

City of Delaware
Storm Water Management Plan



Authorization for Small Municipal Storm Sewer
Systems to Discharge Storm Water under the National
Pollutant Discharge Elimination System Ohio EPA
General Permit No: OHQ000001 dated 12/27/02

June 15, 2007
Project No. 14573222

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Acronyms

Acronyms used in this report include:

AWARE	Alliance for Watershed Action and Riparian Easements
BMP(s)	Best Management Practice(s)
CLUP	Comprehensive Land Use Plan
CWA	Clean Water Act
DOT	Department of Transportation
E&SC	Erosion and Sediment Control
GPS	Global Positioning System
HBA	Home Builder's Association
HSTS	Home Sewage Treatment System
MCM	Minimum Control Measure
MEP	Maximum Extent Practical
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheet
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
Ohio EPA	Ohio Environmental Protection Agency
OSU	The Ohio State University
PUD	Planned Unit Development
SWC	Storm Water Committee
SW	Storm Water
SWCD	Soil and Water Conservation District
SWMC	Storm Water Management Committee
SWMP	Storm Water Management Program
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WPCA	Water Pollution Control Act

1.0 Introduction

1.1 History of the Clean Water Act and Storm Water Management Regulations

In 1972, the Clean Water Act (CWA) was enacted to strengthen the Water Pollution Control Act (WPCA) of 1948. The CWA was intended to prohibit the discharge of any pollutants to Waters of the United States from a point source unless the discharge is authorized under a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES program initially focused on discharges from industrial processes and municipal sewage treatment facilities. As pollution control measures for these pollutant sources were implemented and refined, it became increasingly evident that additional sources of pollution were contributing to water quality degradation. Specifically, storm water runoff was identified as a major cause of water quality impairment along with agriculture and silviculture practices.

Since 1972 and the passage of the CWA, the quality of our Nation's waters have improved dramatically. Despite this progress, degraded water bodies still exist. According to a 1996-2000 National Water Quality Inventory, a biennial summary of State surveys of water quality, an estimated forty (40) percent of surveyed water bodies are still impaired by pollution or do not meet national, state or local water quality standards.

Congress in 1987 to amend the CWA mandating that the United States Environmental Protection Agency (USEPA) develop a phased implementation strategy for the NPDES program. Phase I of the USEPA storm water program was promulgated in 1990 and relies on NPDES permit coverage to address storm water run-off from:

- Medium/Large Municipal Separate Storm Sewer Systems (MS4s) generally serving populations of 100,000 or greater,
- Construction activity disturbing 5 acres of land or greater, and
- Ten categories of Industrial Activity.

The Storm Water Phase II program is the next step and is an extension and expansion of the Phase I program. This program requires additional owner/operators of small MS4s in urbanized areas, defined by the year 2000 US Census tract data, and owner/operators of small construction sites to address storm water run-off through the use of NPDES permits. This Phase addresses the small MS4s in addition to the following Non-traditional Federal, State and Tribal agencies:

- U.S. Department of Defense
- State Hospitals
- State Prisons
- State Departments of Transportation (DOT) - not previously covered under a Phase I permit
- Universities

- Tribal Areas identified as small MS4s owner/operators

The Phase II rule was finalized in December 1999 and required a submittal date of March 2003. On December 27, 2002, Ohio EPA enacted General Permit (No.OHQ000001) for the authorization for small municipal separate storm sewer systems to discharge storm water under the NPDES (Ohio EPA's Phase II General Permit). The Ohio EPA's Phase II General Permit identifies the following six Minimum Control Measures (MCM):

- Public Education and Outreach on Storm Water Impacts
- Public Involvement and Public Participation
- Illicit Discharge Detection and Elimination
- Construction Site Storm Water Runoff Controls
- Post Construction Storm Water Management in New Development and Redevelopment
- Pollution Prevention/Good Housekeeping for Municipal Operations

As a regulated entity in this program, The City of Delaware is required to develop a Storm Water Management Plan which identifies Best Management Practices (BMPs) which satisfy the permit requirements to the Maximum Extent Practicable (MEP). The practices, programs, policies and projects incorporated in the Storm Water Management Plan evaluated cost, manpower, maintenance and reporting requirements of each of the BMPs presented in the plan.

The following information is presented to support the Ohio EPA's Phase II General Permit for coverage associated with storm water discharges governed by the permit requirements. Sections I and II of the permit address coverage and Notice of Intent requirements respectively. The Notice of Intent (NOI) has been completed and the square mileage of the regulated area has been estimated to determine the fee to be submitted with the NOI and are submitted independent of this Storm Water Management Plan (SWMP).

1.2 Purpose of the Permit

The City of Delaware (City) is an Appendix 7 community that is seeking authorization for their Small Municipal Separate Storm Sewer Systems (MS4) to discharge storm water under the National Pollutant Discharge Elimination System. In compliance with the provisions of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., and the Ohio Water Pollution Control Act (Ohio Revised Code 6111) entities that discharge storm water from Small MS4s, as defined in Part 7 of this permit are authorized by the Ohio Environmental Protection Agency, hereafter referred to as "Ohio EPA," to discharge from the outfalls and to the receiving surface waters of the state identified in their Notices of Intent (NOI) Application form on file with Ohio EPA in accordance with the conditions specified in this permit. The primary objective of this requirement, outlined in *40 CFR Parts 9, 122, 123 and 124, "National Pollutant Discharge Elimination System-Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges"* issued by the USEPA in December 1999, is to require the development of a storm water management plan (SWMP) that addresses the six (6) minimum control measures set forth in the regulation.

1.3 Legal Authority to Implement the Storm Water Management Program

Sections 3.1.1.2 and 3.1.1.3 of the permit require statements indicating legal authority to implement selected Best Management Practices (BMPs) associated with permit compliance. Varying levels of legal authority to implement a storm water program exist. Many of the BMPs discussed in this SWMP could be required under the subdivision regulations, building codes or health regulations of the City.

1.4 Financial Ability to Implement the Storm Water Management Program

The permit clearly states that all selected measurable goals and Best Management Practices are to be to the Maximum Extent Practicable (MEP). This also includes the financial impact of implementing a program of this type. The financial abilities of the City to implement the SWMP were taken into consideration during development and BMP selection.

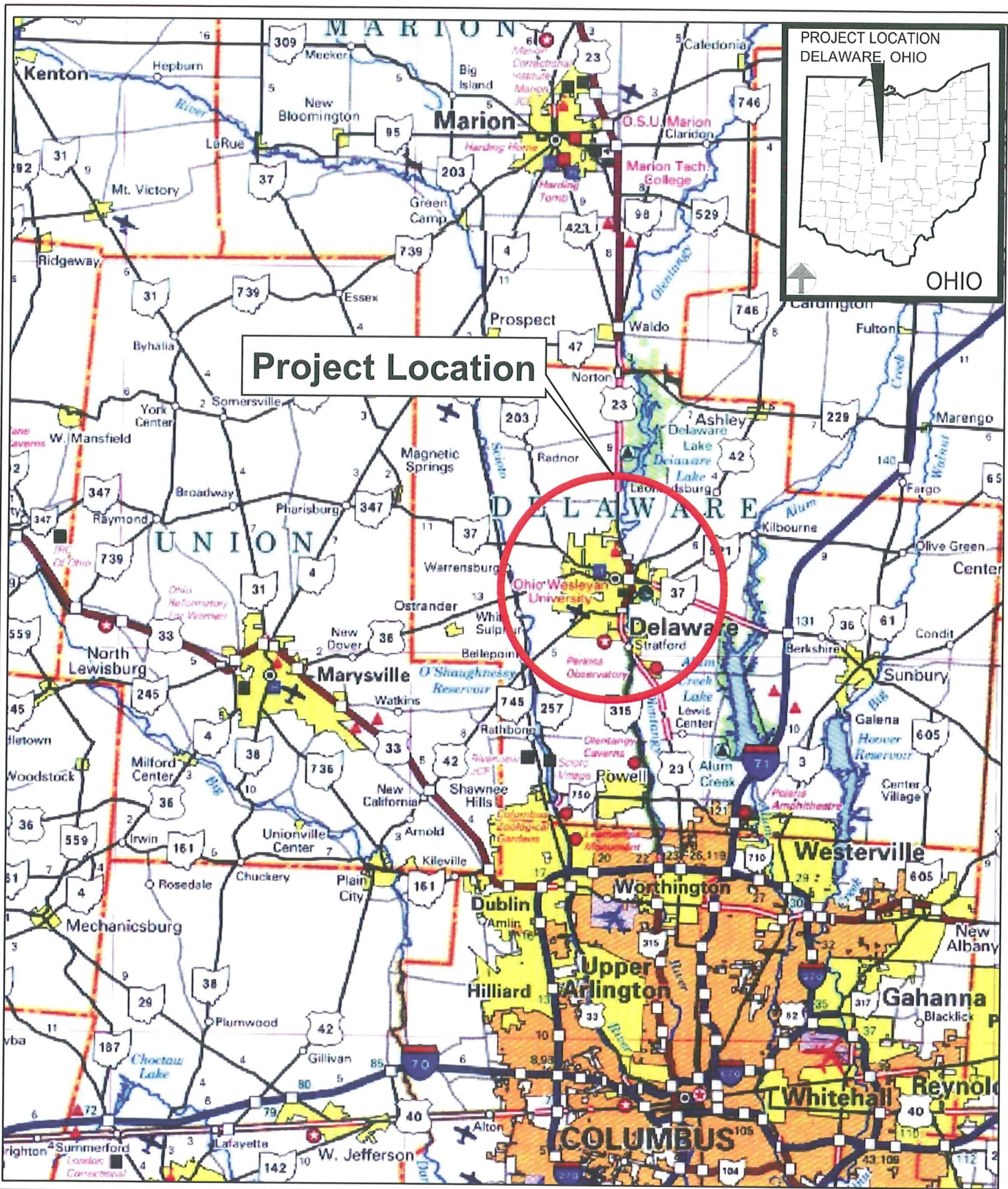
The City of Delaware adopted Ordinance 98-61 that established a storm water utility and fee to allow the City to “own, operate, maintain, repair, improve, and extend the existing a storm water drainage facilities servicing the City.” This utility and fee are not specifically directed to be used for the requirements of the Phase II program. In Year 1 and 2, the City will perform a utility fee Level of Service assessment to assess the feasibility of increasing the existing utility fee to address the financial needs associated with implementation of the Phase II SWMP or develop an alternative funding source.

1.5 Overview of Community Storm Water System

The SWMP's area lies in central Ohio as shown on Figure 1. The Olentangy River and its tributary Delaware Run are the major water courses draining the City. The City of Delaware has an MS4 drainage area of approximately 18.8 square miles. The majority of the City has storm and sanitary sewers.

The storm water drainage system for the City is a combination of ditches that run parallel to City roads, and a closed pipe system. The majority of the closed pipe systems are located in subdivisions. The City is in the process of updating its Storm Water Capital Improvement Plan, which will be modified as necessary to support practices identified in the SWMP.

The City operates a Municipal Separate Storm Sewer Systems (MS4). The Phase II program regulates MS4s located wholly or partially within urbanized areas, as defined by the United States Bureau of the Census. Urbanized areas include cities and townships with populations greater than 10,000 and less than 100,000 people. The permitted facilities under the City's jurisdiction include City roads and other City facilities located within the urbanized areas as shown on Figure 2.



Project Location



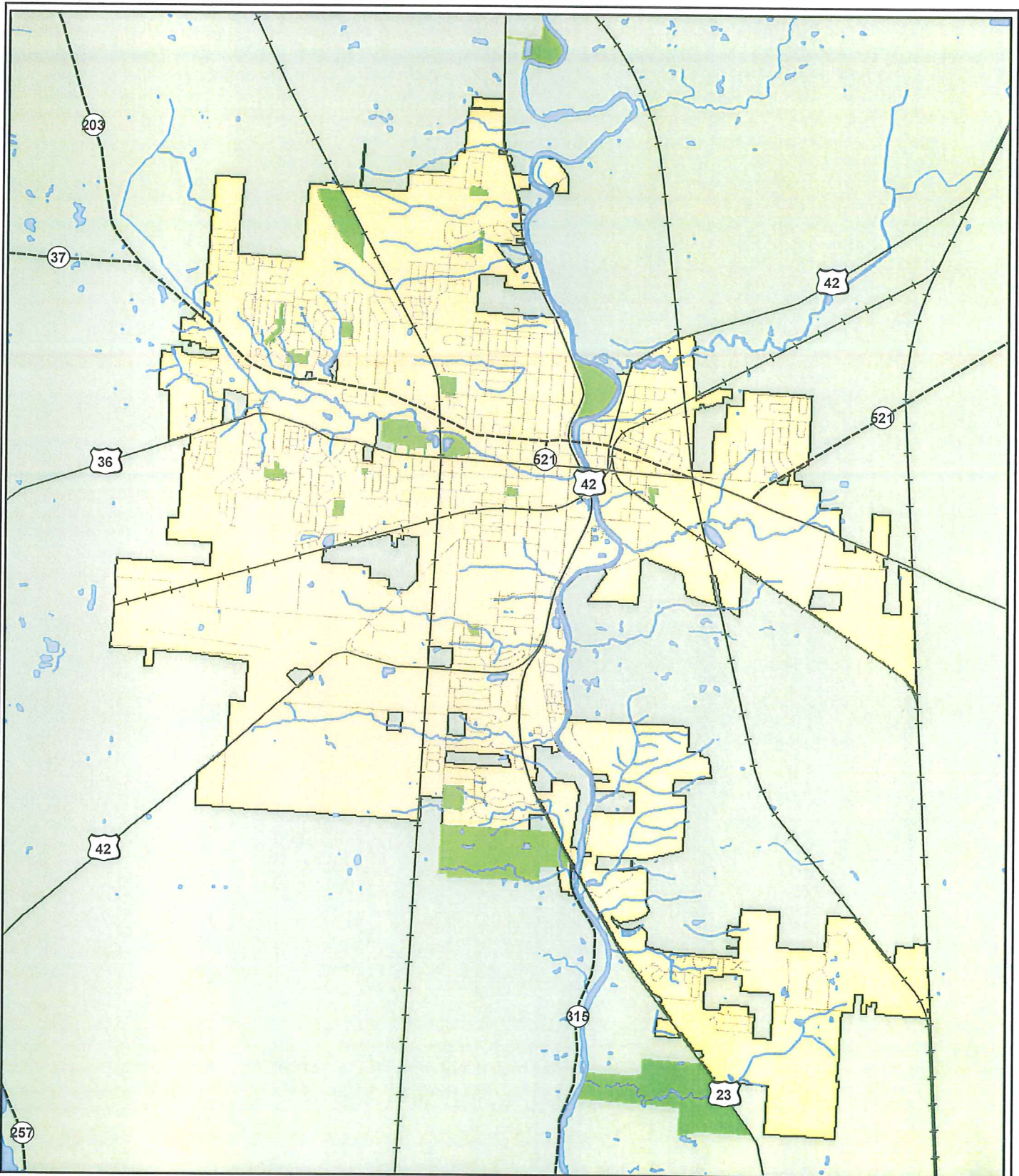
STORMWATER MANAGEMENT PLAN

PROJECT LOCATION
September 2006



URS Cleveland
5000 Feet

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STORMWATER MANAGEMENT PLAN

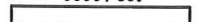
BASE MAP
February 2007

Legend

- Rivers & Lakes
- Parks
- City & MS4 Boundary
- County



URS Cleveland
5000 Feet



1.6 Description of Permit Development and Decision Process

To develop this SWMP, the Applicant followed the steps detailed below:

1. Reviewed the specific requirements of the Ohio EPA NPDES Phase II General Permit:

The first step in the SWMP development process was to complete an internal audit of current practices, policies, resolutions, regulations and other storm water related functions or procedures already in place in the City. Upon completion of this audit, Best Management Practices (BMPs) were selected and reviewed by the Committee. A final list of BMPs, with an implementation schedule, measurable goals, responsible party, and rationale for selection was developed for the SWMP.

2. **Approval:** The City of Delaware Public Utilities Department in combination the Storm Water Management Committee will be the responsible department/committee for the implementation reporting and overall program management of the City's Phase II storm water management program. It is anticipated that the following offices, departments, parties and divisions will play key roles with implementing, operating and maintaining storm water management practices, policies, procedures and protocols throughout the City:

- City Council
- Public Utilities Department
- Storm Water Management Committee
- Planning Department
- County Health Department
- County Soil and Water Conservation District
- City Solid Waste Division
- City Engineering
- City Sanitary Engineering
- City Auditor
- City GIS
- City Prosecutor

Section Two

Minimum Control
Measures

2.0 Minimum Control Measures

Tables have been developed that describe each proposed BMP, and show the schedule, measurable goals, responsible parties, and rationale for the selection of each BMP. These tables form the basis of the following text sections. The bold italic text in the following text sections was taken from Ohio EPA's Phase II General Permit.

2.1 Public Education and Outreach, and Public Involvement and Participation (MCM #1 and #2)

The Permit Requirements for the Ohio EPA NPDES Phase II Storm Water Permit are as follows:

3.2.1.1: Implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and steps that the public can take to reduce pollutants in storm water runoff. In the case of non-traditional MS4s (e.g. universities, hospitals, prisons, military bases, and other government complexes), the permittee is only required to provide educational materials and outreach to employees, on-site contractors, and individuals using regulated facilities.

3.2.2.1: Comply with State and local public notice requirements when implementing a public involvement/participation program. In the case of non-traditional MS4s (e.g. ODOT, Universities, hospitals, prisons, military bases, and other government complexes), the permittee is only required to provide educational materials and outreach to employees, on-site contractors, and individuals using regulated facilities.

2.2 Public Involvement and Public Education (PIPE) Plan

The City has combined MCM 1 and MCM 2 for convenience in this SWMP. These two MCMs are similar and require similar approaches to BMPs and implementing these program elements. The BMPs, measurable goals, responsible parties and rationale in this PIPE Plan are presented in Table 1 in Appendix A.

In addition to Table 1 the City has documented the decision process with the following information per Ohio EPA NPDES permit requirement 3.2.1.2 and 3.2.2.2.

3.2.1.2.1 & 3.2.1.2.2: The City must inform employees, on-site contractors, and individuals using City of Delaware facilities about the steps they can take to reduce storm water pollution and how to become involved in the storm water management program.

The City will inform the public about the steps they can take to reduce storm water pollution and to get involved with the City of Delaware's SWMP program through a combination of workshops, community activities, print media, and web site postings.

3.2.1.2.3 & 3.2.2.2.3: Who are the target audiences for the Applicant's public education and involvement plan who are likely to have significant storm water

impacts and why were those target audiences selected? Include a description of the types of ethnic and environmental groups engaged and steps to involve all potentially affected stakeholders including businesses, trade associations, environmental groups, homeowners associations, and educational organizations.

The target audience includes employees and citizens. Contractors and individuals using facilities subject to this permit. The City, Delaware County departments and agencies involved in preparation of this SWMP include the City Public Utilities Department, Delaware County Soil and Water Conservation District (SWCD), and the City Planning Department. Several public involvement activities, including proposed newspaper articles, newsletters and web site information, are targeted toward very broad audiences. Other education efforts will include brochures, materials and workshops, aimed at audiences such as businesses, universities, homeowners associations, and contractors.

3.2.1.2.4: What are the target pollutant sources your public education plan is designed to address?

Ohio EPA completed the Draft Total Maximum Daily Loads (TMDL) for the Olentangy River Watershed on October 12, 2006. The City of Delaware lies within the Lower Olentangy Watershed (Hydrologic Unit Codes 05060001 120) as described by that document. The listed causes for impairment for the watershed are as follows (Causes referenced from the *Olentangy River Watershed Report*, October 12, 2006):

- Nutrients
- Sediment
- Habitat Alteration
- Flow Alterations
- And Bacteria

The Olentangy River TMDL identified the above causes of impairment except flow alteration. The City will focus on the above target pollutant sources. The City of Delaware identified a number of objectives in the *City of Delaware 2004 Comprehensive Plan* which incorporate designs and practices to protect water resource quality. These include:

- Limit development in the 100-year floodplain to less than 5% impervious cover
- Promote the establishment of conservation easements within the 100-year floodplain
- Promote re-forested buffers of 120 feet in width along the main stem of the Olentangy River
- Promote forested buffers of 60 and 30 feet in width along major and minor water tributaries respectively
- Reforest areas with tree buffers
- Encourage Low Impact Development
- Propose developing an environmental analysis map for all new development

- Create a GIS based resource inventory

The focus of the SWMP will be identifying “hot spots” determined by a systematic inventory of the City’s regulated areas. The impacts to be addressed will be determined by the inventory and the outfall illicit discharge detection program (IDEP) that will be conducted during this five-year permit term.

3.2.1.2.5: What is your outreach strategy, including mechanisms (e.g. printed brochures, newspapers, media, workshops, etc.) you will use to reach your target audiences, and how many people you expect to reach with the outreach strategy over the permit term?

The City SWMP will rely on existing media to communicate with the target audiences. These existing resources include newspaper articles, newsletters to be provided by the City, and the City web site. These existing resources will be supplemented with educational sessions outlined in Table 1 (Appendix A). Milestones listed in Table 1 for the various practices selected include efforts to document the number of people reached.

3.2.2.2.1: How you have involved the public in the development and submittal of your NOI and SWMP.

The City Council members will be briefed on the storm water management plan. A draft of this SWMP will be made available to the public on the City web page starting in January 2007. A Public Notice indicating the availability of the SWMP will be posted on the web page and published in the Delaware Gazette in January 2007. The SWMP will also be available for review and comment at the City Public Utilities Department offices. A summary of the comments and the responses to those comments developed during the public comment period on the Draft SWMP can be provided upon request.

3.2.2.2.2: What is your plan to actively involve the public in the development and implementation of your plan?

A variety of means to communicate with and educate the public are outlined in Table 1 in Appendix A. Table 1 lists opportunities for the public to comment on the SWMP during the 5-year permit term. The table also identifies activities in which members of the public can participate in the implementation of the SWMP.

3.2.2.2.4: What types of public involvement activities are included in your plan? Where appropriate consider the following types of public involvement activities:

3.2.2.2.4.1: Citizen Representatives on storm water management panel.

As the City moves from planning to implementation over the first two years of the permit term, it will form Storm Water Management Committee that will include a citizen representative and a development community representative to collect ideas, concerns and comments from these stakeholder groups.

3.2.2.2.4.2: Public hearings.

The SWMP was available for review at the City Public Utilities Department offices beginning in January 2007. The City will hold a City Council meeting in January or

February 2007 to discuss the SWMP. Additional public hearings will be scheduled if substantial modifications are required during the 5-year permit term.

3.2.2.2.4.3: Working with citizen volunteers willing to educate others about the program.

Current plans call for using existing agencies and groups to lead the public education efforts. As the SWMP is implemented over the five-year permit term, the Storm Water Management Committee (SWMC) will identify opportunities for citizen volunteers to participate.

3.2.2.2.4.4: Volunteer monitoring or stream clean-up activities.

The City helps sponsor, or participates in monitoring or clean-up activities. These will be continued and expanded where possible.

3.2.1.2.6 & 3.2.2.2.5: Who is responsible for overall management and implementation of your Public Education and Involvement Plan?

The responsible parties are listed in Table 1 in Appendix A.

3.2.1.2.7 & 3.2.2.2.6: How will you evaluate the success of this minimum measure, including how you selected the measurable goals for each of the BMPs?

Measures to evaluate each practice are listed in Table 1 in each Appendix A.

2.3 Illicit Discharge Detection and Elimination (MCM #3)

The Permit Requirements for the Ohio EPA NPDES Phase II Storm Water Permit are as follows:

3.2.3.1.1: Develop, implement, and enforce a program to detect and eliminate illicit discharges into your small MS4 (for illicit discharges to your MS4 via a neighboring interconnected MS4, you are only required to inform the neighboring MS4 and the Ohio EPA in your annual report submission, of their existence).

3.2.3.1.2: Develop a storm sewer system map showing the location of all outfalls and the names and locations of all surface waters of the State that receive discharges from those outfalls.

3.2.3.1.2.1: Within five years of when your coverage under this general permit is granted, you must submit the following to Ohio EPA:

3.2.3.1.2.1.1: A list of all on-site sewage disposal systems connected to discharge to your MS4 (a.k.a. home sewage treatment systems (HSTS)) including addresses.

3.2.3.1.2.1.2: A storm sewer map showing the location of all HSTS connected to your MS4. This map shall include details on the type and size of conduits/ditches in your MS4 that receive discharges from HSTSs, as well as the water bodies receiving the discharges from your MS4.

3.2.3.1.3: *To the extent allowable under State or local law, effectively prohibit through ordinance or other regulatory mechanism illicit discharges to your storm sewer system and implement appropriate enforcement procedures and actions.*

3.2.3.1.5: *Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.*

2.3.1 Illicit Discharge Detection and Elimination Plan

The BMPs, measurable goals, and responsible parties in this Illicit Discharge Detection and Elimination Plan are detailed in Table 2 in Appendix A. In addition to Table 2, per the Ohio EPA General Permit requirement 4.2.3.2, we are documenting our decision process with the following information required by the General Permit.

3.2.3.2.1: *How you will develop a storm sewer map showing the location of all outfalls and the names and location of all receiving waters. Describe the sources of information you used for the maps, and how you plan to verify the outfall locations with field surveys. Describe how your map will be regularly updated.*

The City intends to implement a city-wide GIS program that will maintain many of the data themes needed to complete the background mapping for a storm sewer map. The City maintains an inventory list of all culverts within their jurisdiction. A base map will be assembled, consisting of the city background mapping and the culvert inventory. Once the base map is assembled, the process of mapping outfalls will begin. The SWMP calls for the City to use real time corrected Global Positioning System (GPS) surveying (sub-meter accuracy) to map outfalls. The SWMP system will be completely mapped by Year 5. Annual updates will be performed using GPS surveys.

3.2.3.2.2: *The mechanism (ordinance or other regulatory mechanism) you will use to prohibit illicit discharges and why you chose that mechanism. If you need to develop this mechanism, describe your plan and a schedule to do so. If your ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with your program.*

The City will be developing a model regulation and will work to adapt this model and draft resolution language to prohibit illicit discharges. As detailed in Table 2, the City will review this resolution and adopt in Year 2.

3.2.3.2.3: *Your plan to ensure through appropriate enforcement procedures and actions that your illicit discharge regulation is implemented.*

Table 2 indicates that the City will adopt appropriate resolution language by Year 2 that enables appropriate enforcement procedures, to the extent allowable under state and local laws.

3.2.3.2.4: *Your plan to detect and address illicit discharges to your system, including discharges from illegal dumping and spills. Your plan must include*

dry weather field screening for non-storm water flows and field tests of selected chemical parameters as indicators of discharge sources. Your plan must also address on-site sewage disposal systems (including failing on-lot HSTS and off-lot discharging HSTS) that flow into your storm drainage system. Your description must address the following at a minimum:

3.2.3.2.4.1: Procedures for locating priority areas which includes areas with higher likelihood of illicit connections (e.g. areas with older sanitary sewer lines, for example) or ambient sampling to locate impacted reaches.

3.2.3.2.4.2: Procedures for tracing the source of an illicit discharge, including specific techniques you will use to detect the location of the source.

3.2.3.2.4.3: Procedures for removing the source of an illicit discharge.

3.2.3.2.4.4: Procedures for program evaluation and assessment.

The Public Utilities Department will examine each outfall and storm conveyance for evidence of dry weather flows. The Delaware County General Health District (DCGHD) is currently developing a list of all known HSTS's in the County. The City, in conjunction with DCGHD, has committed to mapping all of the HSTS's throughout the City. The City's plan is to map HSTS's using real-time corrected GPS surveying.

Illicit discharges can be detected using a combination of dry weather screening and wet weather sampling. If flows are detected in storm water conveyances during dry weather, it is logical to conclude that sewage or effluents other than storm water are responsible. In addition, outfalls, catch basins, manholes and pipes can be inspected for stains and deposits. Potentially illicit discharges will be examined for odors or other signs of sewage. In addition, specific tests for the presence of fecal coliforms, ammonia, and surfactants will be performed.

The volume of each detected flow will be determined. In sewerred areas the process will involve examining manholes, basins and pipes upstream from the area where the illicit discharge was detected, until the discharge is no longer detected. In ditched areas, the ditch will be examined upstream of the discharge. Detected illicit discharges will be traced to the source and eliminated. In sewerred areas appropriate steps will be taken to replace those pipes or other structures that are leaking sewage into the storm system.

In areas without sewers, the causes of illicit discharges are generally failing septic systems. The DCGHD will issue orders to repair or upgrade systems as required. According to the draft TMDL report for the Olentangy Watershed (October 12, 2006), the DCGHD has received funding through a Section 319(h) grant (awarded in 2005) to address failing HSTS in the county. The DCGHD also intends to seek funding for assistance with selected property owners to repair or replace existing HSTSs.

To evaluate the effectiveness of this program, the City will track the number of illicit discharges detected and removed over the 5-year period. We anticipate that by Year 4 the number of illicit discharges detected should begin to decrease.

3.2.3.2.5: How you plan to inform public employees, businesses, and the general public of the hazards associated with illegal discharges and improper disposal of waste. Include in your description how this plan will coordinate with your public education minimum measure and your pollution prevention/good housekeeping minimum measure.

The PIPE section of this SWMP (MCM 1 and 2) includes steps to educate the target audiences regarding the hazards associated with illicit discharges.

3.2.3.2.6: Who is responsible for overall management and implementation of your storm water illicit discharge detection and elimination plan and, if different, who is responsible for each of the BMPs identified for this plan?

Table 2 in Appendix A identifies the responsible parties. In general, responsibility for ensuring all the BMPs are implemented lies with the City Council members and the City Storm Water Management Committee. For the Illicit Discharge program, the City Public Utilities Department has the responsibility for detecting and eliminating non storm water discharges.

3.2.3.2.7: How will you evaluate the success of this minimum control measure, including how you selected the measurable goals for each of the BMPs?

Table 2 in Appendix A indicates various ways the City will evaluate the success of the selected BMPs. The most obvious measurable goals were those associated with implementing the Illicit Discharge program. The first goals set were for mapping the storm sewer system. Given the size of the area to be mapped, and the limited funds available for the effort, it seemed prudent to measure the percentage of the total area mapped in a given year over the 5-year program. The schedule appears in Table 2 (Appendix A).

Implementation of the other BMPs is spread over the 5-year permit term. Again, the logical measure of success seemed to be meeting milestone dates for implementing the BMPs. These milestones are listed in Table 2 (Appendix A).

2.4 Construction Site Storm Water Runoff Control (MCM #4)

The Permit Requirements for the Ohio EPA NPDES Phase II Storm Water Permit are as follows:

3.2.4.1: Develop, implement, and enforce a program to reduce pollutants in any storm water runoff to your small MS4 from construction sites that result in a land disturbance of greater than or equal to 1 acre. Reduction of storm water discharges from construction activities disturbing less than 1 acre must be included in your program if that construction activity is part of a larger common plan of development

or sale that would disturb 1 or more acres. Your program must include the development and implementation of, at a minimum:

3.2.4.1.1: An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State or local law.

3.2.4.1.2: Requirements for construction site operators to implement appropriate erosion and sediment control BMPs.

3.2.4.1.3: Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary wastes at the construction site that may cause adverse impacts to water quality.

3.2.4.1.4: Procedures for site plan review which incorporate consideration of potential water quality impacts.

3.2.4.1.5: Procedures for receipt and consideration of information submitted by the public.

3.2.4.1.6: Procedures for site inspections and enforcement of control measures.

2.4.1 Construction Site Storm Water Control Plan

The BMPs, measurable goals, and responsible parties in this Construction Site Storm Water Runoff Control Plan are detailed in Table 3 of Appendix A. In addition to Table 3, per Ohio EPA NPDES General Permit requirement 4.2.4.2, we are documenting our decision process with the following information required by the permit.

3.2.4.2.1: The regulatory mechanism you will use to require E&SC at construction sites and why you chose that mechanism. If you need to develop this mechanism, describe your plan and schedule to do so. If your mechanism is already developed, include a copy of the relevant sections with your SWMP.

For the City, the existing Erosion and Sediment Control (E&SC) requirements are found in the Subdivision Regulations. These regulations will be modified during the 5-year permit term to meet compliance requirements and address Erosion and Sediment Control from construction sites.

The Delaware SWCD has agreed to assist the City in educating target audiences, site plan review, inspection, and BMP selection for projects. A memorandum of understanding (MOU) that describes the relationship between SWCD and the City will be developed in Year 1 of the Program.

3.2.4.2.2: Your plan to ensure compliance with your E&SC regulatory mechanism, including the sanctions and enforcement mechanisms you will use to ensure compliance. Describe your procedures for when you will use

certain sanctions. Possible sanctions include non-monetary penalties (such as a stop work order), fines, bonding requirements, and/or permit denials for non-compliance.

Given the complexity of the enforcement process, the appropriate enforcing authority for the City will be identified over the course of the 5-year plan.

3.2.4.2.3: Your requirements for construction site operators to implement E&SC BMPs and control waste at construction sites that may cause adverse impacts on water quality. Such waste includes discarded building materials, concrete truck washouts, chemicals, litter, and sanitary waste.

Table 3 of Appendix A indicates goals and schedules for implementing BMPs for construction sites. Included are steps to control concrete truck washout, litter control, construction/building waste material control and access to construction sites. For each of these items the SWMP indicates that Year 1 of the program will be spent developing controls. These will be implemented in subsequent years and success will be monitored.

3.2.4.2.4: Your procedures for site plan review, including the review of pre-construction site plans, which incorporate considerations of potential water quality impacts. Describe your procedures and the rationale for how you will identify certain sites for site plan review, if not all plans will be reviewed. Describe the estimated number and percentage of sites that will have pre-construction site plan review.

Platted subdivision plans are reviewed for compliance with storm water issues by City engineering staff, Planning and Community Develop Department, Public Works, Public Utilities and with potential future assistance from Delaware SWCD. Subdivision plans must contain a Storm Water Pollution Prevention Plan. To begin the process, an applicant for subdivision approval submits a preliminary plat. The City Engineer, City Planning Commission, and the Delaware SWCD review the plan. The review is driven by the 2003 Ohio EPA Construction Permit, and the City subdivision regulations. The County Board of Health also reviews sewage disposal aspects of the plan at this time. Currently not all development requires a plat. Most non-residential and some residential development does not require platting. In addition, most stormwater and other project utility information is not provided until final platting or submission of the development plan.

The SWMP calls for the City to develop new or updated drainage and storm water design criteria. This regulation will include items that will be reviewed for each site plan. The City will also develop a checklist that can be used to implement the new regulations. The City will develop a tracking mechanism for plan reviews, field inspections made, violations noted, and corrective actions taken.

3.2.4.2.5: Your procedures for receipt and consideration of information submitted by the public. Consider coordinating this requirement with your public education and involvement plan.

Table 1 of this SWMP includes ample opportunity for public input and comment. Additional public comments will be solicited during City Zoning and subdivision meetings. In addition, the City will be developing a system through which the public can submit and obtain information by telephone.

3.2.4.2.6: Your procedures for site inspection and enforcement of control measures, including how you will prioritize sites for inspection.

An MOU between the Delaware County SWCD and the City of Delaware will be developed. Under the MOU, the SWCD will assist in providing inspection for all active construction sites. The City will review and select erosion and sediment control training and certification program for city engineers, inspectors and provide this training and certification for contractors and consultants that provide design and construction services for the City.

3.2.4.2.7: Who is responsible for the overall management and implementation of your construction site storm water control plan, and if different, who is responsible for each of the BMPs identified in this plan?

The City of Delaware Public Utilities Department has overall responsibility for implementing the SWMP. The responsibility for implementation and management of specific BMPs is outlined in Table 3 (Appendix A).

3.2.4.2.8: Describe how you will evaluate the success of this minimum control measure, including how you selected the measurable goals for each BMP.

Table 3 (Appendix A) lists the measurable goals for each of the proposed BMPs. In general, the first year of the Plan will involve further evaluating and defining appropriate BMPs. These will be implemented in the following years. Measurable goals are generally stated in terms of target years for implementation of each BMP, and in quantifying items such as the number of site plan reviews completed or enforcement actions undertaken each year. Items listed for each measurable goal will be reported on annually.

2.5 Post-construction Storm Water Management in New Development and Redevelopment (MCM #5)

The Permit Requirements for the Ohio EPA NPDES Phase II Storm Water Permit are as follows:

3.2.5.1.1: Develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to 1 acre, including projects less than 1 acre that are part of a larger common plan of development or sale, that discharge into your small MS4. Your program must ensure that controls are in place that would prevent or minimize water quality impacts.

3.2.5.1.2: Develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for you community.

3.2.5.1.3: Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law.

3.2.5.1.4: Ensure adequate long-term operation and maintenance of BMPs.

2.5.1 Post-Construction Storm Water Management in New Development and Redevelopment Plan

The BMPs, measurable goals, and responsible parties in this Post-Construction Storm Water Management Plan are detailed in Table 4 in Appendix A. In addition to Table 4, per the Ohio EPA NPDES General Permit requirement 3.2.5.2, we are documenting our decision process with the following information required by the draft permit.

3.2.5.2.1: Your program to address storm water runoff from new development and redevelopment projects. Include in this description any specific priority areas for this program.

As detailed in Table 4, we will use a combination of planning activities, education, and non-structural and structural practices to address storm water runoff from new development and redevelopment projects.

3.2.5.2.2: How your program will be specifically tailored for you local community, minimize water quality impacts, and attempt to maintain pre-development runoff conditions.

The majority of land use in the City is residential with large commercial, institutional and industrial developments. Water quality concerns arising from the past history of the area remain, but the focus for this SWMP will be on increased volumes of storm water runoff as impervious cover increases. These concerns include erosion and sedimentation control, stream bank erosion, increased flooding due to increases in storm water volume and discharges of sewage and other pollutants into the storm sewer systems.

To address these local concerns the City Public Utilities Department will continue to examine and review the current subdivision regulations, and develop appropriate changes as necessary and appropriate to minimize the impacts of storm water runoff on receiving streams. The regulations will affect both new and redevelopment activities within the urbanized portion of the City. Ordinances will be modified and/or developed as needed which potentially will require approvals of storm water management plans from the City that will include a mix of structural and non-structural BMPs.

These BMPs represent significant changes in storm water management in Central Ohio, education for landowners, developers, planners, engineers, and others is necessary to support their implementation, and is part of this plan.

3.2.5.2.3: Any non-structural BMPs in your program, including, as appropriate:

3.2.5.2.3.1: Policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space (including dedicated funding source for open space acquisition), provide buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation.

The City will be reviewing their ordinances to adopt appropriate policies and requirements.

3.2.5.2.3.2: Policies or ordinances that encourage infill development in higher density urban areas, and areas with existing storm sewer infrastructure.

These policies will be explored as the storm water regulations for the City are developed. If deemed appropriate for the City, ordinances may be amended.

3.2.5.2.3.3: Education programs for developers and the public about project designs that minimize water quality impacts.

Table 4 indicates City's plans to develop workshops to educate developers, contractors, officials and the general public regarding post-construction storm water controls.

3.2.5.2.3.4: Other measures such as minimization of the percentage of impervious area after development, use of measures to minimize directly connected impervious areas and source control measures often thought of as a good housekeeping, preventable maintenance, and spill prevention.

Such measures will be considered as the subdivision regulations and zoning resolutions are updated and revised.

3.2.5.2.4: Any structural BMPs in your program, including, as appropriate:

The City Public Utilities Department and City Engineering Department will evaluate the need for organizing, developing or modifying current City drainage design requirements. The current city information does not address the Post-Construction requirements in OEPAs Construction General Permit. The objective of the SWMP is to coordinate requirements of both permits. The focus of the evaluation is to assess the need associated with developing a comprehensive Storm Water, Drainage and Erosion and Sediment Control Guidance document. The evaluation would include review of current design criteria, review of referenced manuals currently used by the City and current erosion and sedimentation policies and procedures.

3.2.5.2.4.1: Storage practices such as wet ponds and extended-detention outlet structures.

The development and implementation of additional specific structural BMPs will be part of the review and development of City subdivision regulations.

3.2.5.2.4.2: Filtration practices such as grassed swales, bioretention cells, sand filters, and filter strips.

The development and implementation of specific structural BMPs will be part of the review and development of subdivision regulations.

3.2.5.2.4.3: Infiltration practices such as infiltration basins and infiltration trenches.

The development and implementation of specific structural BMPs will be part of the review and development of subdivision regulations.

3.2.5.2.5: What are the mechanisms (ordinance or other regulatory mechanisms) you will use to address post-construction runoff from new developments and re-developments and why did you choose that mechanism? If you need to develop a mechanism, describe your plan and a schedule to do so. If your ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with your program.

As discussed above, the mechanisms the City will use to address post-construction runoff from new development and re-development include development and implementation of the SWMP, review and modification of current regulations and resolutions, and looking at BMP practices as presented in Table 4.

The City chose these mechanisms because they address water quality concerns that are related to increases in storm water runoff as land is developed. These mechanisms provide flexibility to landowners, while ensuring that new impervious cover is minimized. The flood control, erosion control, and water quality functions of watercourses and wetlands will be maintained. Any storm water generated will be managed for both quality and quantity.

3.2.5.2.6: How will you ensure the long-term operation and maintenance of your selected BMPs? Options to help ensure that future operation and maintenance responsibilities are clearly identified include an agreement between you and another party such as a post-development landowners or regional authorities.

Implementation schedules and responsible parties have been identified in Table 4. The legal issues associated with operation and maintenance were reviewed during BMP selection and plan development. Long term operation and maintenance (O/M) will be addressed by developing written procedures for these BMPs and incorporating these procedures into current or future operating/maintenance manuals or procedural documents.

Non-structural BMPs,(Ex. riparian setbacks), will be maintained as other existing setbacks are maintained currently within the City. To the Maximum Extent Practicable (MEP) the City will consider and encourage non-structural BMPs to be

designed, implemented and maintained. Should for example a riparian type of BMP be proposed, this setback as with all setbacks within the City, landowners proposing activities in setbacks must request a variance and this request is reviewed, modified, and approved or disapproved by the Board of Zoning Appeals. These protection area BMPs created through riparian setbacks are proposed to be maintained through permanent conservation easements unless modified by variance or develop plan.

Structural BMPs created through the City's improved storm water management regulation will be maintained by post-development landowners on private property. Public Post-construction BMPs will be maintained by City personnel.

3.2.5.2.7: Who is responsible for overall management and implementation for your post-construction plan and, if different, who is responsible for each of the BMPs identified for this program?

The responsible parties for each component of our Post-Construction Storm Water Management Plan are detailed in Table 4.

3.2.5.2.8: How will you evaluate the success of this minimum measure, including how you selected the measurable goals for each of the BMPs?

The City will evaluate the success of this minimum measure through their ability to successfully implement non-structural BMPs by the target years shown in Table 4. Specific measures of success for each non-structural BMP will be developed and tracked over the 5-year permit period.

2.6 Pollution Prevention / Good Housekeeping for Municipal Operations (MCM #6)

The Permit Requirements for the Ohio EPA NPDES Phase II Storm Water Permit are as follows:

3.2.6.1.1: Develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from community operations; and

3.2.6.1.2: Using training materials that are available from Ohio EPA or other organizations, your program must include employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

2.6.1 Pollution Prevention and Good Housekeeping Guidance Manual (PPGHGM)

The BMPs, measurable goals, and responsible parties in this SWMP are outlined in Table 5. In addition to Table 5, per Ohio EPA NPDES General Permit requirement 3.2.6.2, we are documenting our decision process with the following information required by the General Permit.

3.2.6.2.1: Your operation and maintenance program to prevent or reduce pollutant runoff from your community operations. Your program must specifically list the community operations that are impacted by this operation and maintenance program. You must also include a list of industrial facilities your community owns or operates that are subject to the Ohio EPA's Industrial Storm Water General Permit or individual NPDES permits for discharges of storm water associated with industrial activity that ultimately discharge to your MS4. Include the Ohio EPA permit number or a copy of the Industrial NOI for each facility.

The City performed an audit of existing conditions at all of the facilities they currently own and operate. Table 5 indicates the operations the City owns and maintains. In general, the City operates facilities that include wastewater facilities, water facilities, parks and recreation areas, maintenance garages, buildings for offices and meetings, and storage areas for equipment and materials. A schedule was developed such that operation and maintenance practices will be reviewed in detail during Year 1. Appropriate BMPs will be implemented in Year 2. The effectiveness of each BMP will be tracked and reported on during Years 3 to 5.

3.2.6.2.2: Any government employee training program you will use to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. Describe any existing, available materials you plan to use. Describe how this training program will be coordinated with the outreach program developed for the public education and involvement minimum measure and the illicit discharge minimum measure.

The City has committed to an employee training program. Each City department involved will assess its current procedures and make appropriate changes. Operation and maintenance manuals will be developed, and employees will be trained in proper procedures.

3.2.6.2.3: Your program description must specifically address the following areas:

3.2.6.2.3.1: Maintenance activities, schedules, and long-term inspection procedures for controls to reduce floatables and other pollutants in your MS4.

The City will develop a plan to clean and maintain their current storm water infrastructure. Current practices will be reviewed and appropriate changes will be implemented.

3.2.6.2.3.2: Controls for reducing or eliminating the discharge of pollutants from streets, community parking lots, maintenance and storage yards, waste transfer stations, fleet maintenance shops with outdoor storage areas, and salt/sand storage locations and snow disposal areas you operate.

The City currently has a street sweeping program. Some details are provided in Table 5. In addition, the City has provided information on snow removal and salt storage. The City currently stores road salt in roofed structures. Procedures that could affect storm water quantity and quality in place at each maintenance yard, community parking lot, storage area or other community facilities will be reviewed during the operations and maintenance review outlined above.

3.2.6.2.3.3: Procedures for the proper disposal of waste removed from your MS4 and your community operations, including dredge spoil, accumulated sediments, floatables, and other debris.

The City has committed to reviewing the current policies for waste disposal. Appropriate changes to current practices will be developed as needed.

3.2.6.2.3.4: Procedures to ensure that new community flood management projects are assessed for impacts on water quality and that existing projects are assessed for incorporation of additional water quality protection devices and practices.

The City has committed to reviewing the current policies. Appropriate changes to current practices will be developed as needed.

3.2.6.2.4: Who is responsible for overall management and implementation of your pollution prevention/good housekeeping program and, if different, who is responsible for each BMP identified in this program?

Table 5 lists the responsibilities for each of the City.

3.2.6.2.5: How you will evaluate the success of this minimum control measure, including how you selected the measurable goals for each of the BMPs.

Table 5 lists the measurable goals and schedule for the City. In general each BMP will be reviewed and developed in Year 1, and implemented in the subsequent years.

Section Three

**Monitoring, Recordkeeping,
and Reporting**

3.0 Monitoring, Recordkeeping, and Reporting

For each BMP the City has identified the responsible parties and a schedule for implementation of the BMP. The general pattern is that annual reports will be generated. The reports will include details of how each BMP has been implemented, and how the BMP performed.

Section Four

**Appendices and
Sharing Responsibility**

4.0 Appendices and Sharing Responsibility

Overall responsibility for implementation of this SWMP lies with the City Public Utilities Department. The City Storm Water Management Committee will also be a critical links in coordinating the SWMP.

The participation of the Delaware SWCD is also a critical element in the success of this plan. The Delaware SWCD is the agency currently tasked with protecting City surface waters from the effects of erosion and other run off related impacts. The Delaware SWCD will continue its current education and technical support role as an important element of this SWMP.