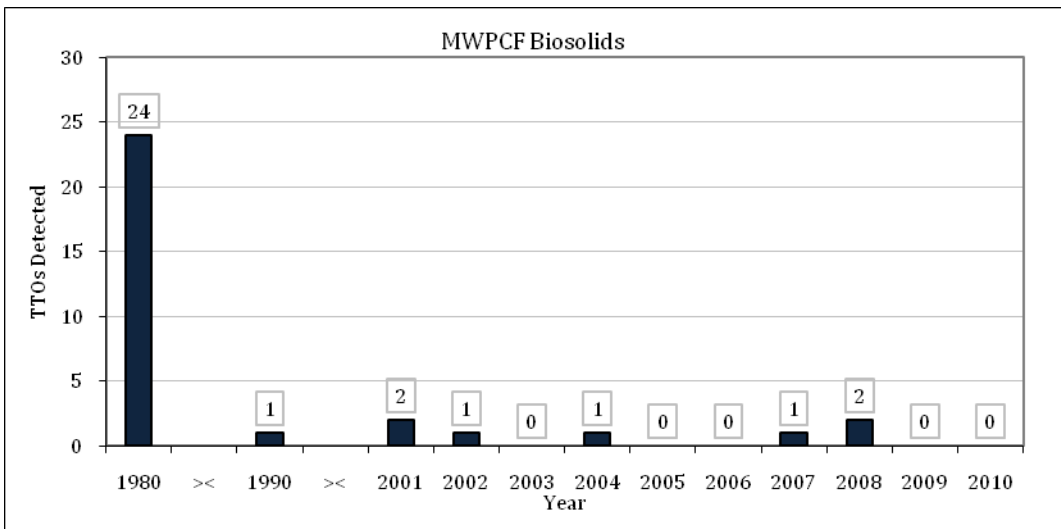
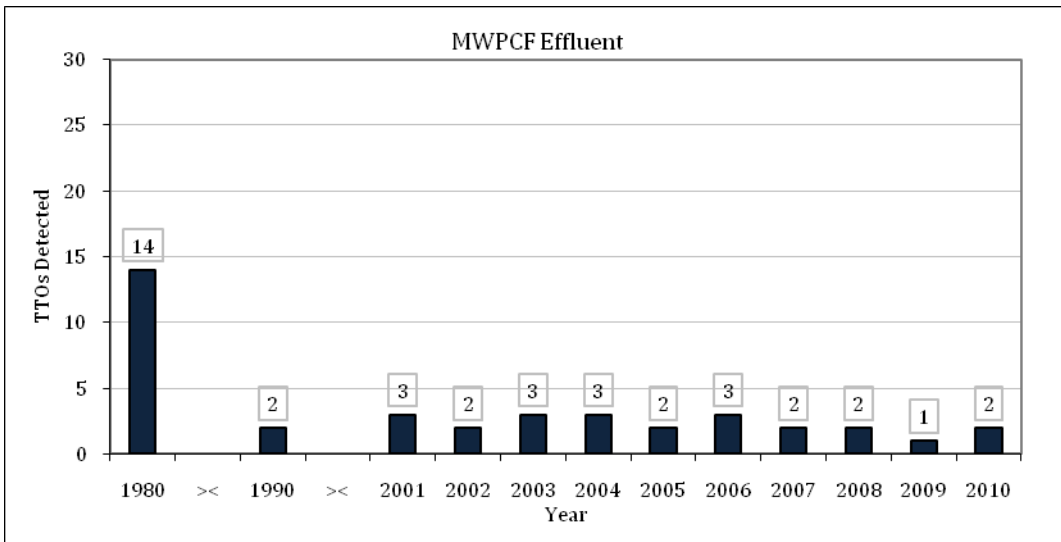
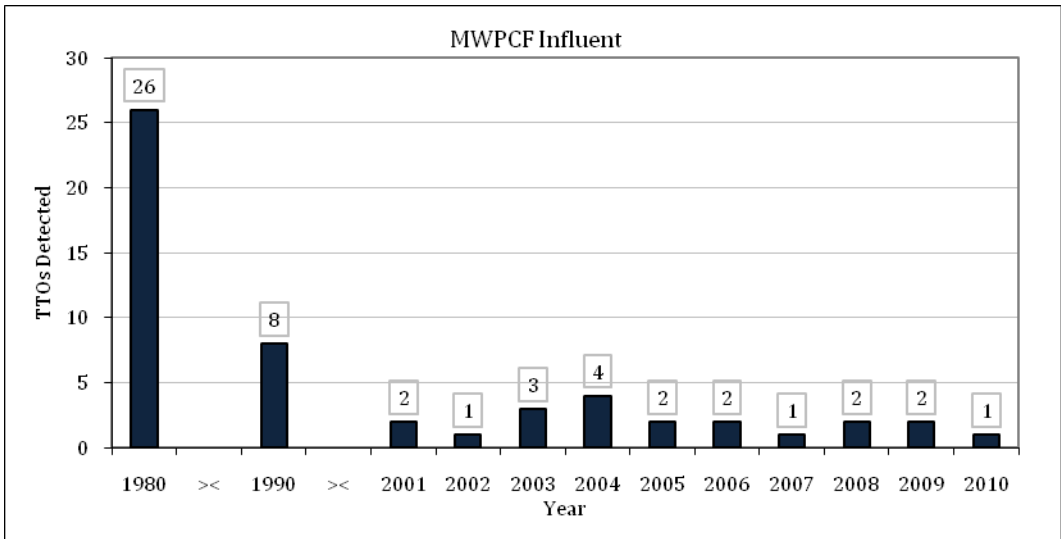
Polychlorinated biphenyls (PCBs)
EPA 608

Parameter	ug/L
NONE DETECTED	-

TOTAL 57630

*Values Estimated, TIC by GC/MS

x Indicates parameter was also detected in 2009



Contaminants of Emerging Concern

Public concern regarding endocrine disrupting compounds, specifically those related to pharmaceutical and personal care products, has piqued in recent years. In response, the Bureau has implemented a limited monitoring program aimed at identifying the presence of these substances in local wastewaters and waterways. The table on the following page lists the compounds which were investigated as well as their concentrations in Muncie's wastewater treatment plant and in the White River throughout Muncie. Relatively high concentrations of acetaminophen, caffeine, and ibuprofen were detected in the wastewater influent. However, in spite of the fact that the treatment plant is not specifically designed to remove these types of wastes, the removal efficiency appears remarkably high for those compounds which were more concentrated in the wastewater than they were in the river.

The small number of samples taken prevents any detailed statistical analysis of loading or removal efficiencies; however, more rigorous sampling seems unwarranted at this time for two main reasons. First, these tests are extremely expensive. Analysis of pharmaceuticals requires specialized equipment to detect such small concentrations, and it quickly becomes cost prohibitive to conduct as many samples as would be necessary to illustrate the nuanced variability that we are frequently able to describe with the more conventional pollutants such as ammonia and metals. Secondly, we can already reasonably estimate the presence and concentrations of pharmaceuticals in and around Muncie based on research conducted elsewhere in the country simply based on Muncie's population. And finally, the demonstrated threat from exposure to pharmaceuticals appears to be extremely low. As an example, for someone to consume the equivalent of a one-time dose of Tylenol, he or she would have to drink 300 gallons of water directly from the river every day for the rest of his or her life. Most of the communities in this area do rely upon the White River as a drinking water source, but only following additional treatment which has been shown to further reduce the concentrations of these chemicals.

To be clear, it is not our contention that this subject is not important. With so much left unknown about these compounds and their possible interactions in the environment, we are merely suggesting that efforts be focused less on re-reporting numbers which have very little meaning to the public other than to incite worry.

With this in mind, the Muncie Sanitary District has decided to focus its efforts in two general directions. The first emphasizes investigating the possible responses of aquatic organisms in the environment. Specifically, we are working to develop a more practical detection method that is sensitive to a wider array of endocrine disrupting compounds, and one that will simultaneously demonstrate an impact on the environment (as opposed to simply demonstrating presence). The preliminary results of this work are promising. Morphological measurements of a sentinel species of fish have shown small but detectable effects that have been correlated to the presence of estrogenic compounds.

The second part of the effort was an acknowledgment that the concentrations of these compounds could be reduced, and that there was no reason to wait and see if any of these compounds is someday proven to be harmful to humans or the environment before taking action to reduce their presence in waterways. To this end, the Muncie Sanitary District has been sponsoring "drug drops" where residents can safely dispose of their unused medicines. The district has also developed educational programs directed at the public and local pharmacies to discourage flushing of unwanted medicines; the most controllable means of contamination of waterways.

all values in ng/L

Drug Name	Plant In-fluent	Plant Ef-fluent	Percent Removal	White River Upstream of Muncie	White River Within Muncie	White River Down-stream of Muncie	Buck Cr. Up-stream of CSOs	Buck Cr. Downstream of CSOs
Acetaminophen	39000	5.8	99.99%	4.2	5.4	6.5	41	26
Caffeine	26000	14	99.95%	29	48	54	52	78
Carbamazepine	110	150	0%	1.4	1.6	9.3	1.7	1.7
Cotinine	1300	13	99.00%	4.3	5.1	8.3	5.9	6.5
DEET	1400	150	89.29%	*24	24	33	*24	*24
Ibuprofen	3400	2.7	99.92%	3.1	*1.1	*1.1	13	6.3
Lincomycin	*1.0	*1.0	-	1.1	1.2	1	*1.0	*1.0
Sulfadimethoxine	*1.1	*1.1	-	*1.1	*1.1	*1.1	*1.1	*1.1
Sulfamethazine	*1.1	*1.1	-	*1.1	*1.1	*1.1	*1.1	*1.1
Sulfamethoxazole	810	9.8	98.79%	4.7	5.7	7.1	2.1	2.3
Sulfathiazole	*1.0	*1.0	-	*1.0	*1.0	*1.0	*1.0	*1.0
Triclosan	*4.8	*4.8	-	*4.8	*4.8	*4.8	*4.8	9.2
Trimethoprim	170	*6.6	-	*1.0	*1.1	*1.2	*1.0	1.7
Tylosin	1.8	1.3	27.78%	*1.1	*1.0	*1.0	*1.0	*1.0
Gemfibrozil	650	5.9	99.09%	2	*1.1	1.5	2.5	2.2
Diclofenac	42	*1.0	-	*1.0	*1.0	*1.0	*1.0	*1.0

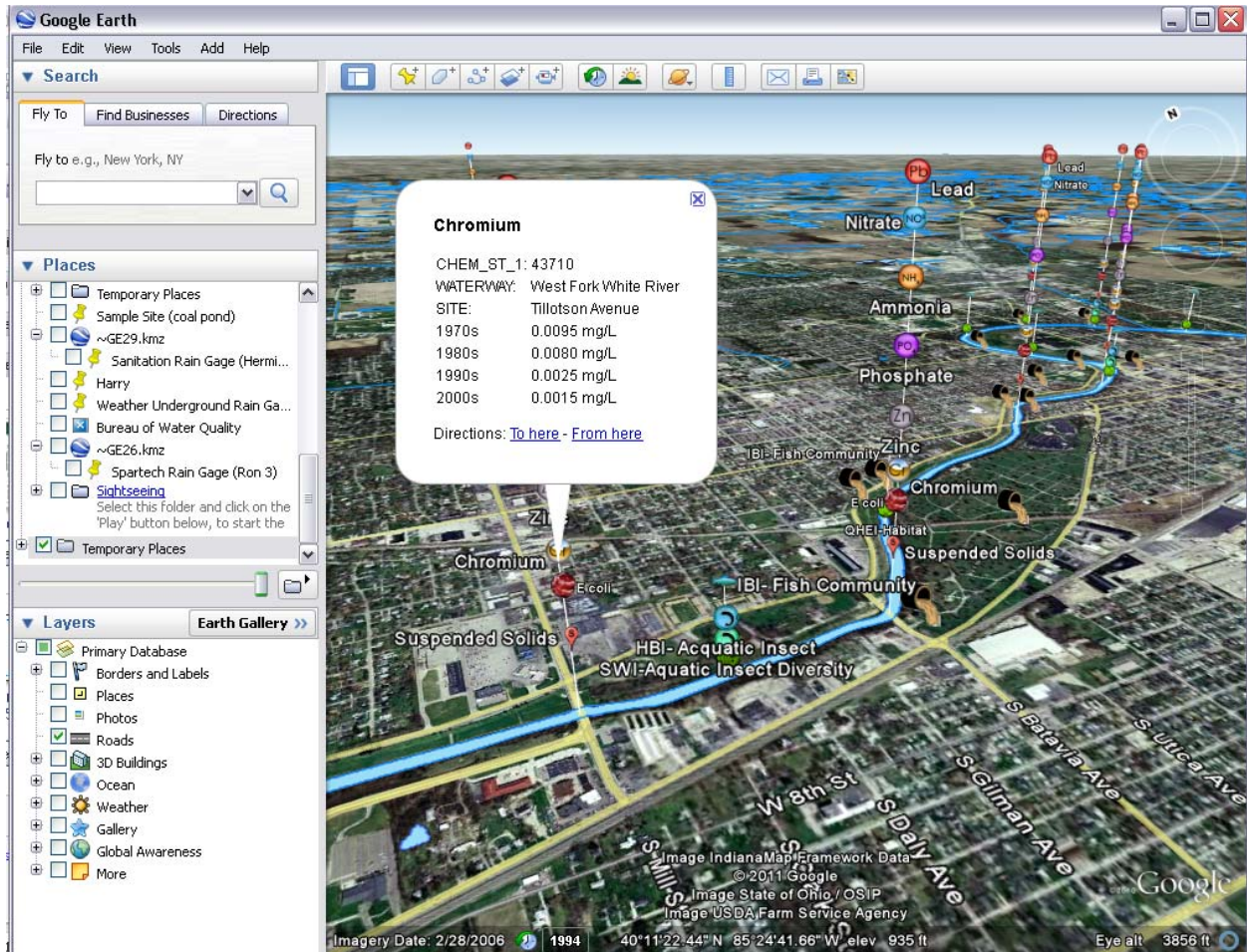
* below detection limit

Summary of results of pharmaceutical sampling in the MWPCF and local streams via LCMSMS.

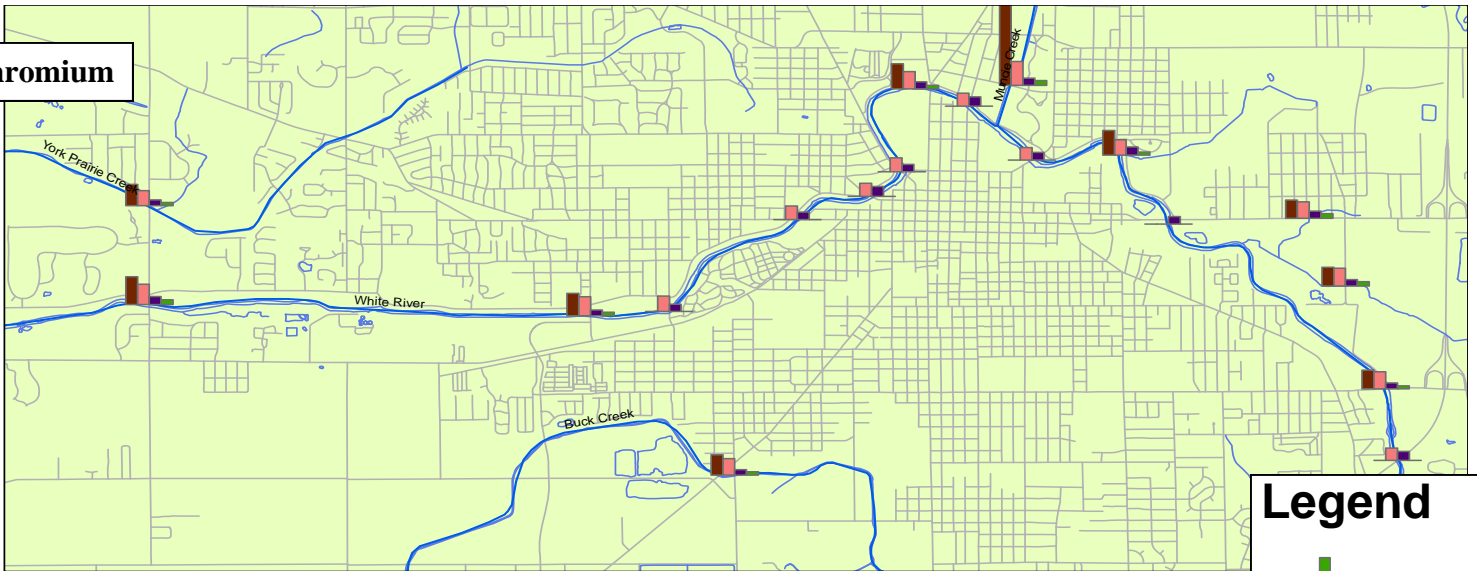
Stream Sampling

One of the first actions taken by the Bureau following its establishment was to begin a monitoring program that would characterize the condition of the White River throughout Muncie. This monitoring, which includes 16 sites sampled on a monthly basis, has continued largely unchanged for almost 40 years. The changes that have been seen over this time have been vital not only in identifying problems with water quality, but also in identifying successes. The reduction in nearly all parameters of concern have been dramatic, and the reduction in metals in particular, speaks volumes about the effectiveness of the pretreatment program.

Today, we take advantage of numerous avenues for disseminating this information to the public. Accessibility to a wealth of information is now available in many formats including geographic information system (GIS) linked databases and GoogleEarth™ online formats. Every effort is made to inform the local residents and anyone with access to the internet of the tremendous improvement in water quality that has occurred in Muncie.



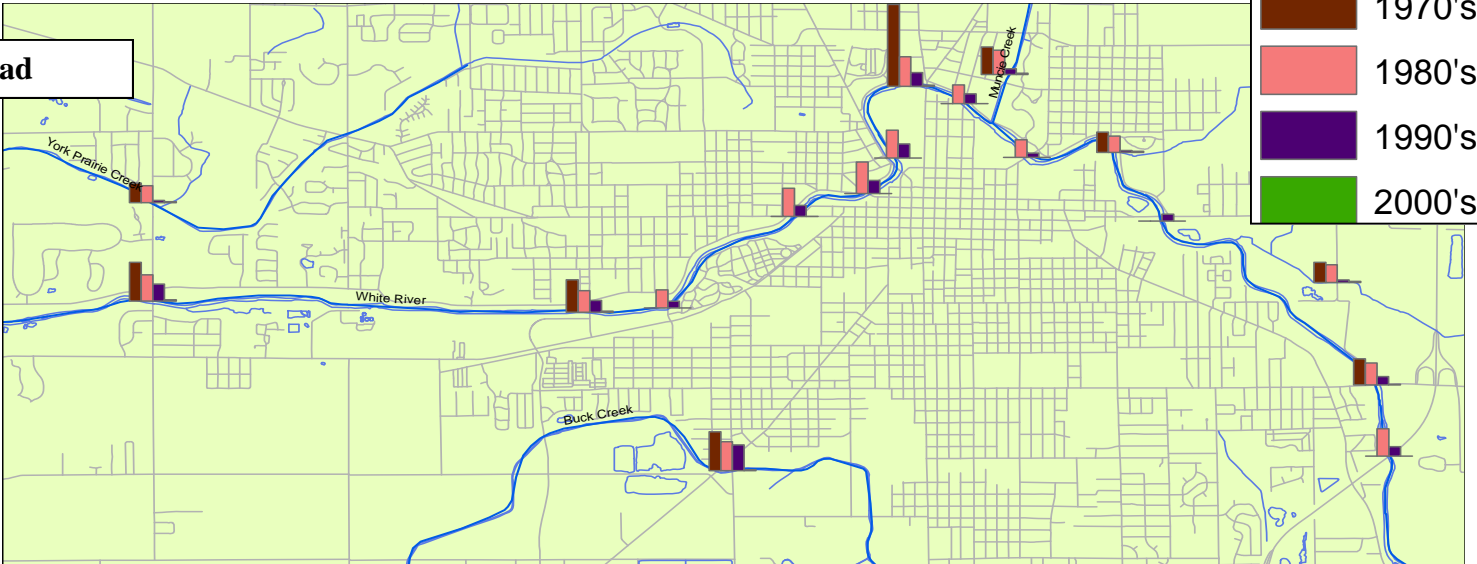
Chromium



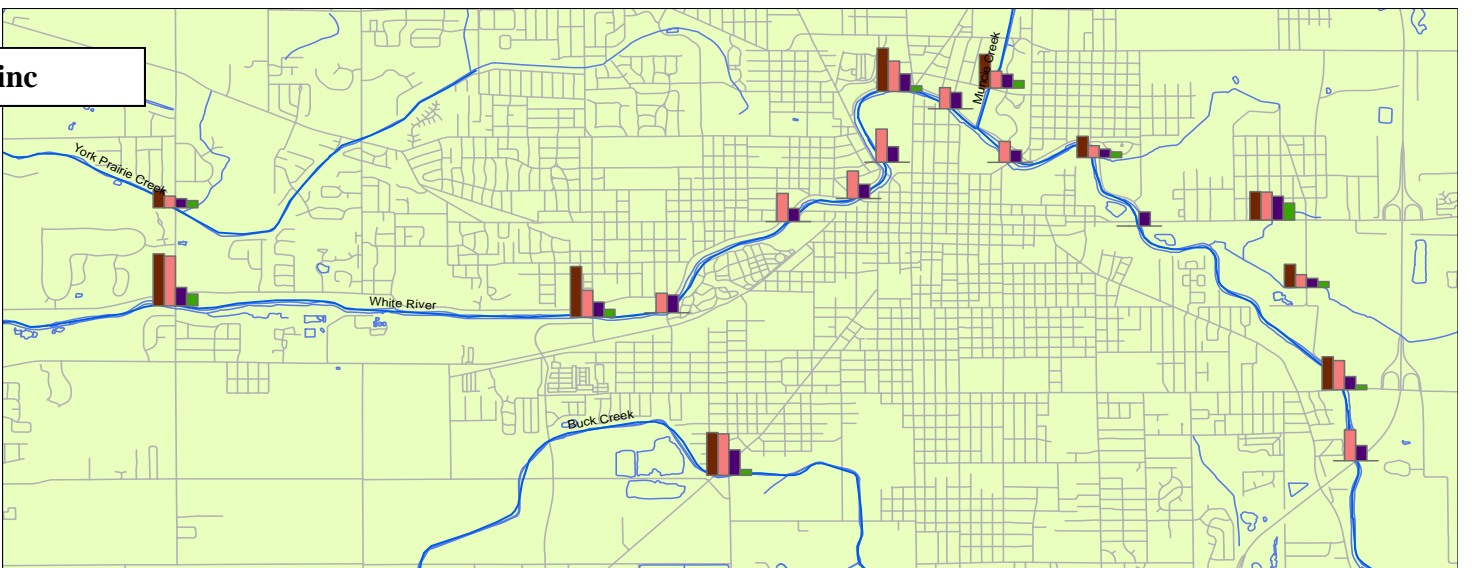
Legend

- 1970's
- 1980's
- 1990's
- 2000's

Lead



Zinc



Aquatic Community Sampling

Although the threats to water quality are diverse and complex, historical water management policies have been relatively simple and narrow. Chemical testing, bioassays, and other related laboratory procedures intended to provide empirical and legal validity to assessments had substituted probable cause-effect relationships for direct observation. This monitoring approach has three main deficiencies; 1) it is limited to instantaneous measurements producing mere “snapshots” of a highly variable chemical timeline, 2) it is unable to reveal the synergistic impacts imparted to aquatic organisms in a natural system, and 3) nonpoint sources that are unrelated to chemical toxicity are not addressed.

The addition of biological integrity as a fundamental goal of water quality programs has encouraged the development of biological criteria (biocriteria) to assess the health of aquatic life. Fish, benthic macroinvertebrates, and periphyton are core indicators of the biological integrity of streams. Community level analysis of these groups provides a measure of ecological sustainability that integrates all components of water pollution.

Biocriteria are not intended to replace chemical sampling, but rather to supplement it by providing the most accurate means of detecting and measuring overall water quality. The following graphs summarize the effectiveness of Muncie’s pretreatment program on the biology of the White River just downstream of the wastewater treatment plant outfall. The index of biotic integrity (IBI) quantifies fish community health, and the Hilsenhoff biotic index (HBI) quantifies aquatic macroinvertebrate health. Detailed reports are completed every year by the Bureau’s biologists and have been a powerful means of communicating the condition of the White River to the public.

