

CITY OF DAYTON STORM WATER MANAGEMENT PROGRAM



2008 ANNUAL REPORT

NPDES PERMIT #1PI00003*CD



City of Dayton Storm Water Annual Report 2008

Table of Contents

1.0	Storm Water Management Program Summary.....p. 4
1.1	Introduction
1.2	Pollution Prevention Team
1.3	Summary of Program Accomplishments/Future Plans (NEW)
1.4	Annual Expenditures/ Fiscal Analysis
2.0	Public Education and Outreach.....p. 10
2.1	Community Education
2.1.1	Community/ School Presentations
2.1.2	Catch Basin Stenciling
2.1.3	River Clean-up
2.1.4	Neighborhood Spill Letters
2.1.5	Restaurant Mailing
2.1.6	Local Medium
2.1.7	Miami Conservancy District Collaboration
2.2	Employee Awareness Training
2.2.1	Annual Storm Water & Spill Response Training
2.2.2	OSHA Training
2.2.3	Qualified Data Collector Accreditation (NEW)
3.0	Public Involvement and Participation.....p. 15
3.1	Children’s Water Festival (CWF)
3.2	“Lend A Hand Miami Valley” (NEW)
3.3	Watershed Coordination Activities
3.4	Spill Notification and Complaint Response
3.4.1	Notification Procedures
3.4.2	Spill Incident Recordkeeping
3.5	Abandoned Drums Program
3.6	Environmental Advisory Board (NEW)
4.0	Illicit Discharge Detection and Elimination (IDDE).....p. 19
4.1	Mapping
4.1.1	GIS Update - Outfall Survey (NEW)
4.1.2	GIS Field Tablet Equipment (NEW)
4.1.3	GIS Update - Home Septic Treatment Systems (HSTS)
4.2	Detection and Inspections
4.2.1	Dry Weather Screening
4.2.2	Screening Equipment (NEW)
4.2.3	Storm Sewer Video Inspection (CCTV)
4.2.4	Outfall Surveillance Program
4.2.5	Summary of Data Review (NEW)



4.3	Illicit Discharge Elimination	
4.3.1	Drainage Area Investigations	
4.3.2	Notification Procedures	
5.0	Construction, Post Construction/Redevelopment.....p. 24	
	(Water Engineering)	
5.1	Inspections	
5.2	Post Construction BMP Design Standards (NEW)	
5.3	ODOT Coordination (NEW)	
5.4	Dayton Public School Coordination	
6.0	Pollution Prevention.....p. 26	
6.1	Inspection and Maintenance of Structural Controls (Sewer Maintenance)	
6.1.1	Storm Sewer Inspection, Maintenance, and Repair	
6.1.2	Catch Basin Inspection, Maintenance, and Repair	
6.1.3	Pump Station Inspection and Maintenance	
6.1.4	River Valve and Gate Maintenance	
6.1.5	Sanitary Sewer Inspections	
6.2	Street Sweeping Program (Street Maintenance)	
6.2.1	Street Sweeping Schedule and Equipment	
6.2.2	Street Maintenance Training	
6.2.3	Leaf Collection	
6.2.4	Dead Animal Removal	
6.3	Deicing Materials Management Program (Street Maintenance)	
6.3.1	Deicing Materials and Equipment	
6.3.2	Deicing Personnel Training	
6.4	Hazardous Materials Management Program	
6.4.1	Montgomery County Solid Waste District Collaboration	
6.5	Pesticide and Fertilizer Management	
7.0	Industrial and Related Facilities Program.....p. 32	
7.1	Industrial Facilities Inventory	
7.2	Inspections	
7.2.1	Facilities Inspection Form (NEW)	
7.3	Enforcement Response Plan (NEW)	
	Summary of Enforcement Actions	
8.0	Conclusions (NEW)p. 34	
Appendix A	Community Education Log 2008	
Appendix B	City of Dayton Internal Spill Notification Contact List	
Appendix C	Outfall Drainage Area Delineation Map	
Appendix D	Dry Weather Screening Form	
Appendix E	Facility Inspection Check Sheet	



City of Dayton Storm Water Annual Report 2008

1.0 STORM WATER MANAGEMENT PROGRAM SUMMARY

1.1 Introduction

This report fulfills the 2008 annual reporting requirement as directed by the Ohio Environmental Protection Agency (OEPA) for the City of Dayton, Storm Water Management Program (SWMP), National Pollutant Discharge Elimination System (NPDES) Permit Number 1PI00003*CD. In compliance with the issuance of the NPDES permit, the City of Dayton began implementation of a system-wide SWMP in 1997. The SWMP provides comprehensive planning procedures, which involve intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable. Using best management practices (BMPs), control techniques and system design and engineering methods where appropriate, the City of Dayton has implemented the SWMP to manage the quality of urban storm water discharged to waters of the state through the municipal separate storm sewer system (MS4).

The City of Dayton encompasses 56.4 square miles. The City owns and operates the MS4 which has over 600 miles of storm sewers, 21,000 catch basins, 15,000 manholes, 15 storm pumping stations, and over 500 storm water outfalls. Dayton's storm water outfalls discharge to the following receiving waters:

- Great Miami River and unnamed tributaries
- Mad River and unnamed tributaries
- Stillwater River and unnamed tributaries
- Wolf Creek and unnamed tributaries
- Lilly Creek
- Tributary to Little Beavercreek
- Tributary to Opossum Creek
- Eastwood Lake



Dayton's Storm Water Management Program (SWMP) includes BMPs which have been developed and implemented by various departments and divisions throughout the City organization. Storm Water Management is a coordinated effort by a diverse group of professionals. The SWMP is managed by the Department of Water, Division of Environmental Management. To optimize implementation of BMP to meet our goals, responsibilities are delegated to the department with direct control.

The Dayton SWMP is strongly based on pollution prevention by education of both City employees and Dayton residents. Through coordination with the local universities, Montgomery County Solid Waste District, Miami Conservancy District, Five Rivers MetroParks, the United Way, and many others, Dayton has successfully implemented many best management practices to prevent pollution from entering our rivers through the MS4.

Best Management Practices (BMPs) are defined as schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices, that when used singularly or in combination, prevent or reduce the release of pollutants and other adverse impacts to surface waters. The objective of BMPs is to control the quality and/or quantity of storm water in order to reduce the adverse impact of storm water on local receiving waters. The following sections outline the BMP status for each individual program component in the Storm Water Management Program.



1.2 Pollution Prevention Team

<i>Name</i>	<i>Responsibility</i>
Department of Water Division of Environmental Management (DEM) (937) 333-3725 Donna Winchester, Manager Michele Simmons, Environmental Compliance Coordinator Felicia Graham, Environmental Scientist	Oversees NPDES permit compliance efforts Develops and implements SWMP Submits Annual Report to OEPA Reviews and updates BMPs as necessary Compiles SWMP record keeping Conducts Industrial and Related Facilities Program Coordinates IDDE and Spill Response Programs Administers Pollution Prevention Program Implements the Industrial and Related Facilities Program Administers employee training program Directs Public Education and Public Involvement Programs
Department of Water Division of Sewer Maintenance (937) 333-4917 Aaron Zonin, Manager Gary Davis, Supervisor	Assists with Pollution Prevention Program Assists with Industrial and Related Facilities Program Assists with IDDE Program Assists with Spill Response Maintains MS4 Cleans catch basins
Department of Public Works Division of Street Maintenance (937) 333-4800 Jim Brinegar, Manager	Assists with Pollution Prevention Program Conducts street sweeping
Department of Public Works Department of Waste Collection (937) 333-4825 Tom Ritchie, Jr., Manager	Assists with Pollution Prevention Program Collects solid waste, bulk waste, recycling
Dayton Fire Department (937) 333-FIRE	Assists with Spill Response Assists with Criminal Investigations Supports Regional HazMat Team



1.3 SUMMARY OF PROGRAM ACCOMPLISHMENTS/ FUTURE PLANS **(NEW)**

The City of Dayton has an established Storm Water Management Program (SWMP) designed to protect and maintain the water quality of our local rivers and streams and to meet the Ohio EPA NPDES Permit requirements.

The SWMP includes the following program elements:

- Public Education and Outreach,
- Public Involvement and Participation,
- Illicit Discharge, Detection, and Elimination,
- Construction, Post-Construction / Redevelopment,
- Pollution Prevention / Good Housekeeping, and
- Industrial and Related Facilities Programs.

The following sections provide a summary of the program, evaluating process, major findings, accomplishments, and future direction of the program. Following the executive summary of accomplishments, are the details for each of the major program elements.

Accomplishments

The City of Dayton Storm Water Ordinance (No. 30811-08) was revised and passed by City Commission and signed by the Mayor on November 26, 2008. The ordinance language was revised to align with the permit requirements and provide the City with additional tools to address storm water and pollution prevention enforcement.

The Dayton SWMP is firmly based on promoting pollution prevention through education of City employees, Dayton residents and businesses. Dayton emphasizes community education and in 2008 has directly presented storm water pollution prevention information to over 8,000 community members and 750 City employees through more than 50 educational forums. Public involvement and community collaboration with the University of Dayton and Five Rivers MetroParks, a community raingarden storm water best management practice was installed at the Wesleyan Nature Center. The garden filters storm water from the community center building to reduce and slow runoff to Wolf Creek.



Storm Water quality is monitored annually by evaluating runoff from over 500 outfalls which convey storm water from Dayton to the rivers. From the 583 outfall visits in 2008, 47% of the outfalls were dry and 60% of the outfalls with flow were screened and evaluated against established storm water criteria. Of the outfalls which screened outside of the established parameters, drainage area investigations were completed and resulted in the following best management practices establishing buffer areas surrounding catch basin during herbicide applications, and rerouting of private sewage systems.

To increase the City's ability to accurately detect and eliminate illicit discharges to waters of the state, a survey of public and private outfalls which drain within the City of Dayton was completed; 433 storm water structures were added to Geographic Information System (GIS) database. To increase the number of outfalls which can be screened, an additional HACH portable analytical instrument was purchased. To further identify best management practices to address post construction and low impact development opportunities, a post construction best management practice design standards manual was developed. The manual includes a summary of post construction storm water permit requirements, guidance on how to select post construction non-structural BMP's and how to select, design, and maintain structural post construction BMPs.

In 2008, the City of Dayton hired a consultant to complete an evaluation of Storm Water Utility Credit options. The report reviewed storm water utility credits in place in nine Midwest communities (Kentucky, Ohio, Illinois, Tennessee, and Georgia). Examples of the credits included: Peak flow credits, maintenance credits and educational credits. Additional review of the options provided and their application to Dayton (if any) will be considered in the future.

Future Plans

For 2009 the SWMP plans to install a demonstration GreenGrid green roof on the City Hall building. The 2,000 square foot system will be a best management practice that will help reduce pollution by reducing and filtering water runoff to the storm sewer system.

To further identify and eliminate discharges to the MS4, the SWMP will increase the inspection of industrial facilities focusing on the facilities with existing NPDES permit requirements. Also, to improve citizen participation in identifying unusual conditions at



outfalls, the City plans to renumber and re-stencil outfalls to capture the newly identified storm water structures and increase visibility for reporting concerns.

These items represent a few of the major accomplishments in 2008 and future plans for 2009. The following sections will provide additional details for the accomplishments within each program element.

1.4 ANNUAL EXPENDITURES AND FISCAL ANALYSIS

The following chart represents Operation Budgets for 2008.

City of Dayton Storm Sewer Fund 2008 Operating Budget

Sewer Maintenance	3,213,150.00
Sewer Inspections	
Minor Repairs	
Catch Basin Cleaning	
Flood Control Gates and Pump Stations	
Outfall Locations	
Complaint Investigations	
Emergency Response Assistance	
Environmental Management (DEM)	532,100.00
Storm Water NPDES Permit Compliance	
Activities Oversight	
Emergency Response	
Illicit Discharge and Complaint Investigation	
Facility Inspections	
Engineering	736,600.00
Sediment and Erosion Control Inspections and Plan Review	
Street Maintenance – Street Sweeping	1,136,800.00
Budgeted Expenditures	\$5,618,650.00



Storm Sewer Fund 2008 Capital Budget Summary

Two major Storm Sewer repairs and improvements were completed in 2008. The St. Clair Street improvement consisted of installation of 2,575 linear feet of storm sewer (ranging from 12 to 84-inches) and manholes on St. Clair Street from First to Fifth Street.

Rubicon Road storm pipe rehabilitation consisted of installation of 480 feet of cured-in-place piping (CIPP) for a 54-inch diameter storm sewer. The work also consisted of constructing a 60-foot length of 36-inch diameter concrete pipe inside of the 54-inch storm sewer. In addition, two top cone sections of access manholes were removed and replaced with new five foot diameter barrel sections, flat slab top, lid, frame and steps.

- ✓ **Washington Street Pump Station – Back-up Generator Installed**
- ✓ **Second and Webster Street – Storm Drain Installed**
- ✓ **Patterson Lift Station – Pumps and Motors Rebuilt**

Revisions to Assessments of Controls and Fiscal Analysis

Funds generated by the City of Dayton Storm Water Utility are used to cover the costs for compliance with the NPDES permit. This utility is charged to both residential and non-residential customers. In 2008, the rates were adjusted by 2.4% to reflect the consumer price index.

2.0 PUBLIC EDUCATION AND OUTREACH

The City of Dayton SWMP Public Education Program (PEP) includes outreach activities designed to teach about impacts of storm water discharges on water quality, informing both business communities and households about the steps to reduce storm water pollution. The following endeavors are being planned for this program: the production of a Water Department video to explain the functions of all Water Dept divisions and the addition of storm water informational messages on our storm water fleet vehicles. Well-informed citizens will act as formal and informal educators to further disseminate information and gather support for the program.



In general, the citizens' awareness has increased but many have not yet acquired a good understanding of the Storm Water Management Program and its components. The combined efforts of the City of Dayton and the Miami Conservancy District's (Phase II) educational efforts will provide a continued increase in public awareness. The City of Dayton, Department of Water, Division of Environmental Management (DEM) offers neighborhood, priority board, and other community presentations to increase the public's awareness of the City's role in storm water protection or pollution prevention.

2.1 COMMUNITY EDUCATION

2.1.1 Community/ Schools Presentations

This BMP was emphasized by DEM's participation in over 50 community forums. DEM offered storm water presentations to neighborhood groups in an effort to get information to the community in small group settings. The details of each activity are listed in the Community Education Log ([Appendix A](#)). In 2008, there were:

- ✓ **50 Community group presentations**
- ✓ **6 Neighborhood Association presentations**
- ✓ **10 School presentations**

2.1.2 Catch Basin Stenciling

Storm drain stenciling/decals urge citizens not to dump polluting materials into the drains. The signs raise awareness about the connection between storm drains and water bodies, and help deter littering, over-fertilization, and other practices that contribute to nonpoint source pollution. It is our goal to stencil or mark each catch basin in the City of Dayton.

With interns each year during the dry summer season, selected streets are identified for catch basin stenciling. The stenciling of "Dump No Waste, Drains to the River" is typically scheduled to follow the Sewer Maintenance seasonal cleanout of storm sewer catch basin. This effort is both visible due to the large cleaning vehicles and promotes to the community to assist with preventing litter and trash from entering the storm sewers.



A coordinated effort focused on the Dayton View neighborhood in West Dayton to pick up trash and stencil catch basin “Dump No Waste, Drains to the River” as part of the Phoenix Project neighborhood improvement.

- ✓ **20 Volunteers and Interns**
- ✓ **200+ Catch basin stenciled**

2.1.3 River Clean-up

The City of Dayton in cooperation with Five Rivers MetroParks coordinated the annual Earth Day Celebration in April. This celebration included river clean-up activities and information booths set up at Island MetroPark.

The City of Dayton through collaboration with Cargill, Veolia, and MCD coordinated the Southwest Ohio portion of the “Clean Sweep” river clean-up which extended from Indian Lake to the Ohio River. Dayton provided 77 volunteers out of 516 total volunteers.

- ✓ **Provided 77 out of 516 total Community Volunteers**
- ✓ **56 miles of river from Indian Lake to the Ohio River**
- ✓ **22.66 tons of trash was removed**
- ✓ **141 tires disposed**

2.1.4 Neighborhood Spill Letters

As residents call in storm water-related concerns, the concerns are investigated and digital pictures taken. “Informational” letters are sent to the responsible parties that include pictures of the complaint topic. These letters provide a method of storm water education in areas where problems have been reported. Several calls are received in response to the informational letters that have allowed for further dialogue with the public.

2.1.5 Restaurant Mailing

Evaluation of litter cleanup efforts has shown that litter from restaurants makes up a significant amount of the litter gathered throughout Dayton. In an effort to reduce the amount of contribution from restaurants and their patrons, pollution prevention letters were mailed to nearly 850 restaurants in Dayton. The informational letter contained an



introduction to the Storm Water Management Program, the Dayton rivers and the MS4 connection to the rivers. A restaurant brochure was also included with the letter outlining the restaurants role in preventing pollution to Dayton waterways. Several calls and follow-up actions were initiated from the mailing.

- ✓ **850 Restaurant letters and brochure mailed**
- ✓ **45 Follow-up calls with restaurants**

2.1.6 Local Medium

The local public access medium, City of Dayton Television Network (CDTN), is utilized to deliver educational, promotional and motivational messages. These television spots are repeated periodically, linked to concerns which the audience values, and cover storm water pollution topics from several different angles. CDTN aired five major productions promoting: Children’s Water Festival, Protecting Our Rivers and Streams, Low Dam Safety, Stop Illegal Dumping, and Take Back the Tap. Informational storm water trailers were also used. There are 30,000 subscribers to our local cable-programming network. With 160 million Americans having internet access at home, we have vastly increased our media access by making our education programs available on the web.

- ✓ **The “Protecting Our Rivers and Streams” video aired 183 times.**
- ✓ **The Children’s Water Festival story aired 141 times.**
- ✓ **The Illegal Dumping public service announcement (PSA) aired 123 times.**
- ✓ **The “Take Back the Tap” Water video aired 146 times.**
- ✓ **The Low Dam Safety public service announcement aired 187 times.**

2.1.7 Miami Conservancy District (MCD) Collaboration

The Miami Conservancy District (MCD) is a watershed-based organization whose mission includes the conservation of water resources. MCD has accepted the responsibility for implementing Best Management Practices under minimum control measures #1-Public Education & Outreach on Storm Water Impacts; #2-Public Involvement and Participation; and #3- Illicit Discharge Detection and Elimination for



about 50 communities that surround Dayton. The following represents MCD's activities in the watershed:

- ✓ Supported the Southwest Ohio Sediment and Erosion Control Field Day.
- ✓ Developed and hosted a Low Impact Development Workshop.
- ✓ Stream Team Volunteer trainings.
- ✓ Participated in three Water Festivals and 6 community education events.

2.2 EMPLOYEE AWARENESS TRAINING

To improve the awareness of City of Dayton employees, comprehensive annual storm water and spill response training is provided covering the requirements of the MS4 Program.

2.2.1 Annual Storm Water & Spill Response Training

The Division of Environmental Management performs on-going storm water training for City of Dayton employees. The focus of the training is an explanation of the MS4, what constitutes an illegal discharge, reporting procedures, and surface water quality impacts due to MS4 discharges. 179 City of Dayton managers, supervisors and staff were trained; 31 of the 179 trained were top management staff including the City Manager, Assistant City Managers and Directors.

- ✓ 179 City of Dayton managers, supervisors, and staff were trained.
- ✓ >600 City of Dayton Staff attended Health and Safety Fair.

2.2.2 OSHA Training

Employees responsible for the Inspection and Maintenance of the Structural Controls BMP, Abandoned Drums and the IDDE Program Elements which includes Sewer Maintenance and Division of Environmental Management are certified annually in OSHA 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response.

- ✓ 28 Water Department, 2 Public Works, 3 Public Health, and 1 Aviation employee attended the 8-hour HazMat Refresher in 2008.



2.2.3 Qualified Data Collector Accreditation (NEW)

The Division of Environmental Management has attained Certification through the Ohio EPA – Qualified Data Collector (QDC) - Volunteer Monitoring Program (VMP). This certification will promote storm water and river water data collection consistency and review in accordance with Ohio EPA approved methodology.

- ✓ Level 2 Macro invertebrates & Habitat (July 7)
- ✓ Level 2 Qualitative Habitat Evaluation Index (March 6)
- ✓ Level 1 Certification (January 7)

3.0 PUBLIC INVOLVEMENT AND PARTICIPATION

3.1 CHILDREN'S WATER FESTIVAL (CWF)

A major SWMP public involvement and educational opportunity occurs with the annual Children's Water Festival. Nearly 300 community members and volunteers participated in the planning and orchestrating of the day-long event for over 1,200 fourth grade students from 22 Montgomery and Greene County schools. The students attend a daylong science workshop that included a series of environmental presentations covering topics such as storm water, surface water, pollution prevention, and other water quality issues. At the end of the day, each teacher received an informational packet to assist with incorporating pollution prevention and water protection into their class curriculum.

- ✓ 294 community volunteers participated.
- ✓ 1,227 4th grade students from 22 schools attended.

3.2 "LEND-A-HAND MIAMI VALLEY" (NEW)

The City of Dayton in cooperation with the United Way Volunteer Connection and United Way of Greater Dayton participated in the Miami Valley's celebration of Make a Difference Day, a national day of engaging members of the community in volunteer efforts. DEM coordinated trash pickup and catch basin stenciling in the Dayton View community as part of the "Join Hands Miami Valley" held on October 24. Dayton's



coordination of 20 volunteers was part of over 900 volunteers which contributed nearly 3,000 hours of service valued at \$60,126 (http://www.dayton-unitedway.org/difference_day.php).

- ✓ **Coordinated 20 of 900 total community volunteers.**
- ✓ **Nearly 3,000 hours of service valued at \$60,126.**

3.3 WATERSHED COORDINATION ACTIVITIES

The City of Dayton participates in many Watershed activities. Our participation is due to our concern for water quality, community outreach, and source water protection for our drinking water supply. We are involved with many different groups because of Dayton's location at the confluence of several watersheds.

Great Miami River Watershed Network

Attend and Participate with representatives from Shelby, Darke, Miami, Preble, Clark, Logan, Champaign, Greene, Montgomery, Warren, Butler and Hamilton Counties.

Dayton, Soil and Water Conservation District, MVRPC, and MCD.

Wolf Creek Stream Team

Participate with representatives from Montgomery County in Water Quality sampling activities for the Wolf Creek within Dayton Corps boundary.

Stillwater Watershed

Attend and participate with representatives from Darke, Miami and Montgomery Counties.

Honeycreek Watershed

Chair of the Urban Land Stewardship Committee, a volunteer committee of the Wegerzyn Garden Foundation, focusing on pollution prevention of the Stillwater River segment within the City of Dayton.

Attend and participate with representatives from Miami, Clark, Champaign and Montgomery Counties.

Hebblecreek Watershed

Attend and participate with representatives from Montgomery and Greene Counties for



watershed protection activities on the Mad River.

Mad River Scenic Designation

Attend and participate with representatives from Montgomery, Greene, Clark, Logan, and Champaign Counties for designation of the Mad River as a Scenic River.

3.4 SPILL NOTIFICATION AND COMPLAINT RESPONSE

The City of Dayton has developed and implemented a Spill Response Program, which has been extremely effective in controlling surface water pollution resulting from spills and releases; and minimizing impacts to the MS4 and rivers.

Citizens are encouraged to contact the City with concerns which could potentially impact the MS4 and rivers. DEM staff with assistance from the Division of Sewer Maintenance responds to complaints, coordinates resolution, and provides follow-up with citizens. The complaints originate from a variety of sources including but not limited to: citizens, City of Dayton employees, the Fire Department, and Neighborhood Associations. DEM logs each of the complaints, the name and address of the responsible party (if available), the action taken, and the follow up required.

- ✓ Sewer Maintenance responded to 883 storm sewer complaints (*primarily structural and/or drainage related*).
- ✓ DEM responded to over 71 complaints, which had the potential to impact the MS4. 57 of which pollutants were prevented from entering the MS4.
- ✓ 61% were storm complaints,
- ✓ 18% illegal dumping, and
- ✓ 18% vehicle accidents, construction drag-out, and odor.

3.4.1 Notification Procedures

City of Dayton employees are educated regarding proper spill reporting procedures for pollutant discharges to the MS4. See [Appendix B](#) for the City of Dayton Internal Spill Notification Contact List.



Signs reminding City employees to report all spills were placed in various locations at the Ottawa Yards Municipal facility. The signs outline spill procedures and provide a daytime and after-hours number.

Signage indicating “Drinking Water Protection Area, Report Chemical Spills, Dial 9-1-1” are located at various points throughout the City as an additional tool to encourage public involvement in water protection.

3.4.2 Spill Incident Recordkeeping

All spill incidents and investigations are documented and recorded. In addition, all MS4-impacted spill incidents responded to by the local HazMat team are kept on file with the Fire Department.

3.5 ABANDONED DRUMS PROGRAM

The City of Dayton participates in the OEPA Orphan Drum Program, coordinated by the OEPA Special Investigations Unit, Division of Emergency and Remedial Response. The goal of the OEPA program is to properly dispose of small quantities of abandoned waste and to locate the responsible party. Dayton citizens are encouraged to call the Division of Environmental Management or Fire when containers of unknown content appear in the streets or alleyways.

- ✓ **7 drums and 25+ paint cans were removed from Dayton streets and public areas and/or relocated to Ottawa Yards for storage. These drums were referred to OEPA for further investigation and disposal under the Orphan Drum Program.**

3.6 ENVIRONMENTAL ADVISORY BOARD (EAB) **(NEW)**

The Environmental Advisory Board is an 11 member group of citizens which have been nominated and selected to serve as advisors to the City Manager, City Commission and Mayor regarding environmental topics which may affect the Dayton community. The community meetings are open to the public, involved discussion on storm water and ground water protection as well as other pollution prevention efforts.

Board members include Citizens and representatives from Crown Equipment Corporation, Cargill, Inc., the Miami Conservancy District, Advocates for Basic Legal



Equity, Five Rivers MetroParks, Priority Boards, Wright State University, and MACTEC Engineering & Consulting.

✓ **There were 11 Citizen Meetings held in 2008.**

4.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)

The Illicit Discharge Program involves the identification and elimination of illegal or inappropriate connections of non-storm water discharges to the MS4.

The City of Dayton has implemented BMPs for illicit discharges to the MS4, including: outfall mapping, field monitoring activities (visual outfall surveillance and dry weather screening), investigative procedures (identifying and tracking illicit/illegal discharges), and spill response and control. The following outlines the status each BMP element:

4.1 Mapping

4.1.1 GIS Update - Outfall Survey (NEW)

The City of Dayton encompasses 56.4 square miles. The City owns and operates the MS4 which has over 600 miles of storm sewers, 21,000 catch basins, 15,000 manholes, 15 storm pumping stations, and over 500 storm water outfalls.

In 2008 the City of Dayton retained a contractor to survey the storm sewer system and update the City's GIS database with outfall data. The survey and mapping efforts created visual descriptions, collected survey data, and photographed each outfall. The effort was focused on meeting the current NPDES requirements for locating and identifying outfall structures, and updating and verifying associated drainage areas. This effort included gathering and review the existing GIS data, Storm Sewer Atlas sheets, and topographic information. The field verified data was geocoded and included into the GIS database in 2008. An outfall drainage area delineation map is included in [Appendix C](#).

✓ **433 storm sewer structures were field verified and added to the GIS database in 2008.**

4.1.2 GIS Field Tablet Equipment (NEW)

To increase the accuracy of sampling point collection and to enable secure, reliable, mobile computing in environmentally-challenging work environments, the City of Dayton



purchased a General Dynamics Itronix, Duo-Touch II Rugged Tablet. The rugged tablet features the ultra-viewable touch screen, wireless mobility, low power consumption and light weight allowing transport to the remote outfalls and other storm water screening locations. For additional information see the product specifications at http://www.gd-itronix.com/index.cfm?page=Products:Duo-Touch_II.

4.1.3 GIS Update - Home Septic Treatment Systems (HSTS)

The City of Dayton in cooperation with the Public Health Dayton and Montgomery County (PHDMC) has compiled a list of structures (residential and commercial) utilizing septic systems for sanitary waste management. The database includes: address, outfall, whether sanitary services are available within 200 feet, and whether the location is within the Well Field Protection Area. This database will be further refined to define IF any of the identified HSTSs discharge (including on lot/ off lot discharging systems) into the MS4. The GIS map will also be updated to include additional information to be provided by PHDMC.

4.2 DETECTION AND INSPECTIONS

The City of Dayton has implemented a storm water-monitoring program for discharges from the MS4 as required by Part III. D. – Illicit Discharge Program and Part IV. – Monitoring and Reporting Requirements. Based on a summary of data collected, outfalls were identified where action levels were exceeded for phosphates, ammonia (nitrogen), and chlorine. Where possible, the drainage areas were investigated and pollution sources eliminated. For the remaining outfalls, monitoring will continue with increased frequency to identify the source and eliminate it. The **major concerns have been addressed**. We will now continue to focus on the remaining minor issues.

4.2.1 Dry Weather Screening

Dry weather screening was performed to help identify sources of non-storm water discharges into the MS4 including illicit connections from the sanitary sewer system, industrial discharges, improper disposal of wastes, and other contaminants (used oil, paint, etc.) that are discharged illegally.

The Dry Weather Screening program involves a combination of visual surveillance, physical, biological, and chemical analysis – both used to detect possible illicit connections and/or illegal discharges. The following table illustrates each parameter tested during dry weather screening. The action level for each parameter was



established based upon published chemical tracer concentrations used to identify possible sources of contamination in dry weather MS4 flows (Watershed Protection Techniques, Vol. 3, No. 1, April 1999). The action levels also took into account chemical concentrations of typical potable water, City of Dayton, Department of Water, Division of Water Supply and Treatment Water Quality Data.

TRACER	ACTION LEVEL
pH	<6.9 or >8.5
Ammonia (NH ₃)	>0.3 (mg/l)
Chlorine (Cl ₂)	>0.5 (mg/l)
Dissolved Oxygen	<4 (mg/l)
Fecal Coliform	>20,000 MPN/100 ml
Nitrates	>10 (mg/l)
Phosphates	>0.31 (mg/l)

Please note that these action levels are only rough indicators of dry weather storm water quality. They are used in combination with visual observations to determine the need for further investigation, or to decide if immediate response action is warranted.

Screening of storm water samples was performed on the Wolf Creek, Mad River, and Stillwater and Great Miami River. In cooperation with Five Rivers MetroParks, monitoring frequency was increased at the convergence of the Great Miami and Mad Rivers immediately upstream from the Downtown Dayton Riverscape activities.

4.2.2 Screening Equipment **(NEW)**

In 2008, the City of Dayton purchased a second field screening unit to assist with dry weather screening. A portable Hach DR/800 Series Colorimeter and a portable Sension156 pH and Dissolved Oxygen Meter purchased to supplement the screening ability of the field teams during dry weather.



Grab samples are collected and analyzed in the field and visual observations are recorded. A portable Hach DR/800 Series Colorimeter is used to test for chlorine, ammonia, phosphates, and nitrates. A portable Sension2 is used to perform pH, temperature, and dissolved oxygen readings. These instruments allow for quick and accurate testing of the selected physical and chemical parameters. The City of Dayton maintains a service partnership with Hach Company to provide annual calibration and certification, priority repair, and technical support.

The Dry Weather Screening Form is included in [Appendix D](#). An analysis of the included data shows a few slight exceedances above the Action Levels set by the SWMP. We believe that these data show no long-term impacts to storm water quality.

- ✓ **583 visual observation visits to MS4 outfalls were accomplished in 2008.**
- ✓ **47% of the outfalls visited were dry after 72 hrs of no precipitation.**
- ✓ **Field analysis for physical, chemical and/or biological parameters was performed on 60% of the outfalls with storm flow.**

4.2.3 Storm Sewer Video Inspection (CCTV)

The operation of closed-circuit television has been a useful tool in locating specific sources of inflow and infiltration, as well as determining the structural condition of the MS4. In addition, guiding of remote television cameras through the MS4 is another way to identify physical, illicit connections for elimination only visible from within the storm sewer system.

4.2.4 Outfall Surveillance Program

As a supplement to the Dry Weather Screening program described above, routine physical outfall surveillance is conducted to assist in the detection of illicit connections and improper discharges.

In 2009 the City of Dayton will re-stencil the outfall identification numbers to increase visibility to the Dayton public.

4.2.5 Summary of Data Review (NEW)



Storm Water quality is monitored annually by evaluating runoff from over 500 outfalls which convey storm water from Dayton to the rivers. From the 583 outfall visits in 2008, 47% of the outfalls were dry and 60% of the outfalls with storm flow were screened and evaluated against established storm water criteria. Of the outfalls which screened outside of the established parameters, drainage area investigations were completed and resulted in the following best management practices establishing buffer areas surrounding catch basins during herbicide applications, and rerouting of private sewage systems.

The following table represents the summary of the actions required for outfall screening events and the minimum and maximum detection ranges for each parameter.

Parameter	Action Level	No Action Required (%) of screen events	Detection Range (Min – Max)
Dissolved Oxygen	DO < 4 mg/L	60	0.29 – 12.1
Phosphates	Phos > 0.31 mg/L	58	0 - 2.75
Chlorine	Cl > 0.5 mg/L	97	0 - 0.76
Ammonia	NH3 > 0.3 mg/L	89	0 - 3.34
Nitrates	Nitrates > 10 mg/L	98	0 – 13.7
pH	pH > 8.5	86	8.54 – 9.21
	pH < 6.9		0

4.3 ILLICIT DISCHARGE ELIMINATION

4.3.1 Drainage Area Investigations

The 2008 storm water program has focused on the completion of investigations of four primary drainage areas. These areas have shown long-term, slight exceedances of the storm water screening criteria for phosphates, nitrates, ammonia and/or chlorine, but the source areas had not been clearly identified and eliminated. These drainage areas were identified through the review of nine years (1999-2007) of storm water outfall screening data. The storm water from the identified drainage areas were monitored through weekly observations and field screening. The source of each of the four drainage areas were



determined to be seasonal or intermittent, which contributed to the difficulty of identifying and eliminating the sources.

The drainage area investigations were conducted through weekly visual observations, screening the storm water flow at the outfall, isolating the storm lines that drain to the outfall, and sampling at each major intersecting lateral. GIS maps of the drainage areas including both sanitary and storm sewer pipes, street names and housing addresses, were necessary to accomplish the investigations. The probable source area was isolated through storm water sampling along the drainage area and then the Sewer Maintenance camera crew completed video inspection of the storm line. Video allowed any illegally connected piping, cracks in the storm line or sanitary infiltration to be viewed and subsequently repaired. Cooperation between the DEM Staff and the Sewer Maintenance Staff was essential for the identification and elimination of the consistent small quantity pollutant sources to our waterways.

These investigations led to the identification of infiltration from impacted groundwater, recommendations for private facility lawn care application best management practices, and identification and disconnection of private illicit sanitary connections.

4.3.2 Notification Procedures

Through the on-going surveillance of the MS4, parties responsible for illicit discharges were advised to eliminate the discharge as expeditiously as possible and to contact OEPA for the appropriate NPDES permitting where applicable.

5.0 CONSTRUCTION, POST CONSTRUCTION/ REDEVELOPMENT

5.1 Inspections

The Construction Site Inspectors and the Water Engineering supervisors meet regularly to review the progress of specific projects. The Inspector routinely obtains construction plans having erosion and sediment control requirements and inspects each site weekly for the duration of the project.

The storm water inspection checklist used by erosion and sediment control inspectors has been standardized. This effort has improved the communication between the plan review team and inspectors while improving communications between the inspector and



the contractor's on site personnel. Inspectors are also urged to keep accurate records of data and to follow-up on recommended site modification to decrease the construction site pollutant contributions to the storm water runoff.

If deficiencies are detected through this site evaluation process a non-compliance letter (along with a copy of the Ordinance) will be sent to the property owner outlining enforcement options and providing a deadline for compliance. Through this site evaluation process, increasing levels of notification are forwarded to the property owner, including a non-compliance letter outlining enforcement options and, possibly, a Notice of Violation. Site inspection follow-up and documentation may result in a stop work order and civil action by the City of Dayton.

- ✓ **Water Engineering reviewed a total of 9 plans for proper SWMP.**
- ✓ **A total of 214 site inspections were conducted for construction site sediment and erosion control measures.**
- ✓ **Water Engineering representatives attended 3 technical workshops (acquiring 43 professional development hours).**

5.2 Post Construction BMP Design Standards (NEW)

In 2008, City of Dayton retained a contractor to develop Post Construction Best Management Practice Design Standards. The BMPs will function as a tool to help developers and designers implement the City of Dayton's post construction storm water management program. The manual includes: 1) a summary of post construction storm water permit requirements, 2) guidance on how to select non-structural post construction storm water BMPs, and 3) guidance on how to select, design, and maintain structural post construction storm water BMPs.

5.3 Ohio Department of Transportation (ODOT) Coordination (NEW)

In 2008, ODOT began a major reconstruction project of Interstate 75 through Dayton with construction continuing through 2013. To foster communication early in the construction process and to reduce future erosion and sediment control concern, the City of Dayton met with ODOT and their primary contractor KOKOSING. The City of Dayton presented Dayton's Storm Water Permit requirements for Dayton and discussed Best Management Practices.



City of Dayton representatives attend the monthly construction planning meeting where storm water, environmental concerns, and complaints (if any) are addressed.

5.4 Dayton Public School (DPS)

The Dayton Public School began construction of ten schools in 2006 with construction continuing through 2010. A meeting was convened between City of Dayton Environmental and Engineering (Inspectors) staff, and DPS and their construction and demolition contractors. Topics discussed included the City of Dayton Storm Water Ordinance and Permit, citizen complaints, storm water BMP implementation, and the proposed construction schedules. Action items from the meeting included DPS inclusion of erosion and sediment control language into their requests for proposal (RFPs), DPS held follow-up meetings with their site haulers to include sediment control in their site plans, street sweepers were added to the specifications for each site, and a point of contact list was provided to each attendee to facilitate rapid communication to resolve any potential runoff/drag out issues. Communication between DPS and the City of Dayton early in the construction schedule proved useful to reduce erosion and sediment control issues at the DPS construction sites.

Contact information exchanged for each of the assigned school construction sites and City of Dayton inspectors continued to facilitate issue resolution during routine inspections in 2008. Although the initial meeting resulted from several citizen complaints regarding drag out of sediments, fewer issues arose in 2008. This is directly attributable to improved communication and an agreed upon enforcement process.

6.0 POLLUTION PREVENTION

6.1 Inspection and Maintenance of Structural Controls

The Division of Sewer Maintenance (SM) manages this BMP element. This program involves the implementation of sewer maintenance activities, maintenance schedules, and long-term inspection procedures – including a training component -- for structural and non-structural controls to minimize pollutants discharged from the MS4.

Record keeping for the maintenance and inspection of MS4 structural controls is filed electronically. Listed below is a brief description for each activity, highlighting notable results.



6.1.1 Storm Sewer Inspection, Maintenance, Repair and Cleaning

The storm sewer conveyance system is inspected, repaired and maintained on a regular basis, or when required.

- ✓ 15 storm manholes were raised in 2008.
- ✓ Approximately 3 miles of storm sewer were inspected by closed circuit TV in 2008.
- ✓ Approximately 0.81 miles of storm sewer were cleaned in 2008

6.1.2 Catch Basin Inspection, Maintenance, Repair and Cleaning

During regular scheduled maintenance each summer, catch basins are inspected and cleaned, and are also cleaned throughout the year based on a complaint or request.

- ✓ 402 repairs to catch basins were performed in 2008.
- ✓ 7,559 catch basins were inspected and/or cleaned in 2008.

6.1.3 Pump Station Inspection and Maintenance

The City operates and maintains 15 storm water pump stations. 6 of the stations are used during high river water stage to provide relief capacity for the tributary storm sewer system. The remaining stations are operated daily to quickly drain storm water from our city streets.

- ✓ Pump stations are inspected weekly for operation, contamination, damage and/or maintenance.
- ✓ 11 cubic yards of material removed from wet wells in 2008.

6.1.4 River Valve and Gate Maintenance

River valves, or sluice gate structures, are located on the outfalls that drain areas protected by levees within the City, and are also used during high river flow to provide relief capacity for the tributary storm sewer system.



- ✓ 108 valves and/or gate structures were greased and operated in 2008.

6.1.5 Sanitary Sewers Inspections

A comprehensive inspection and repair program is in place to maintain the sanitary sewers, reducing potential sanitary sewer overflows (SSOs).

- ✓ Approximately 26 miles of sanitary sewer was inspected by closed circuit TV in 2008.
- ✓ Approximately 262 miles of sanitary sewer were cleaned in 2008.
- ✓ There were 8 SSO identified and reported to OEPA in 2008.

6.2 Street Sweeping Program

The Division of Street Maintenance is responsible for the following BMP elements:

6.2.1 Street Sweeping Schedule and Equipment

Street sweeping is accomplished on a regular basis to minimize pollutant export to receiving waters. The City owns all street sweeping equipment, and operates an average of five sweepers per day during periods of good weather.

- ✓ In 2008, Street Maintenance recorded 12,605 broom miles.
- ✓ As a result of street sweeping, 2,075 tons of debris and 15,380 cubic yards of leaves were removed from the City streets.

The Central Business District streets are swept as needed; residential streets are swept three times per year (additional days are added during leaf removal); and all thoroughfares are swept six times per year. In addition, problematic streets (construction or special event related) are swept more frequently. The following indicates the actual sweeping frequency including highways:

- Route 4 / once this year due to construction
- Route 35 / four times outside of construction zone
- I-75 / four times per year
- Residential streets / 3-4 times depending on neighborhood
- Central Business District / 6 times per year



Evaluation of the Street Sweeping technology has continued in 2008 to identify the frequency and operation procedures required to address the variety of particulate sizes encountered in storm sewer flow throughout the City. Measurements of Total Suspended Solids in specific outfall locations will assist with identifying the effectiveness of the specific sweeper types. To date, street sweeping has proven to be very effective in the removal of debris and leaves.

6.2.2 Street Maintenance Training

Street Maintenance Supervisors participate in annual training concerning activities in the City's right-of-ways. Methods are discussed which reduce storm water pollutant discharges to the MS4 during these operations. Areas of review include:

- Good housekeeping and pollution prevention BMPs (at Ottawa Yards and throughout the City) that control pollutants and reduce Storm Water impacts.
- BMPs for vehicle washing
- Street sweeping/deicing BMPs
- Sediment and erosion control BMPs
- Internal spill reporting procedures
- Pesticide and fertilizer management
- Reporting of suspicious activity or unusual river conditions

6.2.3 Leaf Collection

Leaves and yard waste are not collected with solid waste, as the City of Dayton operates a leaf collection and composting program. Leaves swept to the street are collected at least two times each fall season, and residents are notified in advance of the collection dates.

6.2.4 Dead Animal Removal

Dead animals are removed from all thoroughfares on a regular basis (must be in the right-of-way). A change in the disposal methods of animal carcasses has led to dead animals being reported in tons beginning July 2005.



- ✓ **35.6 tons of animal carcasses were disposed in 2008.**

6.3 Deicing Materials Management Program

6.3.1 Deicing Materials and Equipment (NEW)

BMPs for the application and storage of roadway deicing materials (salt and calcium chloride) have been developed. Salt (Sodium chloride) is now stored in an enclosed building at Ottawa Yards. Calcium chloride, the liquid additive, is stored in (2) –5500 gallon tanks.

In 2008, Street Maintenance purchased 10 new deicing freightliners, with computerized deicing controls. In addition all deicing vehicle controls have been set to automatic to help control salt and calcium application rates.

- ✓ **Street Maintenance maintains 48 trucks in fleet (10 new deicing freightliners with computerized deicing controls).**
- ✓ **There were approximately 17,467 tons salt applied in 2008.**
- ✓ **There were 36,000 gallons of calcium chloride applied in 2008.**

6.3.2 Deicing Personnel Training

The City annually trains all salt equipment operators on street deicing operations. Salt conservation meetings are also held several times per year to study salt demand and usage projections. In 2008, veteran employees received 4 hours of non-event training and reacquainting the drivers with their vehicles and routes. New drivers received 8 hours of training, which included classroom instruction, truck operation, map and route training, and a dry run with the veteran driver. In addition, good housekeeping BMPs are reviewed for material storage and handling.

6.4 Hazardous Materials Management Program

The Division of Environmental Management oversees a Hazardous Materials Management Program for disposal of non-routine hazardous waste for all City of Dayton Departments. A certified disposal contractor is retained to manage the disposal process. Through this process, 17 drums of used oil were removed. Other items disposed included: Fire Extinguishers, calibration gas cylinders, and paints. This hazardous waste



management system was helpful in removing significant materials from storm water exposure, thereby reducing the risk for possible storm water contamination.

6.4.1 Montgomery County, Solid Waste District Collaboration

The Solid Waste District operates two facilities in Montgomery County for trash disposal and recycling; the North facility in Vandalia and the South facility in Moraine. For additional information on locations, hours of operations, and disposal fees for trash, tires and yard waste, go to: <http://www.curby.org/>

Administration Building

2550 Sandridge Drive
 Moraine, OH 45439

South Plant

1001 Encrete Lane
 Moraine, OH 45439

North Plant

6589 North Webster St.
 Vandalia, OH 45414

Operating Hours:			
		Solid Waste /Yard Waste/ Appliance/Tire Disposal	Comingled/Mixed Paper Cardboard/Electronics Recycling
North	M-F	6:00am-8:00pm	6:00am-8:00pm
	Sat	8:00am-3:00pm	8:00am-3:00pm
	Tues	8:00am-2:00pm - residential household hazardous waste dropoff	
South	M-F	6:00am-8:00pm	7:30am-4:00pm
	Sat	8:00am-3:00pm	8:00am-12:00pm
	Sat	8:00am-2:00pm - residential household hazardous waste dropoff	



6.5 Pesticide and Fertilizer Management

The City of Dayton has implemented standard operating procedures with BMPs for pesticide and fertilizer management, application and disposal. Standard Operating Procedures are designed to reduce the discharge of pollutants through the MS4 to the maximum extent practicable.

The DEM reviews and approves the application of herbicides and pesticides within the Well Field Protection Area (WFPA).

Historical data of pesticide and fertilizer sampling analysis (1997-2006) was compiled and sampling locations and results entered into GIS for tracking and future planning. A GIS based map was created to show historical analysis and detections within the City of Dayton over the past 10 years. There have been no significant detections of pesticides in any surface water or groundwater sampled.

7.0 INDUSTRIAL AND RELATED FACILITIES PROGRAM

7.1 Industrial Facilities Inventory

There are over 500 storm sewer outfalls and their associated watersheds within the City of Dayton MS4. DEM has expanded inspections on a system-wide basis to inventory priority industrial sources discharging through the MS4, following the requirements of Part III, H of the OEPA NPDES permit. Due to the vast amount of industry in Dayton, we completed identification of all commercial and industrial facilities that drain to the four major outfall areas. Through review of the Ohio EPA NPDES Permits list annually, DEM maintains a City of Dayton business directory and records facilities with NPDES permits.

7.2 Inspections

Non-routine inspections were completed based on illicit discharge requirements to trace spills to their origin or to identify suspect floor drain connections to the storm sewer system. Other routine inspections were conducted to enhance awareness of the SWMP. Facility inspections include the identification of floor drains, catch basins,



and any other potential pollution source. It is the program's future goal to become more proactive in performance of routine inspections.

✓ **122 industrial facilities were inspected in 2008.**

7.2.1 Facilities Inspection Form (NEW)

A Facilities Inspection Check Sheet was updated to standardize the collection of facilities information. The form includes contact information, Storm Water discharges (if any), drain locations, storage tanks, and hazardous waste management. A Facilities Check Sheet is included in [Appendix D](#).

7.3 Enforcement Response Plan (NEW)

DEM has updated the Enforcement Response Plan to include guidelines for implementing enforcement actions to assure users of the City's MS4 and occupants of the Source Water Protection Area comply with the provisions of the City's ordinances.

The Enforcement Response Plan addresses formal and informal response options including but not limited to: Warning Letter, Notice of Violation, Stop Work Order, Cost of Abatement Letter with Invoice, Administrative Fees, Termination of Water Services, and Civil or Criminal Actions.

Summary of Enforcement Actions

In each complaint, emergency response, or spill situation, enforcement action will be taken if a responsible party is discovered. In 2008 the program's enforcement actions have included letters, warning letters, and notices of violation. In each letter, the violation is stated and it is requested that the responsible party take immediate steps to prevent, control, and abate storm water pollution. In some instances, the responsible party is required to reply, in writing, with their plan to cease storm water pollution. Inspections including photo documentation and sampling may precede enforcement actions.

✓ **122 follow-up letters were written in 2008 as a result of storm water inspections.**



8.0 CONCLUSION (NEW)

The City of Dayton had a very successful year in 2008; and will continue to implement projects to improve storm water quality through the SWMP. Review of the Schedule of Compliance table below shows each of the Permit Source Control components accomplished and/or ongoing for this permit cycle.

Permit Source Control	Component	SWMP Activity	Compliance Schedule	Status
Education and Outreach	Education materials	Provide information on causes and prevention	Ongoing	Accomplished
	Oils and toxins - Identify pollutant sources	Publicize locations of public recyclers of household waste, used oil and tire recyclers etc.	12 months	Accomplished/ Ongoing
Public Involvement and Participation	Identify target audience	Involve Stakeholders	12 months	Accomplished
	Activities	Identify public involvement programs	Ongoing	Accomplished
	Publicize hotline	Publicize telephone number for reporting illicit discharges	Ongoing	Accomplished
Illicit Discharge	Mapping	Update outfall list	Ongoing	Accomplished
	Detection plan	Fully develop storm sewer map. Field screen 20% of major outfalls	Annually	Accomplished
	Tracking database	Develop database for sanitary sewage infiltration & other waste	18 months	Ongoing
Construction Sites	Plan review	Review SWPPPs	Ongoing	Ongoing
	Inspection protocol	Construction site inspection with checklist	Ongoing	Accomplished
	Ordinance	Develop requirement for post construction	12 months	Accomplished
	Planning documents	Develop planning and guidance documents for implementing Post Construction BMPs	12 months	Accomplished/ Ongoing



Permit Source Control	Component	SWMP Activity	Compliance Schedule	Status
Pollution Prevention	Municipal operations	List all municipal operations impacted by O&M program	12 months	Accomplished
	P2 procedures	Establish P2 procedures to minimize discharges from municipal yards and shops	18 months	Accomplished/ Ongoing
	Deicing program	Educate personnel performing deicing operations	Ongoing	Accomplished
	Employee training	Develop and implement routine training program for park and open space maintenance	Ongoing	Ongoing
Industrial Program	Inventory of industrial facilities	Establish schedules of industries to be inspected during term of the permit	Ongoing	Ongoing
		Develop inspection form	6 months	Accomplished
	Training and Education	Develop and implement routine employee training programs that perform industrial site inspections	12 months	Accomplished/ Ongoing
	Inspection	Review of facilities monitoring data, SWP3s and NPDES permits	12 months	Ongoing



Permit Number: 1PI0003*CD
Approved By: Manager – DEM
City of Dayton MS4 Annual Report 2008

Effective Date: 1 Jan 2006
Report Date: March 1, 2009
Version 2.0

Appendix A

Community Education Log 2008



Permit Number: 1PI0003*CD
Approved By: Manager – DEM
City of Dayton MS4 Annual Report 2008

Effective Date: 1 Jan 2006
Report Date: March 1, 2009
Version 2.0

Appendix B

City of Dayton Internal Spill Notification Contact List



Permit Number: 1PI0003*CD
Approved By: Manager – DEM
City of Dayton MS4 Annual Report 2008

Effective Date: 1 Jan 2006
Report Date: March 1, 2009
Version 2.0

Appendix C

Outfall Drainage Area Delineation Map



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City of Dayton MS4 Annual Report 2008

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Appendix D

Dry Weather Screening Form



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City of Dayton MS4 Annual Report 2008

Effective Date: 1 Jan 2006
Report Date: March 1, 2009
Version 2.0

Appendix E

Facility Inspection Check Sheet