



**STORMWATER MANAGEMENT PLAN**

**(Revised February 2010)**

**PREPARED IN COMPLIANCE WITH  
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
PHASE I STORM WATER REGULATIONS**

**NPDES INDIVIDUAL PERMIT  
MIS040085**

**Issued March 3, 2009**



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## ***Section I - Introduction and Background***

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### **1.1 Purpose of the Storm Water Management Plan (SWMP)**

The City of Sterling Heights has developed a SWMP which is designed to reduce the discharge of pollutants from the storm water drainage system to the maximum extent practicable (MEP), to protect the designated uses of the waters of the State, to protect water quality, and to satisfy the appropriate water quality requirements of the Federal and Michigan Water Pollution Control Acts. The SWMP consists of a

discussion of each of the “six minimum measures” along with an outline of the tasks, best management practices (BMPs), measurable goals and schedules that the City must fulfill for meeting the permit requirements of each measure. While the program elements proposed by the Sterling Heights Management Plan are continuous and will be ongoing through the term of the permit, the City of Sterling Heights will continue to evaluate the Management Plan to further develop its Stormwater Management Program for increased effectiveness where deemed necessary.

A summary of that information, along with measures to determine the success of the program, is presented in Section VIII (Table 8.1) of this SWMP.

## **1.2 The State Storm Water Permit**

To facilitate addressing nonpoint sources of pollution commonly associated with storm water runoff, the Michigan Department of Natural Resources and Environment (MDNRE) developed an Authorization to Discharge Under the National Pollutant Discharge Elimination System (MIS040085). MDNRE’s permit is consistent with the Phase I federal regulations and also requires permittees to develop and implement plans for the nine minimum measures. The City submitted their permit application in 2008, and was issued their Permit on March 3, 2009, which authorized the City to discharge storm water to the separate storm sewer systems under their jurisdiction. The Permit will expire on April 1, 2013, at which time the City will re-apply for their Permit.

Per our records, the City’s final draft of the SWMP, submitted March 13, 2007 was approved by MDNRE on April 10, 2007.

## **1.3 1.4 MDNRE Reporting**

As outlined in the City’s Permit, the Annual Report is due October 1. The City of Sterling Heights also developed a documentation and tracking system to evaluate the six minimum measures on a semi-annual basis to determine progress made towards meeting the objectives described in the following sections, as well as to make changes in objectives, as warranted. They prepare progress reports for the MDNRE of activities completed and proposed revisions.

## **1.4 Review and Modification**

This SWMP is a living document, meaning it will likely be modified many times as a result of public input and as program successes and failures are realized over time. Any modifications, additions or deletions of tasks to be completed by the City must be documented to the MDNRE. Any changes, unless noted otherwise by the MDNRE, will be implemented within 60 days of notification to the MDNRE.

## **1.5 City Contact for SWMP**

*Staff Contact:* Mr. Sal Conigliaro  
*Title:* Department of Public Works Director  
*Contact Number:* 586-446-2441

## **1.6 Background on the City**

The City of Sterling Heights covers approximately 23,400 square miles in west-central Macomb County. The City is the second largest City in the County and the fifth largest in the State. Exploding development from 1950 to 1970 led to the incorporation of the City in 1968. Development in this community is characterized by a well balanced mixture of residential, commercial, recreational, and industrial uses. Recreation opportunities include: five golf courses, Dodge Park, and Freedom Hill County Park (32 parks in all). The center of its business district is located at Lakeside Center and Hall Road area, in the northeast corner of the City. The City has a total population of 124,471 as determined in the 2000 census. The entire City falls within the “urbanized area” and thus the storm water regulations apply to all the public municipal separate storm sewer systems (MS4s) within the City limits. There are 700 properties in the City that are served by on-site septic systems. The City is located in the Clinton River East and Red Run Subwatersheds. The 2000 census indicated that nearly 91% of the population was Caucasian and that 29% of the population has a high school diploma and 24% have a college degree. The majority of the population ranges in age from 45 to 64.

The major employers in the City are: Visteon Corporation, DaimlerChrysler Corporation, and Ford Motor Company.

### **1.7 The Nested Jurisdictions**

There are two nested school districts within the City of Sterling Heights. They are: Utica Community School District and Warren Consolidated School District. The City does not have any cooperative agreements between these jurisdictions for stormwater systems within our corporate limits. Both school districts have contractual agreements with Macomb County and are blanketed under the County’s Phase II General Permit. The school districts consist of: thirty-eight schools within City boundaries. All student campuses have potential for contamination of storm water runoff from large parking lots and from maintenance operations at the facilities, grounds, and athletic fields.

The Macomb County Public Works Office (has their own permit coverage) has a number of storm drains within the City and the City is committed to working with this agency and the schools to coordinate and integrate efforts, where applicable, to implement the minimum measures. The Road Commission of Macomb County (RCMC) and MDOT have road right of ways within the City and both have their own permit coverage.

### **1.8 Watershed Background and Scope**

The City of Sterling Heights lies in two subwatersheds: 1) the Clinton River East Subwatershed (70.7%), which drains directly to Lake St. Clair or to Lake St. Clair through the Clinton River Spillway; and 2) the Red Run Subwatershed (29.3%), which drains to the Red Run Drain and empties into the Clinton River. Rapid urban expansion and subsequent losses in habitat, alterations in riparian corridors, and increases in impervious surfaces and flooding over the last fifty years or more have resulted in the Michigan Department of Natural Resources (MDNR) listing the entire Clinton River Watershed and the near shore area of Lake St. Clair an Area of Concern (AOC) in 1995. Several concerns were cited in the Clinton River Remedial and Preventative Action Plan that described why the river was listed as an AOC. These concerns were: 1) conventional pollutants including high fecal coliform bacteria and nutrients, 2) high total dissolved solids, 3) contaminated sediments including heavy metals, PCBs, oil and grease, and 4) impacted biota. Many old closed landfills in the watershed are also of concern. The TMDL for *E. coli* in the Red Run Drain and Bear Creek was established in September 2006.

A 2005 USGS report documented water quality trends between 1970 and 2003 in the Clinton River where it enters the subwatershed. The results showed that the Total Dissolved Solids (TDS), chlorides, and nitrates all increased as expected because of upstream urbanization. However, the levels of dissolved phosphorus and sulfates decreased during the same period most likely due to less deposition from decreased air emission in the case of sulfates and from improved WWTP practices in the case of phosphorus.

Recent biological monitoring (Francis, 2002-2005) of the Central Main Branch showed an increase in macroinvertebrate populations; however farther upstream, populations have decreased. Fish populations remain steadily “Good” both upstream and downstream.

Many projects are currently underway to address Areas of Concern, such as extensive water quality monitoring on the Clinton River, St. Clair River, and Lake St. Clair; bacterial source monitoring; several wastewater treatment system upgrades; SSO and CSO corrections; and numerous other nonpoint pollution control projects are either in progress or in the planning stages.

The City of Sterling Heights has separate sanitary and storm sewer systems with approximately 1.5% (700 homes) of the City’s residences being served by on-site sewage disposal systems (OSDS). A few of the City’s storm conveyances are open drains.

The separate storm sewer system in the City consists of storm sewers under the ownership and/or jurisdiction of several different entities, namely, the RCOC, MDOT, Macomb County, private entities, the City of Sterling Heights, the Utica Community School District, and the Warren Consolidated School District.

## ***Section II - Public Education Plan***

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### **2.1 Public Education Plan (PEP) Objectives**

The purpose of the PEP is to inform the City residents, public employees, businesses, industries, visitors to the area, and construction contractors and developers about their water resources and instill in them a sense of stewardship concerning those resources. The primary objective of the plan is to promote, publicize, and facilitate watershed education and, in doing so, encourage the public to reduce the discharge of pollutants in stormwater.

The general objectives of the PEP are to:

1. Increase the general awareness among residents, local businesses, and agency officials of the City storm sewer system and the Clinton River Watershed and how their daily activities impact this resource.
2. Inform the public and interested parties of the storm water permit, the Storm Water Management Plan, and the objectives of the program.
3. Meet the required elements of an education plan as outlined in the permit.
4. Develop and implement public involvement and education programs, materials, and activities for the citizens in the community to build awareness and foster stewardship of their water resources. The City will utilize existing programs and materials where appropriate.
5. Support the students, groups, or individuals in the community that are participating in existing educational efforts and encourage the development of and participation in additional efforts.
6. Support SEMCOG's "Seven Simple Steps for Clean Water" campaign by displaying informational boards/posters at local events; provide brochures/tip cards at City Hall and local events; and include a link to SEMCOG on the City's web site.
7. Support the Clinton River Watershed Council's (CRWC) educational programs by displaying informational brochures/flyers at City Hall and local events; and include a link to the CRWC on the City's web site.

The land use in the City in part dictates the focus of the education program. According to the Southeast Michigan Council of Government's (SEMCOG's) 2000 land use data, the City is primarily a residential community (48%), however 10% of the community is devoted to industry and over 7% is commercial properties. 5% of the land use is woodland and wetland. Sanitary sewer serves most of the City, but there are 700 homes where residents are known to have septic tank/tile field systems. There is still some undeveloped land available within the City limits.

Given the land uses, the primary concerns for storm water contamination would be residential and commercial sources. Some of the residential sources of contaminants would be illicit connections, new construction or reconstruction, yard maintenance and landscaping, and household hazardous waste disposal. Commercial sources would include waste automotive fluids, restaurant waste and grease, and car wash and laundry wastes. The City's public education is geared to address these potential sources. Below is a list of educational topics and target audiences that the City will address.

## 2.2 Planned Efforts

### A. Plan Implementation

The following paragraphs summarize the six (6) required elements of a Public Education Plan as specified in the City's NPDES Storm Water Permit and the City's plan for addressing each element. Possible future activities are listed under each element as well. The information and actions encouraged by the Public Education Plan will be consistent with the regulations and our objectives. Summary tables of the Public Education Plan (Table 2-1 and Table 2-2) efforts are found on Pages 14 and 15.

#### 1. *Educate public reporting of the presence of illicit discharges or improper disposal of materials into the drainage system.*

##### **Activity II-1.1: Design and implement an education program for City staff and the general public on illicit discharge recognition and illicit connection elimination.**

**Target Audience:** Field crews and facility maintenance staff of the City; general public

**Messages:** Recognition of illicit connections and discharges, methods to detect them, their impact on water bodies, and methods to eliminate them. What can and cannot be discharged to storm sewers. Definition of an 'illicit discharge' and 'illicit connection'. How to recognize an illicit discharge/connection.

**Responsibility:** City Department of Public Works, City Administration

**Measurable Goal:** Documentation of training program and records. Number of illicit connections detected and eliminated. Number of complaints/responses. Number of website hits. Topics of information published in the Magazine.

**Schedule:** Ongoing

Existing Efforts: The City has a complaint tracking and response system of receiving complaints. Complaints are received by the various departments through telephone, walk-ins, email and in-field contacts. The complaints are forwarded to the Macomb County Health Department and the appropriate City Department for follow-up.

The City and Macomb County Health Department periodically perform OSDS inspections for possible failures. In addition, the City has recently instituted a Grease Trap Monitoring Program at all restaurants, bakeries, and catering halls within the City. To date, 106 grease traps have been inspected.

The City sent several representatives to the Oakland County/ Wayne County IDEP training in March 2007 and April 2008.

The City added illicit discharge information on their website and illicit discharge information was featured in the Spring 2008 Magazine.

Future Efforts: The City will continue to train their field staff in illicit discharge detection and notification. Illicit discharge information will continue to be featured on the website and the City Magazine.

##### **Activity II-1.2: Provide the public with information on how storm and sanitary sewer systems function and their effects on water bodies.**

**Target Audience:** General public

**Messages:** Recognition of illicit connections and discharges, methods to detect them, their impact on water bodies, and methods to eliminate them; how storm and sanitary systems work.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Copy of articles. Number of website hits. Number of times videos are aired.

**Schedule:** Ongoing

Existing Efforts: The City's local cable TV station frequently airs the MSU Extension "Home-A-Syst" Video, which provides information on septic systems and household hazardous waste disposal. The City will begin posting CRWC and other organizational workshops information, as well as information on pet waste, fertilizers, and other stormwater issues.

The City posts the SEMCOG's "Storm Drain" tip cards at their offices.

The City added illicit discharge and septic system information on their website and illicit discharge information was featured in the Spring 2008 Magazine. Sewer system backup information was published in the Winter and Spring 2008 and Winter 2009 Magazine.

The City posted SEMCOG, MSU Extension, Macomb County Health Department, and MDNRE web links on the City website.

Future Efforts: The City will continue to air the "Home-A-Syst Video" and continue providing information in City Magazine and on their website on illicit discharges and other storm water related topics. The City will continue to utilize or modify existing educational information on the reporting of improper disposal from sources such as the Clinton River Watershed Council (CRWC), Southeast Michigan Council of Governments (SEMCOG), Michigan State University Extension Service (MSU), MDNRE, and the USEPA.

**Activity II-1.3: Provide information to the public on how to recognize an illicit discharge.**

**Target Audience:** General public

**Messages:** Recognition of illicit connections and discharges, methods to detect them, their impact on water bodies, and methods to eliminate them; how storm and sanitary systems work.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Copy of articles. Number of website hits.

**Schedule:** Ongoing

Existing Efforts: The City's local cable TV station frequently airs the MSU Extension "Home-A-Syst" Video, which provides information on septic systems and household hazardous waste disposal.

The City posts the SEMCOG's "Storm Drain" tip cards at their offices.

The City added illicit discharge and septic system information on their website and illicit discharge information was featured in the Spring 2008 Magazine.

The City posted SEMCOG, MSU Extension, Macomb County Health Department, and MDNRE web links on the City website.

Future Efforts: The City will continue to air the “Home-A-Syst Video” and will begin providing information in City quarterly newsletters and on their website on illicit discharges and other storm water related topics. The City will continue to utilize or modify existing educational information on the reporting of improper disposal from sources such as the Clinton River Watershed Council (CRWC), Southeast Michigan Council of Governments (SEMCOG), Michigan State University Extension Service (MSU Ext.), MDNRE and the USEPA.

**Activity II-1.4: Promote MDNRE’s Pollution Prevention and Waste Reduction Programs to local businesses.**

**Target Audience:** City residents, businesses, developers, contractors

**Messages:** Waste reduction/practicing pollution prevention

**Responsibility:** City Department of Engineering, City’s Consultant

**Measurable Goal:** Copies of publications/number of flyers distributed. Number of website hits.

**Schedule:** Ongoing

Existing Efforts: The City and Macomb County Health Department periodically perform OSDS inspections at all homes and businesses that apply for possible failures. In addition, the City has recently instituted a Grease Trap Monitoring Program at all restaurants, bakeries, and catering halls within the City. To date, over 106 grease traps have been inspected.

Sustainable Business Workshops and other DEQ Program Flyers have been posted at the offices. An article on pollution prevention for businesses was published in the Spring 2009 Magazine, which feature information on the MDNRE P2 Program.

A RETAP Assessment was performed at the DPW facility in April 2007.

Future Efforts: The City will post an MDNRE Pollution Prevention web link on their website. They will continue to promote the MDNRE Pollution Prevention programs, such as RETAP, Michigan Turfgrass Stewardship Program, etc. via website, local cable, and City newsletters

**2. *Public education concerning the water body that would be potentially impacted by improper action at or near a person’s home.***

**Activity II-2.1: Promote Storm Drain Awareness**

**Target Audience:** General public, public employees, businesses, developers, contractors

**Messages:** General awareness of sewer systems in Sterling Heights and how they impact the watershed.

**Responsibility:** City Department of Engineering, City’s Consultant

**Measurable Goal:** Number of materials distributed. Number of website hits. Number of events that materials were displayed or distributed. Copies of publications/number of flyers distributed. Water quality results.

**Schedule:** Ongoing

Existing Efforts: Henry Ford II High School students participate in the annual CRWC Stream Leaders Program.

Dodge Park is home to the annual CRWC Adopt-A-Stream event.

Volunteers regularly take part in the City-wide catch basin stenciling program (Over 4500 catch basins were stenciled to date).

The City currently posts the SEMCOG's "Storm Drain" tip cards at their offices.

The City educates all City residents and businesses on storm drain awareness via City website and Magazine articles. The City posted the CRWC and SEMCOG web links on the website. Storm drain/illicit discharge information was featured in the Spring 2008 Magazine and information is posted on the website. Riparian corridor management information is available on the website.

Future Efforts: The City will work with the School District to discuss further opportunities to increase student awareness.

**Activity II-2.2: Tributary Signage.**

**Target Audience:** All residents, businesses, and visitors.

**Messages:** Signage will contain messages that identify the watershed, tributary and the stewardship message, "Ours to Protect". Consistent signage has been developed by the CRWC. Information on how sanitary and storm systems work. Impacts of storm water pollutants on water bodies.

**Responsibility:** City Administration

**Measurable Goal:** Number of signs posted.

**Schedule:** Completed; Ongoing

Existing Efforts: Tributary signs were posted throughout the City in September 2007.

Future Efforts: Revised drainage maps (if necessary) will be submitted to MDNRE by February 2011.

**Activity II-2.3: Magazine Articles, Local Cable, and City Website.**

**Target Audience:** City residents and businesses

**Messages:** Storm water management. "What you can do to help the watershed?"

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Number of materials distributed. Number of website hits. Topics of information posted on local cable station.

**Schedule:** Ongoing

Existing Efforts: The City's local cable TV station frequently airs the MSU Extension "Home-A-Syst" Video, which provides information on septic systems and household hazardous waste disposal. SEMCOG and CRWC events are also frequently aired on the cable station.

At least one (1) storm water article is featured in each quarterly Magazine edition.

Several environmental topics are featured on the City website. The website is updated at least once every quarter. The City posted SEMCOG, MSU Extension, Macomb County Health Department, and MDNRE web links on the City website.

The City promotes CRWC's "Adopt-A-Stream" Program and other CRWC events via local cable channel, website, and Magazine.

Future Efforts: The City will continue its existing efforts.

**3. Educate the public on the availability, location, and requirements of facilities for the collection and/or disposal of household hazardous waste, travel trailer sanitary wastes, chemicals, grass clippings, leaf litter, animal wastes, and motor vehicle fluids.**

**Activity: II-3.1 Provide the public with information on yard wastes, travel trailer wastes, household hazardous wastes, etc.**

**Target Audience:** General public

**Messages:** Disposal and/or reuse of yard wastes. River-friendly landscaping (non-toxic alternatives; proper disposal methods). Recycling drop-off center information

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Number of materials distributed. Number of website hits. Number of events that materials were displayed or distributed. Number of mailers sent.

**Schedule:** Ongoing

Existing Efforts: The City is home to three recycling drop-off centers. The City gives group tours at these centers.

The City provides leaf pick-up in the fall and yard waste picked up year round. Mailers are sent to all residents in the spring on the availability and location of household hazardous waste disposal and travel trailer waste sites, as well as information on grass clippings, animal wastes, and motor vehicle fluids. Yard waste information is posted on the City website.

Brochures and pamphlets are distributed at the City offices, providing information on: household hazardous waste, pet waste, stormwater, and cold weather practices. In addition, mailings are sent to each resident in the spring on travel trailer wastes, HHW, motor vehicle fluids, leaf litter, and animal wastes. The City posted the Macomb County Health Department HHW web link on their website.

The City's website provides information on recycling and household hazardous wastes. Car care, home composting, pet waste, goose control, clean boating, fertilizing, and RV waste are also featured on the website. All of these topics have been featured in the Magazine.

The City is currently a member of SEMCOG and the Clinton River Watershed Council. The City posts tip cards and event flyers at their offices.

Future Efforts: The City will continue its existing efforts.

**Activity: II-3.2 Provide the public with information regarding proper car care.**

**Target Audience:** City residents, businesses, local schools, City maintenance staff

**Messages:** Proper car care/reduce pollution generated from vehicle maintenance

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Copies of publications/number of flyers distributed. Number of website hits.

**Schedule:** Ongoing

Existing Efforts: The City currently posts SEMCOG's "Car Care" tip cards at their offices.

The Spring 2007 and Fall 2008 Magazine editions feature car care information.

Car care and planning a carwash fundraiser information are posted on the City website.

Future Efforts: The City will continue to post information on the website and Magazine.

**Activity: II-3.3 Promote the MDNRE Pollution Prevention Programs.**

**Target Audience:** City residents, businesses, developers, contractors

**Messages:** Waste reduction/Practicing Pollution Prevention

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Copies of publications/number of flyers distributed. Number of website hits.

**Schedule:** Ongoing

Existing Efforts: See Activity 1.4

Future Efforts: See Activity 1.4

**4. *Public education concerning application and disposal of pesticides, herbicides and fertilizers, including the use of phosphorus-free fertilizer alternatives as appropriate.***

**Activity: II-4.1 Provide the public with information on the proper use and disposal of yard chemicals.**

**Target Audience:** General public, City maintenance staff, and City landscape contractors

**Messages:** Proper use, storage and disposal of yard chemicals. How to reduce your usage of yard chemicals. Yard chemicals alternatives. Impacts on water bodies

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Copies of information published. Number of website hits. Workshops provided and number of attendees.

**Schedule:** Ongoing

Existing Efforts: The City sends representatives to the SEMCOG Municipal Training Workshops as they are offered.

The City currently posts yard waste, HHW, and recycling information on their website. The City posted SEMCOG, MSU Extension, Macomb County Health Department, and MDNRE web links on the City website.

The City advertises SEMCOG, SOCWA, CRWC, and MSU Extension lawn care workshops and events on their local cable TV channel and Magazine.

Several Magazine editions have contained information on recycling, yard waste, and composting. The Fall 2008 edition provided information on earth-friendly fertilizing.

Future Efforts: The City will continue its existing efforts.

**Activity: II-4.2 Provide recommendations on earth-friendly fertilizers and vegetative buffers to the City and its landscape contractor.**

**Target Audience:** City DPW staff and City landscape contractors

**Responsibility:** City Departments of Engineering and Public Works, City's Consultant

**Measurable Goal:** Number of website hits. Number and topics of Magazine articles and flyers distributed. Workshops provided and number of attendees.

**Messages:** Healthy lawn care practices

**Schedule:** Ongoing

Existing Efforts: The City posts SEMCOG's "Fertilizing" and "Landscaping" tip cards at their offices.

The City sends representatives to the SEMCOG Municipal Training Workshops as they are offered. The City sent two representatives to the Michigan Green Industry Association (MGIA) Healthy Lawn Care Workshop, held January 2007. Workshop topics included: slow-release nitrogen fertilizers, low or no-phosphorus fertilizers, integrated pest management, MGIA-endorsed lawn care companies, and other healthy watershed turfgrass options.

The City's grass cutting crews leave the grass clippings on the ground at all sites, effectively eliminating one application of fertilizer at each location. The City currently uses a low-phosphorus fertilizer on all City-owned properties. The City also maintains proper mowing heights on all properties.

The City's consultant reviewed the City's turf management contract and provided recommendations in January 2008.

Fertilizing and rain garden information is available on the City website. SEMCOG and CRWC web links are posted on the City website. Earth-friendly fertilizing, rain gardens, pollution prevention for businesses, and LEED/green development information has been published in the City Magazine.

CRWC, SOCWA, and SEMCOG lawn care programs and events are promoted via cable channel and Magazine.

Future Efforts: The City will consider utilizing an MGIA endorsed landscape contractor by 2011.

Future Magazine articles will be published on native landscaping.

**Activity: II-4.3 Consider hosting or co-hosting a CRWC rain garden or related workshop.**

**Target Audience:** Residents and students

**Messages:** Introduction to rain gardens and native landscaping

**Responsibility:** City Administration

**Measurable Goal:** Topic(s) of workshop and number of attendees. Methods of advertising.

**Schedule:** Ongoing

Existing Efforts: The City has considered hosting or co-hosting a CRWC rain garden or related workshop. The City promotes all CRWC events and programs via website, Magazine, cable channel, and posting flyers at their offices.

Rain garden information was featured in the Summer 2007 Magazine and information on rain gardens and rain barrels is available on the website.

Future Efforts: The City will continue its existing efforts.

**5. *Public education concerning preferred car cleaning materials and procedures for non-commercial car washing.***

**Activity: II-5.1 Provide the public with information on community or ‘school’ car washes.**

**Target Audience:** City residents, businesses, local schools and City maintenance staff

**Messages:** Alternative materials and methods for residential car washing and impacts of car washing on water bodies

**Responsibility:** City Department of Engineering, City’s Consultant

**Measurable Goal:** Number of website hits. Number and topics of Magazine articles.

**Schedule:** Ongoing

Existing Efforts: Small DPW vehicles and equipment are taken to a local commercial car wash facility. Larger vehicles and equipment are washed by the use of a power washer in a wash bay the DPW facility. This wash water is confined in the bay and eventually drains to the sanitary sewer system.

See Activity 3.2 for additional information.

Future Efforts: See Activity 3.2

## **6. Public education concerning proper septic system maintenance.**

**Activity II-6.1: Provide the public with information on on-site septic systems.**

**Target Audience:** Residents and businesses with OSDS

**Messages:** Proper septic system techniques and disposal methods

**Responsibility:** City Department of Engineering, City’s Consultant

**Measurable Goal:** Number of website hits. Number and topics of Magazine articles.  
Workshops

provided and number of attendees. Number of times videos are aired.

**Schedule:** Ongoing

Existing Efforts: The City’s local cable TV station frequently airs the MSU Extension “Home-A-Syst” Video, which provides information on septic systems and household hazardous waste disposal.

The City posted septic information on their website and OSDS information was featured in the Spring 2008 Magazine.

OSDS workshops are promoted on the cable station and flyers are posted at the City offices.

Future Efforts: The City will continue its existing efforts.

## **7. Public education concerning management of riparian lands to protect water quality.**

**Activity II-7.1: Provide information on riparian management.**

**Target Audience:** City residents

**Messages:** The impact of land use on water quality; watershed-friendly landscaping

**Responsibility:** City Department of Engineering, City’s Consultant

**Measurable Goal:** Number of website hits. Number and topics of newsletter articles.  
Workshops

provided and number of attendees.

**Schedule:** Ongoing

Existing Efforts: Riparian management information was posted on the City website.

The City promotes the CRWC and MSU Extension riparian workshops that are offered throughout the year. CRWC and MSU Extension web links are posted on the website.

Future Efforts: The City will begin publishing information in future Magazine editions regarding riparian management.

**8. *Public education for citizen responsibility and stewardship.***

**Activity II-8.1: Promote and educate watershed stewardship in the community.**

**Target Audience:** Business, industry, agencies, non-profits, schools, churches and citizens at large.

**Messages:** Watershed awareness and stewardship

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Number of website hits. Number and topics of Magazine articles. Topics posted on local cable station. Number of schools participating.

**Schedule:** Ongoing

Existing Efforts: The City and/or the Nature Center host an annual River Day event. The events are promoted via cable station and flyers at the City offices and Nature Center. The nature center hosts many workshops, nature classes, and events throughout the year. The City posts information on their website and Magazine regarding these programs.

The City typically hosts a CRWC clean-up event at Nelson Park. The event is advertised on the cable station and Magazine.

Dodge Park is also home to an annual CRWC Adopt-A-Stream event.

Volunteers regularly take part in the City-wide catch basin stenciling program (Over 4500 catch basins have been stenciled to date).

Henry Ford II High School students participate in the annual CRWC Stream Leaders Program.

Future Efforts: The City will publish a stewardship article in an upcoming Magazine article.

***Educate the public on the benefits of using native vegetation instead of non-native vegetation.***

**Activity: II-9.1 Provide information to residents and businesses on native vegetation benefits.**

**Target Audience:** Residents, businesses, schools

**Messages:** Water quality benefits of native plants and rain gardens

**Responsibility:** City Departments of Engineering and Public Works, City's Consultant

**Measurable Goal:** Number of website hits. Number and topics of Magazine articles. Number of brochures mailed out.

**Schedule:** Ongoing

Existing Efforts: Rain gardens information was posted on the City website and published in the Summer 2007 Magazine.

All CRWC and SEMCOG lawn care workshops are promoted via cable station, Magazine, and flyers at the City offices.

The SEMCOG 'Earth-Friendly Landscaping' tip card is distributed at the City offices.

Future Efforts: The City will publish an article on native landscaping in an upcoming Magazine edition.

The City will continue all existing efforts.

***10. Educate commercial, industrial and institutional entities likely to have significant stormwater impacts.***

**Activity: II-10.1 Provide information to commercial, industrial, and institutional entities on stormwater impacts.**

**Target Audience:** Residents, businesses, schools

**Messages:** Impacts of land use on water quality. Provide education on ways the target audience can improve water quality

**Responsibility:** City Departments of Engineering and Public Works, City's Consultant

**Measurable Goal:** Number of website hits. Number and topics of Magazine articles.  
Number of brochures mailed out.

**Schedule:** Ongoing

Existing Efforts: The City has recently instituted a Grease Trap Monitoring Program at all restaurants, bakeries, and catering halls within the City. To date, 106 grease traps have been inspected.

The City's local cable TV station frequently airs the MSU Extension "Home-A-Syst" Video, which provides information on septic systems and household hazardous waste disposal.

Future Efforts: The City will post information on their website and in their quarterly newsletters on stormwater impacts. The City will consider developing or using existing brochures on various stormwater topics and mailing them to local businesses.

**Table 2-1: Summary of Public Education Plan – Six Minimum Measures**

REQUIREMENT	SCHEDULE	TASK	MEASURE
Encourage the public to report illicit discharges or improper disposal into storm sewers.	Ongoing	1.1 Design and implement an education program for City field staff and general public on illicit discharge and illicit connection elimination.	Documentation of content of program. Training records. No. of illicitis detected and eliminated. No. of website hits. Topics of information published in Magazine.
	Ongoing	1.2 Provide the public with information on how storm and sanitary sewer systems function and their effects on water bodies.	No. of materials distributed and topics covered. No. of website hits. No. of times videos are aired.
	Ongoing	1.3 Provide information to public on how to recognize an illicit discharge.	No. of articles posted/published. No. of website hits.
	Ongoing	1.4 Promote MDNRE Pollution Prevention and Waste Reduction Programs to local businesses.	No. of articles distributed. No. of website hits.
Public education concerning the water body that would be potentially impacted by improper actions at or near a person's home.	Ongoing	2.1 Promote storm drain awareness.	No. of schools participating. Water quality results. No. of website hits. No. of materials distributed and topics covered.
	Completed; Ongoing	2.2 Tributary signage.	No. of signs installed.
	Ongoing	2.3 Newsletter Articles, Local Cable, City Website.	No. of articles posted/published. Topics covered. No. of website hits. Topics posted on local cable station.
Educate the public on the availability, location, and requirements of facilities for the collection and/or disposal of household hazardous waste, travel trailer sanitary wastes, chemicals, grass clippings, leaf litter, animal wastes, and motor vehicle fluids.	Ongoing	3.1 Provide the public with information on household hazardous wastes and yard, travel trailer and vehicle maintenance buffers.	No. of materials distributed and topics covered. No. of website hits. No. of mailers sent.
	Ongoing	3.2 Provide the public with information regarding proper car care.	No. of materials distributed and topics covered. No. of website hits.
	Ongoing	3.3 Promote the MDNRE Pollution Prevention Programs.	No. of materials distributed and topics covered. Documentation of pollution prevention implementation efforts by the City. No. of website hits.
Public education concerning application and disposal of pesticides, herbicides, and fertilizers, including the use of phosphorus-free alternatives.	Ongoing	4.1 Provide the public with information on the proper use and disposal of yard chemicals.	No. of materials distributed and topics covered. No. of website hits. No. of workshop attendees.
	Ongoing	4.2 Provide recommendations on earth-friendly fertilizing and vegetative buffers to the City and its landscape contractor.	Copy of recommendation letter. Implementation efforts. No. of attendees at workshops. No. of website hits.
	Ongoing	4.3 Consider hosting or co-hosting a CRWC rain garden or related workshop.	Topics of workshop and no. of attendees. Methods of advertising.
	Ongoing	5.1 Provide the public with information on community or 'school' car washes.	No. of website hits. No. of articles published.
Public education concerning preferred car cleaning materials and procedures for non-commercial car washing.	Ongoing	6.1 Provide the public with information on on-site septic systems.	No. of materials distributed and topics covered. No. of articles published. No. of times videos are aired.
	Ongoing	7.1 Provide information on riparian management.	No. of materials distributed and topics covered. No. of articles published. No. of attendees at workshops.
Public education concerning management of riparian lands to protect water quality.	Ongoing	8.1 Promote and educate watershed stewardship in the community.	No. of materials distributed and topics covered. No. of articles published. No. of schools participating. Topics posted on local cable station.
	Ongoing	9.1 Provide information to residents and businesses on native vegetation benefits.	No. of materials distributed and topics covered. No. of website hits. No. and topics of Magazine articles. No. of brochures mailed out.
Public education concerning the benefits of native vegetation.	Ongoing	10.1 Provide information to commercial, industrial, and institutional entities on stormwater impacts.	No. of materials distributed and topics covered. No. of website hits. No. and topics of Magazine articles. No. of brochures mailed out.
	Ongoing		

**Table 2-2: Public Education Topics and Methods – Annual Schedule**

	Jan	Feb	March	April	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Illicit Discharge or Illegal Dumping Reporting	T, P	T, P	T, P	T, P	T, P	P	P	P	T, P	T, P, W	T, P, W	T, P
		QM			QM							
		QM			RLM							
Riparian Land Management	P	P	P	P	P	P	P	P	P	P	P	P
				CS	CS	CS						
Residential Car Washing	V-HA		V-HA	W	V-HA	W	V-HA	W	V-HA		V-HA	
					QM							
	P	P	P	P	P	P	P	P	P	P	P	P
Used Motor Oil Disposal				RC	QM							
	V-HA		V-HA		V-HA		V-HA		V-HA		V-HA	
Grass Clipping and Leaf Disposal	P	P	P	P	P	P	P	P, W	P, W	P, W	P, W	P
				RC	QM							
	V-HA		V-HA		V-HA		V-HA		V-HA		V-HA	
Pesticide/Herbicide Application	V-HA		V-HA	QM, W	V-HA	QM, W	V-HA	QM, W	V-HA	QM, W	V-HA	
					QM, W							
Household Hazardous Waste Disposal	V-HA	QM	V-HA	RC	QM	QM	V-HA	QM	V-HA	QM	V-HA	
	P	P	P	P	P	P	P	P	P	P	P	P
Information to food industry				DM	DM			QM	QM			
				QM, CS	QM, W	QM, CS	QM	QM	QM			
Native Vegetation and Rain Gardens												

CB – Catch basin stenciling with public information  
V-HA – Video of Home-A-Syst Program  
T – Tours of Recycling Center  
P – Pamphlets available at City offices  
RLM – Riparian Land Management brochures – targeted mailing  
RCP – Recycle Center Pamphlets – direct mailing  
QM – Quarterly Magazine  
DM – Direct Mail  
W – City Website  
CS – Cable Station

# *Section III - Public Involvement and Participation Plan*

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## **3.1 Public Involvement and Participation Plan (PIPP) Objectives**

The purpose of the PIPP is to involve the City residents, community officials, local business representatives, and other interested parties in the development and implementation of the storm water management program.

The general objectives of the PIPP are to:

1. Meet the required elements of a PIPP as outlined in the permit.
2. Involve a cross-section of the citizenry of the City in the decision-making, review and implementation of the SWMP.
3. Utilize the resources of the public, local businesses and existing community groups in the implementation of the management plan.
4. Engage local environmental groups and seek their input and support on the SWMP. In turn, encourage students, organizations, and individuals in the community to participate in existing environmental groups and programs.

The City will seek out and draw on people from existing community organizations and groups to assist them in their storm water management efforts. The organizations that may be contacted include local church groups, local sporting and environmental groups including the CRWC, the Board of Education, City Council, City Parks and Recreation Department, City Public Works Department, the Chamber of Commerce, Sterling Heights Nature Center, the Friends of the Sterling Heights Public Library, the Lions Club, Rotary Club, Sterling Heights Community Foundation, and other business and civic organizations. The City plans to utilize their existing avenues to publicize the management program and seek participation and input. Those existing avenues are tabulated in the table below.

<b>Type</b>	<b>Size</b>	<b>Frequency</b>	<b>Delivery</b>	<b>Comments</b>
Sterling Heights Magazine	70-80 pages	4 times/year	Mailed to all residents and posted on website	
Water Quality Report		4/year	Mailed to homeowners	Water Bills
Cable TV		6:30am to 8:30pm	Available for all residents	
City Website		Continuous updating	All internet	<a href="http://www.ci.sterling-heights.mi.us">www.ci.sterling-heights.mi.us</a>
Sterling Heights Magazine	84 pages	4/year	Mailed to all residents	
Sharp Newsletter	2-4 pages	2 times/year	Mailed to businesses and posted on website	
Information Shelf (City Hall and DPW)		Continuous updating	Pickup	
Sterling Special	2-4 pages	Quarterly	Mailing list (4300 residents)	Parks and Recreation information
City Calendar/Annual Report	12-14 pages	Annually	Mailed to all residents	
City Council		Meets twice/month		

### 3.2 Planned Efforts

The following paragraphs summarize the three (3) required elements of a PIPP as specified in the MDNRE Storm Water Permit (MIS049000) and the City's plan for addressing each. The City is committed to implementing activities in all three of the required elements within five (5) years of COC issuance. Potential future efforts are listed under each element, as well. The information and actions encouraged by the PIPP will be consistent with the regulations and plan objectives. A summary of the implementation schedule and the tasks and measures for the PIPP are given in Table 3-1.

*1. Follow local public notice requirements, as appropriate, when notifying the public that the City must implement a storm water management plan. Make copies of draft and final management plans available to the public for comment and inform them as to when and where copies are available.*

**Task III-1.1: Provide copies of the draft and the final SWMP to the public and interested groups via City web site, newsletters, and City Hall.**

**Target Audience:** The citizens of Sterling Heights, City employees, and local businesses

**Description:** The target audience will be advised of the significance of the SWMP and informed as to when and where they can obtain copies of the final SWMP and provide comment by electronic or direct mail.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Completion of all tasks and copies of all documents. Number of comments received and number of hits on the City web site.

**Schedule:** Ongoing

Existing Efforts: A copy of the existing SWMP is available for review on the City website.

Future Efforts: The City will notify the public of the SWMP revisions and solicit input via website and Magazine articles.

*2. Participate in a citizen advisory committee for the purpose of encouraging public involvement in all aspects of the SWMP.*

**Task III-2.1: Participate in the existing committee, the Red Run Subwatershed Advisory Group.**

**Target Audience:** Local stream and watershed protection groups, local sportsman/environmental groups, and neighboring communities.

**Description:** Utilize the Group's input to develop public participation initiatives for the purpose of the SWMP.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Meeting minutes and attendance records.

**Schedule:** Ongoing

Existing Efforts: The City and its consultant are active participants of the Red Run Subwatershed Advisory Group (SWAG). This Group is in the process of developing a Public Participation Plan (PPP), which the City will provide input on and utilize some of the information for their SWMP if needed.

Future Efforts: The City will continue its existing efforts.

**Task III-2.2: Develop and distribute a survey form to the citizens of Sterling Heights to determine their awareness and opinion of storm water and watershed issues.**

**Target Audience:** General public and students.

**Description:** A questionnaire/survey will be developed that will provide insight into:  
1) The extent of the public awareness of storm water and watershed issues and their ideas on possible water quality improvements;  
2) What they know about the SWMP and their opinions on the effort;  
3) What they know about water bodies in the community.  
Responses to the survey will be tabulated and the City will then use the data to help in the oversight of the program.

**Measurable Goal:** Number of comments received and volunteers recruited.

**Schedule:** Begin by Winter 2010

Existing Efforts: SEMCOG developed a citizen survey in 2004.

Future Efforts: The City will work with CRWC to develop an online and paper survey by February 2010.

**3. Inform local stream or watershed protection organizations, if any, of activities under the storm water management program and allow them to review and comment on the storm water management program plan.**

**Task III-3.1: Develop a mailing and contact list for local stream and watershed protection organizations and local sporting and environmental groups.**

**Target Audience:** Local stream and watershed protection groups and local sportsman/environmental groups.

**Description:** Develop a contact list for these organizations so they can be contacted about the SWMP.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Creation of list.

**Schedule:** Ongoing

Existing Efforts: The City and its consultant attend quarterly Red Run SWAG meetings. The SWAG works collaboratively with CRWC, SEMCOG, and MDNRE.

Future Efforts: The City will continue its existing efforts.

**Task III-3.2: Provide the target groups with draft copies of the SWMP using the mailing list and solicit comment on the plan.**

**Target Audience:** Local stream and watershed protection groups and local sporting/environmental groups.

**Description:** Email groups copies of the draft and final approved plans and give them to the City website address so they can provide updates.

**Measurable Goal:** Number of comments received and volunteer recruited.

**Schedule:** Ongoing

Existing Efforts: The existing SMWP is available for review on the City website.

Future Efforts: The updated SWMP will be posted once it is revised in an effort to solicit input. The City will work with CRWC to develop an online and paper survey by February 2010.

**Task III-3.3: Contact the target groups to determine what programs they sponsor that may satisfy SWMP or permit requirements. Evaluate those qualifying programs to determine those in which the City will participate or encourage participation.**

**Target Audience:** Local stream and watershed protection groups and local sportsman/environmental groups.

**Description:** Personal contacts to determine what programs exist that the City may participate in to satisfy requirements of the SWMP and General Permit.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Number of programs evaluated

**Schedule:** Ongoing

Existing Efforts: The City utilized RETAP in 2007. The City is a member of SEMCOG and CRWC.

Future Efforts: The City will begin promoting the MTESP Program for local golf course owners.

**Task III-3.4: Consider sponsoring or co-sponsoring (with Shelby Township, City parks, etc.) a stream clean-up with the CRWC or a similar group.**

**Target Audience:** Citizens, City staff, neighboring communities, and school students.

**Responsibility:** City Department of Engineering, City's Consultant

**Description:** Nelson Park is home to the annual CRWC Clean-Up event. The City promotes this and all CRWC events via website and local cable.

**Measurable Goal:** Number of volunteers. Documentation of materials removed. Advertisement mechanisms.

**Schedule:** Ongoing

Existing Efforts: The City and/or Nature Center typically host a CRWC Clean-Up event. The event is promoted on the CRWC website and flyers are posted in the Magazine, cable station, and City offices.

Future Efforts: The City will continue its existing efforts.

**Task III-3.5: Consider co-sponsoring a storm drain stenciling/marker program with a local community group.**

**Target Audience:** General public, local businesses, industries, construction contractors and developers

**Description:** City volunteers regularly participate in a catch basin labeling program.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Number of drains labeled. Number of volunteers.

**Schedule:** Ongoing

Existing Efforts: Over 4,500 catch basins have been stenciled to date. Over 10,000 door hangars were distributed to homes on the streets where stenciling was performed.

Future Efforts: The City will continue its existing efforts.

**Task III-3.6: Work with CRWC regarding water quality monitoring with local schools. The students would help collect and report data on the major water bodies in the area.**

**Target Audience:** Citizens, school students  
**Description:** The City will continue to work with local schools in promoting the program.  
**Responsibility:** City Department of Engineering  
**Measurable Goal:** Number of students/schools participating. Monitoring results.  
**Schedule:** Ongoing

Existing Efforts: Several City schools participate in the Stream Leaders Program. The City promotes the Adopt-A-Stream program via cable station and flyers at the City offices.

Future Efforts: The City will continue its existing efforts.

**Task III-3.7: Consider hosting or co-hosting a CRWC lawn care/landscaping workshop.**  
**Target Audience:** Citizens, City staff  
**Description:** Consider hosting or co-hosting with a neighboring community a CRWC workshop regarding lawn care and landscaping for residents.  
**Responsibility:** City Department of Engineering, City’s Consultant  
**Measurable Goal:** Number of attendees. Advertising mechanisms.  
**Schedule:** Ongoing

Existing Efforts: The City has considered hosting or co-hosting a CRWC lawn care/landscaping workshop. The City promotes all CRWC events and programs via website, Magazine, cable channel, and posting flyers at their offices.

Rain garden and lawn care information was featured in several Magazine editions and information on lawn care, rain gardens, and rain barrels is available on the website.

Future Efforts: The City will continue its existing efforts.

**Table 3-1: Summary of Public Involvement and Participation Plan**

<b>REQUIREMENT</b>	<b>SCHEDULE</b>	<b>TASK</b>	<b>MEASURABLE GOAL</b>
Follow local public notice requirements, as appropriate, when notifying the public that the City must implement a storm water management plan. Make copies of draft and final management plans available to the public for comment and inform them as to when and where copies are available.	Ongoing	1.1 Provide copies of the draft and the final SWMP to the public and interested groups.	Completion of all tasks. Copies of all delivered documents. No. of comments received. No. of hits on web site.
	Ongoing	2.1 Participate in the existing committee, Red Run Subwatershed Advisory Group (SWAG).	Meeting minutes and attendance records
Participate in a citizen advisory committee for the purpose of encouraging public involvement in all aspects of the SWMP.	Begin Winter 2010	2.2 Develop and distribute a survey form to the citizens of Sterling Heights to determine their awareness and opinion of storm water and watershed issues.	No. of comments received and volunteers recruited.
	Ongoing	3.1 Develop a mailing and contact list for local stream and watershed protection organizations and local sporting and environmental groups.	Creation of list.
Pursue cooperation with local stream or watershed protection organizations by informing them of the City's program, providing them with copies of draft and final plans and seeking their input on the plans and program. Solicit volunteer assistance from the groups in the implementation of the program and associated activities. Satisfy permit requirements were possible by assisting the organizations with their efforts.	Ongoing	3.2 Provide the target groups with draft copies of the SWMP using the mailing list and solicit comments on the Plan.	No. of comments received and volunteers recruited.
	Ongoing	3.3 Contact the target groups to determine what programs they sponsor that may satisfy SWMP or permit requirements. Evaluate qualifying programs to determine those in which the City will participate or encourage participation.	No. of programs evaluated.
	Ongoing	3.4 Sponsor or co-sponsor (with Shelby Township, City parks, etc.) a stream clean-up with the CRWC or similar group.	No. of volunteers. Documentation of materials removed. Advertisement mechanisms.
	Ongoing	3.5 Co-sponsor a storm drain stenciling/marker program with local community group.	No. of drains stenciled. No. of volunteers.
	Ongoing	3.6 Work with CRWC to begin water quality monitoring with local schools.	No. of students/schools participating. Water quality results.
	Ongoing	3.7 Consider hosting or co-hosting a CRWC lawn care/landscaping workshop	No. of attendees. Advertising mechanisms.

## ***Section IV - Illicit Discharge Elimination Plan***

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### **4.1 Illicit Discharge Elimination Plan (IDEP) Objectives**

The purpose of the IDEP is to develop a program to prohibit and effectively eliminate illicit discharges to the storm sewer system. The federal law defines “illicit discharge” and “illicit connection” as follows:

Illicit discharge - the discharge of untreated sanitary wastewater (including industrial and commercial wastewater) or other polluting materials into a river, stream or other water body from: improper sewage connections - such as sources of sanitary sewage which should be connected to the sanitary sewer but are inappropriately connected to the storm sewer; effluent from improperly designed and/or operated septic systems; sanitary sewer overflows; improper disposal of waste products – such as emptying a mobile home holding tank into a catch basin or pouring used motor oil into a catch basin; Other discharges not composed entirely of storm water (except as specified in the permit).

Illicit connection – an improper physical connection of illicit discharges to the storm water drainage system, or other connections not authorized by the local authority (where required), to the storm water drainage system. Examples of illicit connections are: a) a floor drain in an automobile repair shop that is connected to the storm sewer rather than the sanitary sewer; and b) a septic tank discharge line that has been connected to the storm sewer. An improper connection of a source of storm water to the sanitary sewer would also be considered an illicit connection, for example, a parking lot catch basin that is tapped into the sanitary sewer. Illicit connections refer to a physical connection to the drainage system that either: primarily conveys illicit discharges into the storm sewer system, or is not authorized or permitted by the local authority, if required.

For the purposes of this plan, “outfall” and “point source” are defined as a location where the storm water from a separate storm water conveyance under the jurisdiction of the City passes into a water body, wetland, upland or into a conveyance or property under the ownership or jurisdiction of an entity other than the City. “Significant Illicit Discharge” is a discharge that shows evidence of impairing water quality in the receiving water. During visual observations or sampling, in instances where the storm water outfall is submerged or the outfall is connected to another enclosed sewer, the City will inspect the nearest upstream manhole or access point.

The Permit requires the City of Sterling Heights to prohibit illicit discharges and dumping of pollutants into the City storm sewer. The City of Sterling Heights must:

- a. Effectively prohibit illicit discharges, including discharge of sanitary wastewater, to the Sterling Heights municipal separate storm water drainage system.
- b. Upon identification of a responsible part, the permittee shall require immediate cessation of dumping of waste directly into the municipal separate storm water drainage system. The permittee shall require the responsible party to clean up the dumped materials as necessary.
- c. Upon identification of an illicit discharge from an illicit connection, the permittee shall require the party responsible for the illicit connection to stop the discharge as soon as possible.

- d. Where an illicit connection to the Sterling Heights separate storm water drainage system cannot be removed immediately, the permittee shall submit a schedule for removal of the illicit connection. The schedule shall be included in the mid-year and annual reports to the Southeast Michigan District Supervisor. The schedule shall provide for removal as soon as possible.
- e. The permittee shall minimize infiltration of seepage from sanitary sewers and septic systems into the Sterling Heights separate storm water drainage system. The goal of the minimization program is to eliminate all identified sources of infiltration from septic tanks and sanitary sewers during the term of this permit.

#### 4.2 City of Sterling Heights Storm Sewer System

The City of Sterling Heights covers approximately 36.6 square miles. It has separate sanitary and storm sewers under its jurisdiction and approximately 1.5% of the City’s residences are being served by OSDs. The separate storm sewer system in the City of Sterling Heights consists of storm sewers under the ownership and/or jurisdiction of several different entities, namely, the Macomb County, private entities, the City of Sterling Heights, Utica Community School District, and Warren Consolidated School District.

The City of Sterling Heights maintains storm water map which includes all municipally-owned storm water outfalls, catch basins, and tributaries. This map was submitted to MDNRE in June 2006 and is available upon request. The City currently has 250 outfalls under their jurisdiction. They discharge to various receiving sites including the Macomb County Public Works Office (MCPWO) drains, land owned by the City of Sterling Heights, the Utica Community School District, Warren Consolidated School District and other privately owned property within the City of Sterling Heights. All storm water from the City ultimately drains to the Clinton River.

#### 4.3 Planned Efforts

The following subsections summarize the five (5) required elements of an IDEP as specified in the Permit and the City’s plans for addressing each element. The City is committed to beginning the IDEP within 90 days of final submittal of the SWMP and to completing activities in each of the three required elements within 5 years of Permit issuance. A summary of the implementation schedule and the tasks and measures for the IDEP are given in Table 4-1.

***1. Develop an ordinance or program, or other regulatory mechanism where an ordinance is not feasible or appropriate, to effectively prohibit illicit discharges into the MS4 owned or operated by the permittee that implements appropriate enforcement actions.***

**Task IV-1.1: Review existing City ordinances.**

**Description:** The City of Sterling Heights must have adequate legal authority and enforcement capability to implement its IDEP. The City will conduct a thorough review of its existing ordinance to determine if:

- The ordinance adequately defines illicit connections and discharges;
- The ordinance prohibits illicit connections and discharges;
- The City has adequate legal authority to investigate suspected illicit connections and discharges;

- The City has adequate legal authority to require elimination of illicit connections and discharges;
- The City has adequate enforcement capability.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Documentation of review.

**Schedule:** Completed – see details below.

The Code of Ordinances of the City of Sterling Heights (the "Code") contains provisions to control and/or restrict the contribution of pollution and materials into the stormwater system. Chapter 17 of the Code requires persons who desire to deposit land or materials within the City or who desire to excavate a site other than for construction of a building or structure for which a building permit has been issued, to obtain a permit. Section 17-14 prohibits the deposit of materials in any flood plain, watercourse or wetland. Section 17-19 provides penalties for any violation relating to the alteration, modification or change in the geographic structure of land.

Section 20 of the Code adopts by reference Section F-2901.9 of the BOCA National Fire Prevention Code of 1987, which requires all businesses and facilities which use, store or generate hazardous substances to provide for both primary and secondary containment for hazardous substances and to prevent potential spills and leaks. Section 20 of the City Code further prohibits the indoor storage of hazardous substances near a floor drain connected to soil, groundwater and nearby drains and rivers, unless a secondary containment system is provided. Furthermore, Section F-104.1 authorizes the chief of the fire department to enforce the provisions of the fire code. As a code officer, the fire chief has the authority pursuant to Section F-111.1.2 to issue appearance tickets to any party who violates the aforesaid Code provisions.

Section 23-6 requires any individual seeking to dispose of hazardous waste within the City to obtain approval from the City Manager or the authorized agent. Section 23-33 of the Code prohibits the sweeping or depositing of litter in any gutter. Section 38-10 prohibits the discharge of any substance into a lake, stream, or any other body of water adjacent to any park or stream, storm sewer, or drain which results in the pollution of such waters. Section 53-2 empowers the City Manager to operate and manage the City sewage disposal system. Section 53-10 provides the City with the right to prohibit a manufacturing or industrial plant to discharge sewage into the sewer system, if necessary to protect the public health and safety of the citizens of the City. Section 53-52 prohibits the discharge of ground water or unpolluted industrial process waters into a sanitary sewer and for the discharge of the same into a storm sewer system. This section further prohibits the discharge of garbage or other waste to any public or private sewer. Moreover, no surface, roof, or ground water may enter the sanitary sewer system without authorization. This section further requires a permit for the discharge of treated ground water into the sewer system. Section 53-57 authorizes the levy of a penalty for any violation of the sewer, disposal, connection and use standards of Section 53 of the Code and provides that any violator shall be guilty of a misdemeanor and fined no more than \$500.00 or imprisoned for a term not to exceed 90 days.

Section 33-2(q) illicit discharge states: **Any unauthorized spilling, dumping or disposal of non-storm water into the storm sewer system except as permitted in accordance with Chapter 53.**

As a result, the City will have the right to use its existing nuisance abatement procedures to regulate such unauthorized activity.

Section 17-14 prohibits the filling or depositing of materials in the flood plains, watercourse or wetlands without a permit. Section 23-33 prohibits the sweeping or depositing of any litter in any gutter

or other public place within the City. Section 38-10 prohibits the discharge or the placement of any substance or material into a lake, stream, bay or other body of water adjacent to a City park or into a storm sewer or drain flowing into such waters, which may result in the pollution of such waters. Section 53-10 prohibits the discharge of sewage from any manufacturing or industrial plant, if necessary for the protection of the public health and safety.

Section 53-48 further requires no person, as owner, occupant or tenant of any lot, parcel of land or building thereon within the city shall discharge any sanitary sewage, industrial waste and/or other objectionable or deleterious matter into any stream, watercourse, lake or pond within, leading to or bordering upon the city. Such sewage or waste shall be discharged into the public sewers having connection to the sewage works of the City of Sterling Heights, unless such sanitary sewage or other objectionable or deleterious matter is treated in a manner approved by the superintendent of the department of public works for the City of Sterling Heights and the health department so as not to endanger public health and as required by other governmental agencies and in a manner or fashion not in conflict with or otherwise consistent with the rules and regulations of the Detroit Water and Sewage Department and the City of Detroit.

Section 53-52(b) of the Code expressly prohibits the discharge of any non-storm water, industrial cooling or other unpolluted waters to the storm sewer system without specific approval, unless the individual or entity has obtained a separate NPDES permit, or unless such discharge results from fire fighting activity undertaken by the City.

Section 53-57 enforces the aforesaid provisions by providing authority for the issuance of a written notice of a violation. Any continued violation shall be a misdemeanor and the violator shall be subject to a fine of not more than \$500.00 or subject to imprisonment for no more than 90 days.

Section 38-10 prohibits the discharging or placing of any substance into any body of water adjacent to any fountain, pond, lake, stream, bay or other body of water adjacent to any park, or any tributary, stream, storm sewer or drain flowing into such waters, which may result in the pollution of the same. Section 53-52(b) permits the discharge of storm water and other unpolluted waters into the storm sewer.

Section 53-52(b) prohibits the spilling, dumping or discharging of non-storm water or other unpolluted waters into the separate storm sewer system. Section 53-56 provides the City Manager or his designee the right to enter upon property located within the City to inspect for any unauthorized discharge of non-storm water and to report the occurrence of any such spill or release into the system to the proper authorities. The enforcement of the aforesaid provisions shall be provided in accordance with Section 53-57, which declared any continued violation as a misdemeanor.

No current agreement exists between the City of Sterling Heights, Macomb County and the Michigan Department of Transportation concerning the control of pollution from one portion of the sewer system to another. Pursuant to Section 2.04 of the City Charter, the City has a right to perform any of its functions jointly with one or more states or agencies thereof. The Michigan Department of Transportation owns a small portion of the sewers which discharge into the City's system and it is the applicant's understanding that the agency is submitting its own application for an NPDES permit.

Section 1-9 of the Code declares any violation of the Code to be a misdemeanor, punishable by a fine of no more than \$500.00 or imprisonment for a period not to exceed 90 days, or both. Section 1-10 provides that any condition caused or permitted to exist in violation of any provisions of the Code shall be

considered a new and separate offense for each day that such condition continues to exist. Section 17-13 authorizes the City Engineering Department to temporarily suspend a permit for removal or excavation of land upon any violation of any applicable provisions of the Code or when necessary to preserve and protect public health, safety or welfare. Section 17-19 authorizes the City to notify the owner of any violation of a permit issued for the relocation or excavation of soil or fill and to suspend such operation if the owner fails to undertake the appropriate action. Section F-104.1 requires the chief of the fire department or his designee to enforce the provisions of the Fire Prevention Code adopted by the City. Section 53-57 provides that any person violating any provision of the sewage disposal, sewer connection and use standards of Section 53 of the Code shall be guilty of a misdemeanor and upon conviction shall be subject to a fine not to exceed \$500.00 or imprisonment for a term not to exceed 90 days.

Section 33-2 of the Code, declares the unauthorized discharge, spill or dumping of non-storm water as a public nuisance. As a result, the City shall have the right to utilize the nuisance abatement provisions of Section 33-8 including the right to levy special assessments against the owner of the property for its failure to abate the nuisance.

Section 17-17 authorizes the City to inspect any portion of any landfill deemed abandoned or ready for restoration. Section 53-2 authorizes the City Manager to supervise and control and manage the City water and sewage disposal system. Section 53-52 authorizes the City to inspect any taps used to discharge treated groundwater into the sanitary sewer system. Section 53-56 authorizes the Superintendent of the Department of Public Works to enter upon all properties for purposes of inspecting, observing and sampling of materials deposited into the Sterling Heights sewer system.

Section 53-65 of the Code, prohibits any individual or entity who may be required by federal law to obtain a separate NPDES permit from discharging contaminated materials or substances, pollution or other hazardous substances or materials without a permit into the storm sewer system. Section 53-65 shall further authorize the City Manager or his designee to make copies of the NPDES permit requirements promulgated under federal regulations available to those individuals or entities whose activities require a NPDES permit. Section 53-56(b) shall also be added to authorize the City Manager to enter upon all properties within the City to inspect for any unauthorized discharge and to report the same.

Section 3.1.2 of the Storm Water Master Plan of the City of Sterling Heights requires that all new developments control the runoff from their respective development via stormwater retention ponds. The requirement stipulates that all developers provide a storage volume equivalent to two inches of runoff over the entire surface area of the development. The peak discharge rate from the new ponds is restricted to 0.1 cfs per acre.

**Task IV-1.2: Amend and adopt City ordinance as needed.**

**Description:** If needed, the ordinances will be modified to ensure that the City has the legal authority to implement the IDEP. Model ordinances will be utilized to provide wording for any amendments that may be necessary to give the City adequate legal authority and enforcement capability.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Documentation of adoption of amendments.

**Schedule:** Ongoing

**2. Prepare a drainage system map showing all known locations of discharge points the permittee owns or operates.**

**Task IV-2.1: Evaluate the use of Global Positioning System (GPS) equipment in mapping efforts.**

**Description:** The City will explore and evaluate the use of hand-held GPS monitors during sewer observations and sampling to more accurately map the location of the outfalls, catch basins and manholes.

**Responsibility:** City Administration, City's consultant

**Measurable Goal:** Documentation of evaluation and decision.

**Schedule:** Ongoing

Existing Efforts: GPS/GIS mapping has begun.

Future Efforts: The City will continue its existing efforts.

**Task IV-2.2: Field verify storm sewer outfalls.**

**Description:** The City will complete a field verification of the storm conveyance outfalls within the City based on the existing maps. This may be completed during the initial dry weather inspection or as a separate field reconnaissance.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Outfall map and table updated.

**Schedule:** Ongoing

**Task IV-2.3: Develop procedures to identify and record outfalls from new construction.**

**Description:** The City will develop and implement a procedure to add outfalls from new construction. The procedure will involve identifying new outfalls and receiving waters through the building permit process, adding them to the existing storm sewer catchment system map, and performing an initial dry weather inspection of the outfall.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Procedure documented and implemented. New outfalls mapped and inspected.

**Schedule:** Ongoing; Updated map submitted by 2011.

Existing Efforts: An updated storm sewer map was submitted with the Storm Water Permit Application, in 2008.

Future Efforts: As required by the Certificate of Coverage (CoC), the City will submit an updated storm sewer map (if necessary) by February 2011.

**3. Develop and implement a program to find and eliminate illicit connections and discharges.**

**Task IV-3.1: Perform visual inspections and dry weather screenings of all City operated storm sewer outfalls.**

**Description:** A visual inspection will be conducted at each of the City-operated outfalls within the City during dry weather. At a minimum, 85 to 100 outfalls are screened annually. During the final two years of the permit, the remaining existing outfalls will be screened as well as any newly-constructed outfalls/discharge points.

Priorities are given to:

Sections that have been identified as problem areas in the past;

- ☒ Parcels that have no sanitary system available or have not connected to the sanitary system;
- ☒ Areas that have frequent flooding problems;
- ☒ Spot check all areas for illegal taps.

In instances where the storm water outfall is submerged, or the outfall is connected to another enclosed sewer, the City visually inspects the nearest upstream manhole. Dry weather discharges are sometimes indicative of illicit connections. Dry weather inspections are conducted when no rain/precipitation event has occurred for a minimum of 48 hours. When flow is observed in the sewer at that time, it may be attributed to sewage, cooling water, sump pump discharge, infiltration from ground water sources, or runoff from potable water sources such as lawn sprinklers. The City may be able to locate the source of an illicit connection/discharge solely through visual observation of flow in the storm sewer at manholes. Odor, color, turbidity, bacteria growth, quantity of flow, etc., may lead to the source of a problem without additional sampling.

All storm outfalls that are discharging during dry weather are investigated further by upstream visual inspection or with televising, as-built pipe schematic review, dye and/or smoke testing, sampling, or other investigation as needed to determine the nature and source of the flow.

1. Televising - The City may elect to televise those storm sewers that have suspicious flows to identify pollutant sources that cannot be located through simple visual observation and/or sampling. For example, the City may determine through visual observation and/or sampling that an illicit connection exists between two specific manholes. Video inspection of the stretch of storm sewer between these two manholes could be used to isolate the exact source of the connection/discharge.
2. As-built pipe schematic review - Where available, the City will utilize as-built pipe schematic drawings as a tool to determine the source of an illicit connection/discharge.
3. Dye or smoke testing - The City will conduct physical inspection of commercial and/or residential facilities as needed to verify suspected illicit connections that are detected through visual observations/sampling of yards, outfalls and manholes. As necessary, facility inspections will include dye or smoke testing of suspect facility plumbing fixtures to determine if the fixture discharges to the sanitary sewer or to the storm sewer. All facility inspections are documented.
4. Sampling - Investigation of dry weather discharges are prioritized based on the number of discharges identified as well as other factors including location, volume of flow, and suspected contaminants based on color, turbidity, or odor. When flow is observed during the dry weather outfall inspections and visual observations do not lead to a source, the City may decide to sample the flow for pollutant parameters typically found in illicit connections. Sampling can rule out some dry weather discharges such as groundwater. The sampling typically begins at the outfall and continues upstream from manhole to manhole

until a source is found. The choice of sampling parameters depend on several factors including:

- ☒ Location of the storm outfall (i.e., in residential or commercial area);
- ☒ Turbidity and color of discharge which could distinguish between an illicit discharge from a commercial establishment versus a residence;
- ☒ Odor associated with discharge such as petroleum odor, or raw sewage odor.

The City may choose to analyze the samples in the field, using commercially-available colorimetric test kits for some or all of the following parameters:

- 1) Total Chlorine
- 2) Total Copper
- 3) Total Phenol
- 4) Detergents
- 5) pH (obtained by portable pH measuring equipment)

All other observation data is visually estimated, determined, and recorded on a Field Data Sheet.

The City may elect to conduct wet weather observations of some outfalls to determine if runoff from certain areas is contaminated. For instance, oil sheen at the outfall may indicate illicit disposal of oils or grease upstream in the service area. All outfall inspections will be documented.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Number of outfalls inspected. Documentation of findings. Number of illicit discoveries.

**Schedule:** Ongoing

Existing Efforts: The City is working cooperatively with MCHD to perform dry-weather monitoring of all the City's outfalls.

Future Efforts: The City will continue its existing efforts.

**Task IV-3.2: Trace Illicits and Owner Notification.**

**Description:** Trace illicit to their source and notify the owner in writing and direct them to eliminate the illicit connection/discharge within a specified timeframe. The notification will require the owner to inform the City when the connection has been eliminated. The timeframe for eliminating the connection/discharge depends on the type of illicit connection/discharge, expense, and difficulty in repair. The goal of the plan is to have most illicit connections/discharges eliminated within 60 days of notification. Illicit connections/discharges that are more complex may take longer than 60 days to eliminate. Follow-up inspections are done to verify corrections.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Number of illicit traced and documentation of notification and elimination.

**Schedule:** Ongoing

**Task IV-3.3: Follow-up Enforcement for Non-correction.**

**Description:** The City will follow up with the owner to ensure that the connection/discharge has been eliminated. The City will re-inspect the outfall(s) to ensure the illicit has been eliminated. If the illicit has not been eliminated, the City will enforce its ordinances to obtain compliance.

The City's discharge elimination procedures are as follows:

- A) Formal notification to property owner of violation.
- B) Make recommendation to correct problem.
- C) Supply resident with list of qualified contractors.
- D) Inspections to be made on all disconnects to ensure proper capping.
- E) Inspection on tap to the sanitary system and septic tank abandonment.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Documentation of enforcement actions. Number of illicit found vs. number eliminated.

**Schedule:** Ongoing

Existing Efforts: The City works cooperatively with MCHD at identifying any potential illicit discharges and connections, tracing them to their source, and notifying the responsible party. Five (5) illicit connections have been corrected since 2006.

Future Efforts: The City will continue its existing efforts.

**Task IV-3.4: Provide training to appropriate City staff on illicit connections and discharges, failed OSDS, safety issues and natural occurring phenomenon.**

**Description:** The City will provide training on illicit connections and discharges, failed OSDS safety issues and natural occurring phenomenon to appropriate City staff. It will attempt to take advantage of any regional training provided by the State, County agencies or groups such as SEMCOG.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Number of illicit connections/discharges found, refined, and/or corrected.

**Schedule:** Ongoing

Existing Efforts: Several City staff members have attended the Oakland County IDEP training course.

Future Efforts: New employees will attend the training course as needed.

**4. Develop and implement a program to minimize seepage from sanitary sewers and on-site sewage disposal systems (OSDS) into the separate storm water drainage system.**

**Task IV-4.1: Identify and record all OSDS within the City.**

**Description:** The City has located and recorded all OSDS within the City limits. Approximately 1.5% of the City of Sterling Heights' population is served by OSDS. A review of the City's records to determine individuals that are not being billed for sewer services may locate additional OSDS. The City takes the following action to locate failing OSDS and report those failures to the Macomb County Health

Department (MCHD):

- Citizen complaints are recorded and then referred to the MCHD.
- Any suspected OSDS failures are addressed by sending letters to the residents and/or businesses up stream of the location checked.
- These addresses are then dye tested to determine where the failure is occurring. The property owner is then required to make the necessary repairs.
- City field employees will be trained to identify failed OSDS so in their daily routine they can assist in locating these areas of concern and advise MCHD.

**Responsibility:** City Administration, Department of Engineering

**Measurable Goal:** A list/map of the locations of all OSDS. Updated lists of OSDS locations with annual report.

**Schedule:** Ongoing

Existing Efforts: MCHD performs OSDS inspections as needed. 2-5 inspections are typically performed in the City each year.

Future Efforts: The City will continue to collaborate with MCHD as needed.

**Task IV-4.2: Enforcement of Existing and Revised City Ordinance.**

**Description:** Currently, the City identifies failing OSDS through complaints from residents and/or observations made by City field personnel. When failing OSDS are identified, the City notifies the MCHD. A review of the City's ordinance indicates that the Section 94 of the City Code requires connection to the sanitary sewer system where the OSDS is determined to be failing if the service is available. Any OSDS found to be failing will be sent a notice to connect to the sanitary sewer, if it is available, in accordance with City Code. If the ordinance is revised, it will be enforced accordingly.

**Responsibility:** City Administration, Department of Engineering, City's Consultant

**Measurable Goal:** Number of notice letters sent and failed OSDS repaired or connected to the sewer.

**Schedule:** Ongoing

Existing Efforts: The City Engineer reviewed the existing ordinances in 2006. No revisions are necessary at this time.

Future Efforts: The City will revise the ordinances as needed.

**Task IV-4.3: Review MCHD Program and Ordinance.**

**Description:** The City reviewed the MCHD program and evaluate for compliance with Phase I and Phase II. The City of Sterling Heights recognizes the authority and expertise of the MCHD in overseeing issues related to failing septic systems. Currently, all new construction and repairs for OSDS are permitted through MCHD.

**Responsibility:** City Administration, Department of Engineering

**Measurable Goal:** Documentation of review of MCHD program. Documentation of adoption.

**Schedule:** Completed; Ongoing

Existing Efforts: The MCHD Program was reviewed in 2008 and is found to be sufficient.

Future Efforts: The City will re-evaluate the Program is necessary.

**Task IV-4.4: OSDS Complaint Tracking, Response, and Investigation.**

**Description:** Citizen and business owners are often excellent sources of information regarding illicit connections and discharges. The City currently has a complaint response system in place that forwards complaints to MCHD. However, improvements to the system can be made. The City will establish a reliable system to receive and investigate citizen reports regarding suspicious discharges from storm sewer outfalls, failed OSDS, waste dumping, construction sites, etc. The reporting system will include:

- Telephone complaint system with emergency number for non-business hours;
- Complaint documentation and tracking system;
- Follow-up notification to reporting citizen to inform them what corrective actions have been or are being taken.

When the City of Sterling Heights receives complaints regarding illicit discharges, the City will investigate each suspected connection as outlined and take appropriate action(s).

Systematically sample areas of the City starting with the older residential areas that were developed without established sanitary systems. Checks will be made of the storm sewer system mains either visually, by taking samples or both. Any suspected illegal discharges will be addressed by sending letters to the residents and/or businesses up stream of the location checked. The property owner will be required to make the necessary repairs. Inspectors will be on site to inspect the repair to assure that proper taps are made.

**Responsibility:** City Administration, Department of Engineering

**Measurable Goal:** Number of notice letters sent and failed OSDS connected to the sewer.

**Schedule:** Ongoing

Existing Efforts: See Activity 3.3.

Future Efforts: See Activity 3.3.

**Task IV-4.5: Evaluate the integrity of the sanitary sewer system in the City.**

**Description:** Evaluate the sanitary sewer system to ensure that seepage into the groundwater and surface water is minimized. The evaluation will include visual observation, flow, other record review, sewer televising, and other means as appropriate.

**Responsibility:** City Administration, Department of Engineering

**Measurable Goal:** Report of evaluation and recommendations. Records of repairs. Number of feet of sewer televised.

**Schedule:** Ongoing

Existing Efforts: Due to a shortage in staff, the City has been forced to perform restaurant grease trap inspections on a complaint basis. Sanitary sewer lines are televised as needed.

Future Efforts: The City will continue its existing efforts.

**5. Coordinate the implementation of IDEP efforts with other government agencies.**

**Task IV-5.1: Coordination with the MCPWO and MCHD.**

**Description:** The MCHD has developed its own illicit connection and OSDS program. MCHD inspects properties upon request. When County sampling and inspection results suggest that illicit connections to County storm drains exist, MCHD and MCPWO investigate further to determine where the suspected illicit discharge is coming from. MCDC then notifies the City and MDNRE of all illicit connections/discharges suspected to originate in the City of Sterling Heights. The City investigates each suspected connection and takes appropriate action(s) in accordance with the investigative techniques described earlier.

**Responsibility:** MCHD, MCPWO, City Department of Engineering

**Measurable Goal:** Copy of notification(s). Copy of the annual report.

**Schedule:** Ongoing

Existing Efforts: See Activity 3.3.

Future Efforts: See Activity 3.3.

**Task IV-5.2: Coordination with the MDNRE.**

**Description:** The City will notify the MDNRE of illicit connections/discharges discovered and of corrective actions being taken to eliminate the connection/discharge in the annual report or immediately if appropriate. The reports will summarize the following:

- Illicit connections/discharges identified through citizen complaints, MCHD referral, inspections, sampling and/or sewer television and the corrective actions taken, including follow up inspections and sampling;
- Dry/wet weather storm water outfall inspections conducted;
- Storm sewers televised in the past year, if any, and the findings;
- Corrective actions taken as a result of storm sewer televising;
- The anticipated schedule for televising storm sewers in the upcoming year;
- Sanitary sewers televised in the past year, as well as the findings;
- Corrective actions taken as a result of sanitary sewer televising;
- The anticipated schedule for televising the sanitary sewers in the upcoming year;
- On-site sewage disposal systems found to be improperly functioning and the actions taken to correct the problems.

For significant illicit discharges, the City will list the pollutants of concern, the estimated load and volume discharged, and the locations of the discharge into the system and to the waters of the state. For unresolved sewage discharges that are the responsibility of the City, the report will follow the reporting requirements of Section 324.112a of Part 31 of Public Act 451 of 1994, as amended.

**Responsibility:** City Administration, Department of Engineering

**Measurable Goal:** Copy of the annual report.

**Schedule:** Ongoing

Existing Efforts: Information on the IDEP Program is supplied in the Annual Report. When necessary, the City notifies MDNRE of any potential or confirmed illicit connections or discharges.

Future Efforts: The City will continue its existing efforts.

**Table 4-1: Summary of Illicit Discharge Elimination Plan**

<b>REQUIREMENT</b>	<b>SCHEDULE</b>	<b>TASK</b>	<b>MEASURABLE GOAL</b>
Develop the legal authority and enforcement capability to implement its illicit connection and discharge elimination program within its jurisdiction.	Ongoing	1.1 Review City's legal authority to implement IDEP program.	Documentation of ordinance review.
	Ongoing	1.2 Amend and adopt ordinance.	Documentation of adoption. Copy of ordinance.
Prepare a drainage system map of all known City outfalls.	Ongoing	2.1 Investigate the use of GPS during inspections to aid in mapping efforts.	Documentation of decision.
	Ongoing	2.2 Field verification of known outfalls	Outfall map and table updated.
	Ongoing; Updated map submitted by 2011	2.3 Develop procedure to identify and record outfalls from new construction.	Procedure documented and implemented. New outfalls identified & mapped.
	Ongoing	3.1 Perform visual inspection and dry weather screening of all City storm outfalls.	No. of outfalls inspected and illicitis found.
	Ongoing	3.2 Trace illicit discharges and notify responsible party to correct.	No. of illicitis traced. Documentation of notification and elimination.
Develop a program to identify and eliminate illicit connections and discharges.	Ongoing	3.3 Follow-up enforcement action for non-correction.	Number of illicitis found vs. eliminated.
	Ongoing	3.4 Provide training to appropriate City staff on illicit connections and discharges, failed OSDS, safety issues and natural occurring phenomenon.	Documentation of actions.
	Ongoing	4.1 Identify and record all OSDS sites.	Number of illicit connections/discharges found, referred, and/or corrected
	Ongoing	4.2 Enforce existing and revise City ordinance.	List/map of location of all OSDS sites. Updated lists of OSDS locations with annual report.
	Ongoing	4.3 Review MCHD Program and Ordinance.	No. of notice letters sent and failed OSDS repaired or connected to sewer.
Develop and implement a program to minimize seepage from sanitary sewers and OSDS into the MS4.	Completed; Ongoing	4.4 Establish OSDS complaint reporting and tracking system for suspicious discharges.	Documentation of review. Documentation of adoption.
	Ongoing	4.5 Evaluate the integrity of the sanitary sewers in the City.	No. of notice letters sent and failed OSDS connected to the sewer.
	Ongoing	5.1 Coordination with the MCPWO and MCHD.	Report of evaluation and recommendations. Records of repairs. No. of feet of sewer televised.
	Ongoing	5.2 Coordination with MDNRE.	Copy of notification(s). Copy of annual report.
	Ongoing		Copy of annual report.
Coordinate the implementation of IDEP efforts with other government agencies.	Ongoing		
	Ongoing		

# *Section V - Post-Construction Storm Water Management Program*

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## **5.1 Post-Construction Storm Water Management Program (P-CMP) Objectives**

The City of Sterling Heights will address storm water management issues for new development and redevelopment at various levels—from City mandates to specific controls for individual projects—by developing and implementing a comprehensive stormwater master plan. The objectives of the P-CMP are to minimize the effects of urbanization by addressing storm water runoff from new development and redevelopment projects that disturb one acre or greater, including projects less than one acre that are part of a larger common plan of development, that discharge to the storm sewer system. The stormwater master plan will be a comprehensive document which describes policies, standards, and requirements for preventing storm water impacts and protecting sensitive areas. The plan will detail methods of inspection, enforcement, and levels of responsibility for long-term maintenance.

## **5.2 Planned Efforts**

The following subsections summarize the three (3) required elements of a P-CMP as specified in the Permit and the City’s plan for addressing each requirement. The City is committed to the comprehensive management of storm water issues. The plans and actions implemented by the P-CMP will be consistent with the regulations and plan objectives. A summary of the implementation schedule and the tasks and measures for the P-CMP are given in Table 5-1.

### ***1. Develop a storm water master plan for development, implementation, and enforcement of jurisdiction-wide controls to protect the designated uses of State receiving waters.***

#### **Task V-1.1: Prepare and adopt a stormwater master plan.**

**Description:** Develop a comprehensive storm water master plan which emphasizes controlling impacts of storm water runoff from new construction and redevelopment sites. The storm water master plan would include development guidelines, discharge construction regulations and design standards that will regulate the quantity and quality of storm water. For new developments, when the downstream improvements are inadequate, the Storm Water Management Plan requires new developments to provide detention storage volume equivalent to two inches over the tributary drainage area, and peak run-off from the detention basins is restricted to 0.1 cubic feet per second per acre (this is consistent with Macomb County Engineering Design Standards). The Engineering Department utilizes the Storm Water Master Plan and all area engineering maps and information to determine if downstream improvements are needed. The Storm Water Management Plan emphasizes maintaining required detention ponds as permanent facilities and modifying the philosophy of individual detention ponds for each site to a regional detention approach. The regional ponds would be more like receiving “lakes” with the larger size and flow minimizing the nuisances commonly associated with small detention ponds.

Examples of comprehensive management plan controls for prevention of impacts from urbanization include the following:

- ☒ Policies and ordinances that provide requirements and standards for directing growth to identified areas;
- ☒ Protecting sensitive areas such as wetlands and riparian areas;
- ☒ Maintaining and/or increasing open space;
- ☒ Encouraging infill development in higher density urban areas and areas with existing infrastructure;
- ☒ Establishing in-stream maximum flow targets designed to minimize stream bank erosion and maintain healthy fish populations;
- ☒ Coordinating release volumes and rates from detention basins to achieve in-stream maximum flow targets.

Adopted the plan as city-wide policy to guide plan review, inspections, upgrades to infrastructure, and enforcement.

**Responsibility:** City Department of Engineering  
**Measurable Goal:** Documentation of adoption.  
**Schedule:** Ongoing – Master Plan was revised in 1992 and updates were made in 2008.

***2. Develop the legal authority to address post-construction storm water runoff from new development or redevelopment to the extent allowable.***

**Task V-2.1: Adopt policies and ordinances or other regulatory mechanisms to require appropriate post-construction BMPs.**

**Description:** The City reviewed existing engineering design standards and ordinances in 2005 to ensure that floodplain, natural features, cluster developments, and other post-construction issues were properly addressed. The City will develop a spreadsheet or database to track all plan reviews and permits, violations, ordinance enforcement, BMP location, and conservation easements. The Macomb County Public Works Office is currently updating their engineering design standards. Once these standards are finalized, the City will review and revise their own standards if necessary. The City will review their ordinances and standards every 5 years.

**Responsibility:** City Department of Engineering  
**Measurable Goal:** Documentation of review and adoption.  
**Schedule:** Ongoing

Existing Efforts: The City Engineer reviewed the existing ordinances in 2006 and 2008. No revisions are necessary at this time.

Future Efforts: The City will revise its ordinances as needed.

In Section 4.04 of the Subdivision Regulations (Ordinance 196) of the City Code requires that if any part of a proposed subdivision lies within the floodplain of a river, stream, creek or lake, approval of the final plat shall be conditioned on the following:

1. No building shall be located on any portion of a lot lying within a floodplain, unless approved in accordance with the rules of the Water Resources

Commission of the Department of Natural Resources;

2. Restrictive deed covenants shall be filed and recorded with the final plat that the floodplain area will be left essentially in its natural state;
3. Any portion of the proposed subdivision within the floodplain, either wholly or in part, shall require specific compliance with the Subdivision Control Act and its review by the Water Resources Commission of the Department of Natural Resources.
4. If it is determined that a flood problem does exist, the City Council shall reject the plat for failure to comply with the provisions of this section.

Section 4.05 of the Subdivision Regulations (Ordinance 196) of the City Code requires the following:

- A. *Existing features.* Existing natural features and character of lands shall be preserved wherever possible. Due regard must be shown for all natural features such as large trees, natural groves, watercourses and similar community assets that will add attractiveness and value to the property, if preserved. The preservation of drainage and natural stream channels must be considered by the subdivider, and the dedication and provision of adequate barriers, where appropriate, shall be required.
- B. *Suitability of lands.* Lands subject to flooding or otherwise deemed by the Planning Commission to be uninhabitable shall not be platted for residential purposes or for uses that may, in the judgment of the Planning Commission, increase the danger to health, life or property or increase the flood hazard. Such land shall be platted for other uses, such as parks or other open space.
- C. *Environmental assessment.* Where appropriate, the Planning Commission may require the subdivider to submit an environmental assessment, which shall include reviews and statements from all affected agencies.

The City within the Zoning Ordinance (Section 22.01 and 22.03) has a cluster option and a planned unit development option. Both of these sections encourage innovation and allow more efficient use of land through the use of regulatory flexibility in the consideration of proposed land uses within the City consistent with the City's Master Land Use Plan. Further, they encourage the development in keeping with the physical character of the City and the area surrounding the proposed development, and preserving much of the vegetation and terrain as possible as a part of the development.

The following design requirements have been adopted into the Zoning Ordinance of the City Code for the cluster development option:

1. Within the cluster development, a minimum of 20% of the total parcel shall be in preservation areas. Road rights-of-way, bodies of water, utility easements, regulated wetlands, floodways, required yard areas and limited common areas not available for use by all of the residents within the development, while included in the total parcel area, shall be excluded from the preservation area calculations. The City will develop a spreadsheet or database to track the number of cluster zoning applications and approvals.

2. On parcels which contain wetlands, floodplains and/or landfill areas, the following shall apply:
  - a. When the wetland, floodplain and/or landfill area does not comprise 50% of the parcel, 25% of this land will be included in acreage for computation of density;
  - b. When the wetland, floodplain and/or landfill comprises 50% or more of the parcel, a 25% density increase will be permitted on land other than wetland, floodplain and/or landfill;
  - c. No density credit will be allowed for any bodies of water on the parcel, even if the entire shoreline is within the parcel to be developed; however, an area to be improved into a lake or pond, when approved by the city, shall not be excluded from the 25% density credit.

The City of Sterling Heights has established a Brownfield Redevelopment Authority and has designated the entire city as a Brownfield Redevelopment Zone. The purpose of this designation is to allow private developers an opportunity to take advantage of tax incentives and grant programs to redevelop underutilized and/or obsolete properties as well as remediate those properties that may be, or appear to be, contaminated.

Our first objective is to assist in the remediation of contaminated sites to provide a healthy environment for all of our stakeholders. Our second object is to use our limited available land to its highest and best use. Our third objective is to protect the property values of all of the property in the city. Contaminated sites tend to be underutilized and reduce the property values of not only the specific site, but surrounding properties as well. By redeveloping sites, we can redirect growth to areas that already have public infrastructures in place, thus saving the taxpayers millions of dollars in needless future reinvestment.

Article III of Chapter 53 of the Code of Ordinances has established a Tree Preservation ordinance. The purpose of this ordinance is to provide for the protection, preservation, replacement, proper maintenance and use of trees and woodlands located in the city in order to minimize disturbance to them and to prevent damage from erosion and siltation and loss of wildlife habitat and vegetation.

With the adoption of the above ordinances, the City feels that the issue of preservation of existing vegetation and terrain has been addressed; therefore, no further additional ordinances are planned at this time. Further, the amendments, which have been adopted, more adequately addresses in keeping with the overall Master Land Use Plan of the City.

The Office of Engineering standards include the following items into our Plan Review Requirements to support the reduction of post construction storm water runoff:

☒ Typical cross section slopes will be varied to minimize the increase in erosion potential and to facilitate safety and drainage. The concentration of water at the top of slopes will be controlled with infiltration areas, intercepting ditches, diversion berms, or drop structures. The concentration and velocity of runoff on side slopes will be minimized horizontal surface roughening practices. Reducing effective slope length and promptly installing anchored mulch material or geotextile surface coverings.

☒ Ditches and channels will be designed with the “flattest” side slopes allowed by the right-of-way (preferably 3H:IV) and broad, rounded bottoms. This type of cross-sectional profile has been shown to minimize bank, channel erosion, and improve safety features. Gradual variations will be used when altering channel alignment in order to reduce the potential for bank erosion at curves. All or portions of the channel will be lined with erosion resistant materials if the bed and/or bank surfaces will erode at prevailing or anticipated runoff flows velocities.

☒ Culverts and structures generally constrict flood-flow, increase velocities, and increase erosion potential. Energy of high velocity flow at the outlet of culverts will be dissipated with approved measures or the bank and channel surfaces will be protected with erosion-resistant materials. Culverts will be located so that minimum changes will be made to channel orientations even to the point of allowing skewed culvert alignments.

☒ Check dams, sediment traps, or both in combination will be placed in unstabilized waterways or roadside ditches to reduce runoff velocity and trap sediments caused by upstream erosion. These devices may be either temporary or permanent, depending upon the extensiveness of unstabilized channel soils and the project phase in which the unstabilized channel(s) occurs. Each plan will contain provisions for the periodic maintenance and removal and disposal of accumulated sediment behind these devices. Any sediment control device will be cleaned of sediment and restored to full effectiveness as soon and as often as is necessary to maintain peak efficiency.

☒ Prior to the issuance of occupancy permits by the Office of Building Services or release of builder’s bond or soil erosion bonds, all disturbed areas are required to be restored with vegetation (grass must be growing). All temporary soil erosion and sedimentation control measures removed and all landscaping to be installed. All storm sewers to be cleaned. All catch basin sumps to be cleaned.

☒ All earth changes shall be designed, constructed and completed in such a manner to limit the exposed area of disturbed land for the shortest possible period of time.

☒ A minimum 20 ft. vegetative buffer strip shall be maintained adjacent to all water bodies.

☒ Retention Basin Agreements will be executed for developments with retention basin to insure appropriate operations and maintenance of those basins. An easement will be required over the proposed retention basin and a retention basin access easement must be dedicated to the City of Sterling Heights prior

to site plan approval to allow city personnel access for regular inspections and maintenance activities.

- Open Space Agreements will be required for cluster developments, which identifies the ownership, management, maintenance, and any other pertinent requirements for the open space located within the proposed development. The Open Space Agreement will be approved by City Council prior to final plan approval.
- Conservation Easement Agreements will be required relative to the regulation and maintenance of the designated greenbelts and other natural features. The Conservation Easement will be approved by the City Council prior to final plat approval.

**Task V-2.2: Provide training for City field staff.**

**Description:** The P-CMP will be assigned to the City’s Department of Engineering, as they Review and approve all development plans within the City limit. The personnel needed to implement this program include plan review staff that are knowledgeable of the permitting process, and site inspectors that are trained in overseeing the implementation and maintenance of BMPs during and after construction. The following types of training are essential to the success of the post-construction program:

- Recommended Best Management Practices (BMPs);
- Training of staff responsible for plan reviews and permit issuance in the design and application of BMPs and post-construction controls;
- Training of inspection staff in the proper methods and installation techniques of BMPs and post-construction controls.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Copy of the training program and employee attendance records.

**Schedule:** Ongoing

Existing Efforts: City staff have attended various SEMCOG and MDNRE Municipal Training workshops when they have been offered.

Future Efforts: The City will continue its existing efforts.

**Task V-2.3 Prepare informational materials and conduct outreach for the development community.**

**Description:** In conjunction with its PEP and Construction Site Runoff Control Program, the City will provide informational and educational materials to the construction/development community for both structural and non-structural BMPs. The materials will be in the form of brochures/handouts that will be provided to developers at the time of construction permit application. The informational brochures/handouts will cover subjects such as:

- Low-impact development/Landscaping for storm water control
- Minimization of impervious surfaces
- Maximization of infiltration
- On-site storm water detention

- ☒ On-going inspection and maintenance
- ☒ Site planning measures that avoid or reduce disturbance of sensitive areas and limit addition of impervious surfaces
- ☒ Pollution prevention/source control measures that reduce or eliminate potential future sources of pollutants
- ☒ Treatment control measures that treat polluted runoff from new development/redevelopment sites
- ☒ Capturing sediment
- ☒ Good housekeeping

**Responsibility:** City Department of Engineering; City’s Consultant

**Measurable Goal:** Copies of the information and numbers distributed. Calculations of nonpoint source pollutant loading reductions based on the number and types of BMPs implemented within the City.

**Schedule:** Ongoing

Existing Efforts: In 2007, the City developed building brochures for homeowners performing home improvement projects.

Articles were published in the Fall and Winter 2008 Magazine regarding building permit requirements and an article on LEED/green development was featured in the Spring 2009 edition.

*Strategy for a Sustainable Sterling Heights* was developed in April 2008, which identifies storm water management and other post-construction goals for the City. This document is available on the City website.

Future Efforts: The City is considering utilizing the existing WCDOE/DPS River-Friendly Report for Contractors and Developers.

The City will continue to publish articles in the Magazine and post information on the website.

**Task V-2.4: Inspection Program.**

**Description:** From construction drawings submitted by the developer and site inspections, the City’s engineering and building departments will determine the proper installation of post-construction controls and BMPs implemented on the project. The checklist will be developed to reflect the proper implementation of post-construction controls and BMPs and inspection program will ensure that storm drains/inlets are adequately isolated from pollutant sources. The City will develop a spreadsheet or database to track the number of approved BMPs and their location, etc. as well as the number of Cluster Development Zoning applications have been approved, etc.

**Responsibility:** City Administration

**Measurable Goal:** Inspection and enforcement records. Records of # and type of BMPs installed.

**Schedule:** Ongoing

Existing Efforts: A portion of the streambank at Jaycee Park is being stabilized with native plantings. The City is considering partnering with neighboring Clinton River Watershed communities to develop

a woody debris management plan.

Future Efforts: The City will create a spreadsheet of post-construction BMPs as they are installed.

**Task V-2.5 Long-Term Operations and Maintenance Program.**

**Description:** A major problem with many new development and redevelopment runoff controls is the proper long-term maintenance and operations of post-construction controls.

The problem has many facets:

Post-construction runoff controls require proper maintenance and become

less effective or fail when maintenance is inadequate;

Projects are often built by one entity and then occupied/owned by another

entity. Several ownership changes make it difficult to delegate maintenance procedures and responsibilities to subsequent owners;

Occupants/owners may not wish to take on maintenance responsibilities or

costs or may be ignorant of such responsibilities or costs.

To avoid these problems, the City will have mechanisms in place to ensure that the controls are properly maintained. At the time of the permit issuance, the City will require the applicant to provide a clear explanation of who is to maintain the controls, the frequency at which the maintenance is to be conducted, and who is liable if maintenance is not completed. The MCPWO developed an Operations and Maintenance form that the City will use and modify as necessary.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Copy of the program/agreement. Number of agreements entered.

**Schedule:** Begin by 2011

Existing Efforts: All City and privately-owned detention basins were inventoried in 2008. A recommendation report was provided to the City. The City is currently working with its consultant, Macomb County Public Works, and the Red Run SWAG to apply for grant funding to rehabilitate two (2) City-owned detention basins within the City.

Future Efforts: As stated in the *Strategy for a Sustainable Sterling Heights* by 2011, the City will review its existing policies and procedures to promote and encourage green facilities, construction, and sustainable land use and development.

**3. Review and revise plan review procedures and requirements.**

**Task V-3.1: Revise plan review procedures for new developments or redevelopments to ensure appropriate installation of BMPs, minimize illicit discharges, and ensure adequate long-term maintenance.**

**Description:** Prior to receiving a construction permit from the City for a new development or redevelopment project, the applicant or developer must secure and submit all required approvals and permits from State and County agencies (MDNR, MDNRE, MDOT, MCRC) and others as required. This process provides the City the opportunity to review the project during the planning stage and to direct its design and development in regards to stormwater runoff issues through the City's

Engineering Department.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Documentation of review and a copy of the review procedure.

**Schedule:** Ongoing; Begin by 2011

Existing Efforts: All plans are reviewed by the Department of Engineering.

Future Efforts: See Activity 2.5.

**Table 5-1: Summary of Post-Construction Storm Water Management Program**

<b>REQUIREMENT</b>	<b>SCHEDULE</b>	<b>TASK</b>	<b>MEASURABLE GOAL</b>
Prepare and adopt a storm water master plan.	Ongoing – revised in 1992; additional updates made in 2008	1.1 Prepare and adopt a stormwater master plan.	Documentation of adoption.
Develop legal authority to address post-construction storm water runoff from new development and redevelopment.	Ongoing	2.1 Adopt policies and ordinances or other regulatory mechanism to require appropriate post-construction BMPs.	Documentation of review and adoption.
		2.2 Provide training for City field staff on P-CMP	Copy of training program and records.
		2.3 Prepare informational materials and conduct outreach for the development community.	Copies of information distributed.
		2.4 Implement a post-construction inspection program	Inspection and enforcement records. Records of number and type of BMPs installed.
		2.5 Develop a Long-Term Operations and Maintenance program.	Copy of the program/agreement. No. of agreements entered.
Review and revise plan review procedures and requirements.	Ongoing; Begin by 2011	3.1 Revise plan review procedures to include P-CMP for new development and redevelopment.	Documentation of review and copy of review procedure.

# *Section VI- Construction Site Storm Water Runoff Control Program*

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## **6.1 Construction Site Storm Water Runoff Control Program (CRCP) Objectives**

Storm water runoff from construction sites is currently regulated by the City of Sterling Heights and MDNRE. The City Department of Engineering reviews site plans and enforces the Part 91 regulations within the City limits, and the City's consultant inspects the construction sites.

## **6.2 Existing Efforts**

### **Enforcement Procedures**

On the date of a regular inspection, scheduled grading activity, after a significant event resulting in runoff or if driving by a permitted site the enforcement consultant notices a lack of compliance of the soil erosion and sedimentation control policy/plan or city ordinance, he shall notify the onsite responsible person and the applicant/property owner verbally. A written violation letter shall follow (via certified mail), within 24 hours of the verbal notification, if the situation is not immediately addressed. The inspector shall post a "**STOP WORK NOTICE**" stopping all further inspections of the site if corrective measures have not been taken within 5 days of the first notification. The inspector shall notify the Office of Engineering/Building that further inspections are stopped and when inspections can resume. If corrective measures have not been undertaken within 5 days of the "**STOP WORK NOTICE**", a "**STOP WORK ORDER**" will be issued stopping all work on the site. The "**STOP WORK ORDER**" will outline the items to be corrected or repaired. If the cost of corrective measures will not exceed \$500.00 the enforcement consultant shall notify the property owner/applicant in writing (via certified mail) to remedy the situation within 10 days. If the cost of corrective measures will exceed \$500.00 the enforcement consultant shall notify the property owner/applicant in writing (via certified mail) to remedy the situation within 20 days.

If the time to implement the corrective measure has elapsed, the City shall retain the services of an independent contractor or the Office of Public Works to install the required measures. The City shall deduct the costs incurred from SESC bond deposited at permit issuance or place a lien on the property in accordance with City Code. If the funds posted for SESC measures have been depleted the "**STOP WORK ORDER**" will be continued until sufficient additional funds have been deposited with the City. No further non-soil erosion and sedimentation control inspections shall be conducted on the site until additional funds have been deposited.

In cases where mud tracking on City roads is an issue, the property owner/applicant shall be required to clean the road in accordance with City Code 17-14(j). If the roadway is not cleaned up within 24 hours or within a time specified by the inspector based on safety considerations, the inspector shall notify the Office of Public Works to have the roadway swept/cleaned. The inspector shall post a "**MUDDY STREET NOTICE**" stopping all further inspections. The inspector shall notify the Office of Engineering/Building that further inspections are stopped and when inspections can resume. Inspections can resume only after the street has been swept and reinspected. The Office of Public Works shall keep track of all expenses and forward a copy of the bill to the inspector and the Office of Engineering. The Engineering Office shall deduct the expenses from the SESC bond deposited at the time of permit issuance.

The objective is to provide a final comprehensive enforcement tool that will restrict occupancy of a structure if the approved plans are not followed. Monies are retained in sufficient amounts to maintain the Soil Erosion and Sedimentation Control measures if the applicant fails to do so. City Engineering inspectors visit the site on a regular basis to determine conformity to the site development's SESC plan. For those developments that are not required to obtain a SESC permit, the City's building inspectors monitor the construction for conformance to City Ordinance. This consistent inspection and enforcement of existing Soil Erosion and Sedimentation Control Ordinances maintain sufficient funding and ongoing training of field personnel ensure that adverse water quality impact will be minimized.

### **Soil Erosion and Sedimentation Control Plan Review**

All development projects have a comprehensive soil erosion and sedimentation control plan or established procedure in place and functioning before the soil is disturbed and until all exposed soils are permanently stabilized.

After a site plan is found to be in conformance with all applicable ordinances and laws it is approved. Any construction to include single family home sites, right-of-way work, or site development that is within 500 feet of a natural drainage course, inland lake or stream or disturbs more than 1.0 acre of land is required to obtain a Soil Erosion and Sedimentation Control Permit. State law requires that any site over 1.0 acres obtain a NPDES permit.

The following BMPs will be implemented when appropriate into all Soil Erosion and Sedimentation Control plans:

- ☒ Design and construct terrain features such as slopes and drainage ways to minimize the erosion potential of the exposed site based on the soil type, time of year, proximity to waterways, duration of exposure, length and steepness of the slope, and the anticipated volume and intensity of runoff.
- ☒ Minimize the surface area of unstabilized soils left unprotected and vulnerable to runoff and wind at any one time.
- ☒ Minimize the amount of time that unstabilized soil areas are exposed to erosion.
- ☒ Protect and shield exposed soil areas with a cover of live vegetation, mulch, or approved erosion-resistant material during the temporary and permanent control periods on construction.
- ☒ Avoid concentrating runoff. When concentrated runoff cannot be avoided, runoff velocities will be reduced to non-erosive velocities.
- ☒ Eroded sediments will be trapped on-site with temporary and permanent barriers, basins, or other sediment retention devices while allowing for the controlled discharge of runoff waters at non-erosive velocities.

### **6.3 Planned Efforts**

The following subsections summarize the required elements of a CRCP as specified in the Permit and the City's plans for addressing each element. The City is committed to ensuring that the activities of each of the required elements are properly implemented. The plans and actions completed by the CRCP will

comply with the regulations and plan objectives. The implementation schedule, tasks, and measures for the CRCP are outlined in Table 6-1.

**1. The permittee shall prohibit storm water discharge into MS4s from construction activities that are not in compliance with the requirements included in the State of Michigan's Permit by Rule (Rule 323.2190).**

**Task VI-1.1: Coordinate with MDNRE.**

**Description:** MDNRE currently regulates storm water discharge from construction activities greater than one (1) acre or which directly discharge to waters of the State (including separate storm sewers) under NPDES permits through a Permit-by-Rule. Although it is the responsibility of the permittee to notify MDNRE within 5 days of becoming aware of an NPDES permit violation, the City may also notify the appropriate MDNRE personnel of such a violation. The City will also review and follow-up on any cases referred to them by MDNRE and update MDNRE on the status of these cases during regular progress reports. The City will notify the MDNRE verbally, within 24 hours, if a construction activity results in a deposit or imminent threat to deposit solids or other waste materials into the drainage system that may endanger health or the environment. The City will report to MDNRE in their annual report of the number of new permits, closeouts, and notice of violations within that year.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Documentation of referrals and other issues.

**Schedule:** Ongoing

Existing Efforts: The City notifies MDNRE on SESC issues as needed. SESC updates are provided in the Annual Report.

Future Efforts: The City will continue its existing efforts.

**2. Review preliminary construction site plans to ensure adequate soil erosion and sediment controls.**

**Task VI-2.1: Review the existing SESC Program.**

**Description:** Per MDNRE's request, the City reviewed their SESC Program in 2006 and made minor changes to their Permit fees and overall program. MDNRE approved these changes.

**Responsibility:** City Administration

**Measurable Goal:** Documentation of review of the OCDC's SESC.

**Schedule:** Ongoing

Existing Efforts: Changes were made to the City's program in 2006.

Future Efforts: The City will re-evaluate its program as needed.

**Task VI-2.2: Review and revise existing City ordinances as necessary to implement the CRCP.**

**Description:** Upon MDNRE's request, the City revised their Soil Erosion and Sedimentation

Control Ordinance. The Ordinance was approved by MDNRE in Spring 2006 and adopted by the City Council in August 2006.

All Storm Water Ordinances and Engineering Design Standards were reviewed by the Department of Engineering in 2006 and were found to be sufficient in implementing the CRCP.

MDNRE currently regulates storm water discharge from NPDES permitted construction activities through its Permit by Rule. The NPDES regulations for construction sites necessitate the permittee to comply with following:

- ☒ Requirements for construction site operators to implement appropriate SESC BMPs;
- ☒ Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste that may cause adverse impacts to water quality;
- ☒ Requirements for construction site operators to develop and implement storm water pollution prevention plans;
- ☒ Requirements to submit a site plan for review that incorporates consideration of potential water quality impacts and ensures that the site is adequately sized for the placement of appropriate SESC BMPs.

The City currently prohibits storm water discharges into MS4s from construction activities that are not in compliance with these four (4) requirements of the Permit by Rule.

**Responsibility:** City Department of Engineering  
**Measurable Goal:** Documentation of review and changes to ordinance.  
**Schedule:** Completed; Ongoing

Existing Efforts: The revised SESC Ordinance was adopted in 2006.

Future Efforts: The City will review and revise its ordinance as needed.

**Task VI-2.2: Review and revise the City’s plan review process.**

**Description:** The City’s site plan review process has been reviewed and revised to ensure that construction site runoff issues are addressed. See Existing Efforts for details.

**Responsibility:** City Department of Engineering  
**Measurable Goal:** Documentation of changes to site plan review process.  
**Schedule:** Completed; Ongoing

Existing Efforts: The City revised its plan review process in 2006.

Future Efforts: The City will re-evaluate and revise its process as needed.

***3. Develop and implement a procedure to receive complaints and other information submitted by the public regarding construction site storm water runoff.***

**Task VI-3.1: Complaint response and investigation.**

**Description:** Citizens and business owners are often an excellent source of information regarding runoff from construction sites. Complaints received regarding construction storm water runoff shall be directed to the Office of Engineering for resolution. The City has adopted a policy of using on-site personnel for soil erosion and sedimentation control inspections on construction and in-house maintenance operations. These personnel inspect soil erosion and sediment controls regularly and initiate any changes in field if required. Erosion and sedimentation problems and/or violations will be corrected immediately and documented in the inspection reports.

**Responsibility:** City Department of Engineering, City’s Consultant

**Measurable Goal:** Documentation of complaint receipt and response. Numbers of complaints received.

**Schedule:** Ongoing

Existing Efforts: The City has a complaint/response system in place for handling all SESC issues.

Future Efforts: The City will continue its existing efforts.

**Task VI-3.2: SESC Program tracking and reporting.**

**Description:** The City keeps a database of all open and closed SESC permits, site inspections, failures, and corrections. The City reports to MDNRE in their Annual Report the status of the SESC program (number of new and closed permits, number of inspections, failures, and corrections).

**Responsibility:** City Department of Engineering, City’s Consultant

**Measurable Goal:** Documentation of number of new permits, permit closures, notice of violations in Annual Report.

**Schedule:** Ongoing

Existing Efforts: The City provides SESC information in the Annual Report.

Future Efforts: The City will continue its existing efforts.

**4. Provide education materials and outreach.**

**Task VI-4.1: Provide outreach and distribute educational materials to the construction community.**

**Description:** In conjunction with its PEP, the City provides informational and educational materials to the construction/development community and homeowners to consider when planning projects or filing for permits. This includes guiding principles along with cost-effective measures that can be implemented into projects to reduce the potential of urban storm water runoff impacts. The following materials were developed for homeowners and business owners:

Building Brochures for homeowners performing various home improvement projects.

The *Sharp Newsletter* is developed quarterly and is mailed to all business owners. The newsletter is also available on the website.

**Responsibility:** City Department of Engineering, City's Consultant  
**Measurable Goal:** Copies and numbers of materials distributed. Improved SESC compliance (documentation of a reduction in non-compliance records).  
**Schedule:** Ongoing; Additional materials distribution by 2011.

Existing Efforts: In 2007, the City developed a series of Building Brochures for homeowners performing various home improvement projects.

An article on SESC was published in the Winter 2008 *Sharp* economic development newsletter. Articles were published in the Fall and Winter 2008 Magazine regarding building permit requirements, etc.

Future Efforts: The City will publish SESC articles in the Magazine by Fall 2010. The City will continue its existing efforts.

By 2011, the City will consider utilizing existing materials developed by MDNRE, etc. to distribute to the construction community.

**Table 6-1: Summary of Construction Storm Water Runoff Control Program**

<b>REQUIREMENT</b>	<b>SCHEDULE</b>	<b>TASK</b>	<b>MEASURABLE GOAL</b>
Coordinate with MDNRE Review preliminary construction plans to ensure adequate SESC.	Ongoing	1.1 Coordinate SESC with the MDNRE	Documentation of contacts with the MDNRE.
	Completed; Ongoing	2.1 Review the SESC program.	Documentation of review and compliance with Phase II.
Develop and implement a procedure to receive complaints regarding construction.	Completed; Ongoing	2.2 Review and revise City ordinances as needed to implement the CRCP.	Documentation of review and changes.
	Ongoing	2.3 Review and revise the City's site plan review to include CRCP.	Documentation of changes to site plan review process.
	Ongoing	3.1 Establish and use a complaint tracking, response and investigation system.	Documentation of complaint receipt and response.
Provide educational materials and outreach.	Ongoing	3.2 SESC Program tracking and reporting.	No. of new/closed permits. No. of inspections. No. of notice of violations. No. of corrections.
	Ongoing; Future materials distribution by 2011	4.1 Provide outreach and education to the construction community on SESC and CRCP.	Copies of materials distributed. No. distributed. Improved SESC compliance.

# ***Section VII - Pollution Prevention and Good Housekeeping Plan***

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## **7.1 Pollution Prevention and Good Housekeeping Plan (PPGHP) Objectives**

The purpose of the PPGHP is to monitor, evaluate, and improve pollution prevention measures at municipal and municipally-owned facilities. The evaluation will include, but is not limited to, the use and maintenance of: structural controls, roadways, parking lots, vehicles, storm sewers, flood control mechanisms, pesticides, fertilizers, and stockpiles of salt and other raw materials.

The general objectives of the PPGHP are to:

1. Meet the required elements of a PPGHP as outlined in the permit.
2. Involve the municipal operations personnel in the decision-making, review, and implementation of the management plan.
3. Educate the municipal operations personnel in pollution prevention and good housekeeping and in the implementation of the management plan.

## **7.2 Current and Planned Efforts**

The following paragraphs summarize the seven (7) required elements of a PPGHP as specified in the Permit and the City's plan for addressing each. The City is committed to implementing activities in all seven of the required elements in the first year of program implementation. Future scheduled activities and potential activities are listed under each element, as well. The information and actions encouraged by the PPGHP will be consistent with the regulations and plan objectives. Table 7-1 is a summary of the tasks, measures, and implementation schedule of the PPGHP.

Currently, the City performs several general maintenance activities to address storm water management and safety procedures. In the implementation of this plan, these activities will either be continued or augmented to correlate with Phase I regulations to ensure compliance.

### **A. Employee/Contractor Training**

Several City employees have attended various SEMCOG Municipal Training, CRWC, SOCWA, and WCDOE workshops since they have been offered. These workshops provide information regarding: environmentally-friendly turf management, structural controls maintenance, proper street and parking lot maintenance, road salt storage and applications, proper snow removal and storage, and illicit discharge elimination program concepts.

By Fall 2010, the City will begin providing training information to its turf management contractor and additional contractors as needed.

### **B. Structural Controls**

1. *Catch Basin Cleaning.* Each year, typically 300 to 500 of the City's catch basins are cleaned. Catch basins are cleaned by the Dept. of Public Works with a vacuum truck. The vacuum method uses a vacuum unit to pull sediments out of the catch basin sump. These sediments are collected and taken to the Parks and Grounds facility where they are deposited onto a concrete pad and allowed to dewater into the sanitary sewer. Spoil samples are taken to a local laboratory for

analysis of metals. The results of the samples are sent to City Environmental Services, the company we have contracted with for hauling. Street sweepings and catch basin debris are hauled to Pine Tree Acres for disposal.

The goal is to clean each of the City's 7,000+ catch basins on a five (5) to seven (7) year rotation. With the purchase of a new Vac-All, we anticipate achieving these projected numbers.

The current program may be enhanced by utilizing computerized database to track catch basin maintenance operations. This would provide the necessary information to optimize the catch basin cleaning program.

Catch basin cleaning at construction sites is the responsibility of the developer. Under the development's Soil Erosion and Sedimentation Control Permit, all necessary precautions are taken to reduce sediment from entering the storm sewer catch basins. If these controls should fail, the developer is required to clean the catch basins. If the developer fails to perform this cleaning, the City's Dept. of Public Works cleans the catch basins and charges the developer's escrow account. Once the development is completed, an inspection is performed to ensure that the catch basins are free of sediment before the project is accepted.

A map of the Sterling Heights storm sewer system was submitted with the 2008 Permit Application. A map showing all City parks, municipal buildings, recycle centers, schools, golf courses, and fire stations was also submitted with the Application.

2. *Ditching and Culvert Cleaning.* Upon notification by residents or when a blockage is discovered, ditching is performed as well as the removal of obstructions from culverts in order to maintain the free flow of storm water.
3. *Detention Pond Cutting and Maintenance.* The City cuts the grass in 24 City-owned basins three (3) to four (4) times per year. At this time, the grass is allowed to remain in the retention basins. If wet conditions in the bottom of the pond do not allow regular cutting, the ponds will be hand cut; and the cuttings will be removed from the pond.

Sixteen (16) of the detention basins maintained by the City have pumps. In these ponds, water and sediment are removed from the wet wells to make the pumps available for normal maintenance and necessary repairs in order to keep the pumps in good working order.

In addition to the 24 City-owned detention basins, there are 196 detention and retention ponds that are privately or county-owned. City inspectors make annual inspections of these sites. If any problems are discovered, the owner is notified and given ten (10) days to make repairs. Repairs not made within the allotted 10 days are completed by the City, and the costs assessed to the property owner.

The City's consultant performed a City-wide detention pond survey in 2007. A report including data, photo documentation, and recommendations was provided. The majority of the detention ponds within the City are privately-owned. The City is currently working with MCPWO and neighboring subwatershed communities to apply for grant funding that would allow the City to rehabilitate two (2) City-owned basins by addressing soil erosion and goose control concerns. A detention basin map is available upon request.

The City's consultant reviewed the existing turf management contract and provided recommendations in 2008. The report included recommendations regarding detention pond mowing and maintenance.

4. *Privately Owned Detention Basins.* Privately owned detention basins that are not maintained by the City through a maintenance agreement are inspected annually by City inspectors.

The ponds are inspected for grass cutting, fencing requirements, excess sediment build up and the condition of inlet and outlet pipes. Letters are sent to the owners if work or repairs are deemed necessary. If repairs are not completed, the city has the right to make the necessary repairs and charge the property owner.

By 2011, the City will distribute the SEMCOG Detention Pond Manual and maintenance checklist to the owners of these private basins.

5. *Storm Sewer Inspection and Repair.* Upon completion of any City development and prior to any sewer connections being made, the developer is required to contact the Public Works Office 48 hours prior to making a sewer tap. A sewer inspector is on-site when taps are made. Although this is done primarily for sanitary sewer connections at new developments, this ensures taps are made into sanitary sewer and not inadvertently made to the storm sewer.

This process also takes place where additional storm sewers are constructed and taps to the storm sewer made. Engineering inspectors are on-site to inspect storm sewer construction and connections to the storm sewer main.

Upon notification of potential storm sewer blockages or suspected sediment infiltration of storm sewer lines, Public Works employees inspect the site by means of dye testing, televising the sewer line, or by making a visual inspection of the storm sewer. Necessary repairs are then made at the cost to the necessary party. Sedimentation blockages are power jetted to a manhole sump and vacuumed.

### **C. Roadways, Parking Lots, and Bridges**

1. *Street and Parking Lot Sweeping.* All major roads and local streets under the city's jurisdiction are the maintenance responsibility of the Dept. of Public Works. Normal sweeping operations begin in the spring and end in the fall. Currently, three (3) vacuum sweepers are utilized on a regular basis, with another older model regenerative air sweeper utilized during regular sweeper down time. Generally, all City-owned parking lots are swept while area streets are being swept, unless there is a specific complaint from a City resident or employee.

The heavily used major roads are swept during the nighttime hours in order to take advantage of lower traffic volumes and to allow for more continuous, efficient sweeping. Local roads and lesser-traveled major roads are cleaned during the daylight hours. These hours are more effective due to fewer parked cars on the road right-of-way and allow greater removal of sediment. Collected debris is taken to the Parks and Grounds facility and deposited on a concrete pad and allowed to dewater into the sanitary sewer. Spoil samples are taken to a local laboratory for analysis of metals. The results of the samples are sent to City Environmental Services, the company we have contracted with for hauling. Street sweepings and catch basin debris are hauled

to Pine Tree Acres for disposal if approved upon sample results. Approximately 700 cubic yards of sediment and debris are removed from City streets each year.

Roadways and parking lots in developments, which are under construction, are monitored by field inspectors from the Office of Engineering. City Ordinance 17-53 requires prompt removal of all soil, miscellaneous debris or other materials applied, dumped or otherwise deposited on public streets. If the contractor fails to maintain the site properly, City Ordinance 17-50 requires the payment of all necessary costs and expenses that may be incurred or expended by the city in causing all such work to be done.

Improvements to the new development areas under road construction that have been adopted include:

- ☒ Contracting with a local engineering firm the services of an inspector who inspects each site a minimum of every other week to monitor soil erosion and sedimentation control of new developments. Engineering Services Manager visits new development sites monthly to ensure compliance.
- ☒ 10 Engineering Inspectors have all received Phase I and Phase II Soil Erosion Training and received certification in Stormwater Management - Construction Site from the State.
- ☒ The City's consultant has received certification in Stormwater Management – Industrial Site from the State.

2. *Road Repairs.* Normal road repairs and preventative maintenance occurs during the spring, summer, and fall construction seasons. For pothole repairs the Office of Public Works personnel are instructed to clean the proposed work area to the best of their ability. The void is then filled with patching material. The crack sealing program methodology is similar to pothole repairing with the contractor disposing of any unusable material in accordance with Michigan Department of Transportation specifications. The City does not and will not discharge to waters of the state any wastewater generated from cutting, grinding, drilling, or hydro-demolition of concrete or asphalt. When more cost effective and more environmentally safe materials and procedures become available they will be evaluated and implemented accordingly.

3. *Bridge Inspections and Repair.* The City's consultant performs bi-annual inspections on all City-owned bridges and reports back the City those that are in need of repair.

4. *Snow and Ice Control.* The current snow and ice control program ensures an organized procedure for snow removal of all city roads within 24 to 30 hours after snowfall ceases. This objective is achieved on 58 miles of major roads and 254 miles of local roads.

5. *Salt.* The City has numerous detention basins that receive much of the run-off from the roadways where the salt and other sediments will be filtered out prior to any water entering the receiving waters.

As a matter of policy, the major roads are the only roads that are salted with each snow event. Once the major roads are clear, a determination is made as to whether the priority 2 and 3 roads are cleared. If salt is necessary, generally only curves and intersections are salted. These practices

have been in effect for 30 plus years and have helped reduce the amount of salt entering the receiving waters. Parking lots are salted more frequently due to safety concerns, especially lots located at the City Offices. The City applies approximately 7,000 tons of salt on City streets and parking lots each year.

The City considered utilizing a deicing alternative, beet juice, in conjunction with road salt, which is less toxic to the environment and requires less road salt than when used alone; however at this time, this alternative is too costly.

In 2008, the City purchased a new salt spreader and utilizes salt brine, which allows them to use less road salt.

6. *Leaf and Brush Pickup.* The City's Department of Public Works picks up yard waste Monday through Friday all year long. The City provides information on their website and Magazine and developed a brochure that was distributed to all City residents.

7. *Total Suspended Solids.* See Activity Number 1. The City will work with SEMCOG and other local entities as needed at quantifying the TSS loads removed on an annual basis.

#### **D. Fleet Maintenance and Storage Yards/Facilities**

Vehicle and equipment maintenance is performed by the Fleet Maintenance Division at the Public Works facilities. All mechanics are certified by the State of Michigan.

Used waste oil and antifreeze are collected and held in a large storage tank and 55 gallon drums respectively. When these are full, Usher Oil, a licensed waste hauler, EPA Identification #MID106985814, is called to remove the used waste.

Parts, cleaning chemicals, and degreasing agents are picked up and disposed of by Safety Kleen, EPA Identification #MID981099484.

Small vehicles are washed at a local car wash. Large vehicles and other equipment are washed by use of a power washer in a wash bay at the Public Works facility. This wash water is confined in the bay and drains to the sanitary sewer system.

In 2007, RETAP performed an environmental assessment at the DPW facility. DPW staff are beginning to review the recommendations.

Several City employees have attended various SEMCOG Municipal Training and MDNRE workshops regarding streets and parking lots maintenance.

By 2012, the City will develop a Storm Water Pollution Prevention Plan (SWPPP) for all municipal fleet maintenance and storage yards/facilities (City Hall, DPW facility, police station, fire stations, and parks) that are not currently regulated as industrial facilities.

#### **E. Storm Drain Labeling**

In order to inform and educate the public where storm water runoff ends up, the Office of Engineering will require under its site plan review requirements for new developments and for public improvement projects the message “Do not dump – storm drain” to be cast into the top surface of all catch basin grates. The City currently participates in a volunteer storm drain stenciling program. To date, over 4,500 catch basins have been stenciled within the City limits.

Metal labels corresponding to the outfall number assigned to the all major City-owned outfalls (installed after 2004) will be affixed to the outfall pipe.

## **F. Flood Control Projects**

All new development projects that require on-site detention as part of their flood control plan and redevelopment projects that have existing detention ponds will be evaluated during the review process to assess their impact on water quality. Additional BMPs, such as:

- Infiltration Basins
- Wet Detention Basins
- Rip-Rap
- Oil/Grit Separators

will be considered during the review process as additional water quality protection BMPs.

## **G. Managing Vegetated Properties**

The Public Works Department, Parks & Grounds Maintenance Division, currently administers the contract for turf fertilization and weed control. The contract covers Civic Center Grounds, limited public right-of-way and two City Parks. These areas are treated with granular fertilizer and weed control four times per year under the guidance of the City's certified commercial pesticide applicator. The existing contract restricts the use of weed control (2,4 D) to two times per year and requires all applicators to be certified by the State.

Because of the relatively low concentrations of herbicides and fertilizer, their impact as pollutants in urban run-off are difficult to assess. The wet weather-monitoring program of the NPDES application process associated with Part II, indicates that pollution due to pesticides and fertilizers were insignificant in Sterling Heights.

The City of Sterling Heights turf spray contractor applies approximately 40 to 50 gallons of herbicide per year to all City municipal sites. In keeping with the City's promotion of the "Don't Bag It" Program, grass-cutting crews are required to leave the grass clippings on the ground at all sites, effectively eliminating one application of fertilizer at each location.

Typically, as a standard, approximate pounds of active ingredient of nitrogen, phosphorous, and potassium used annually on all City sites are as follows:

- Nitrogen – 1.0 lb of actual nitrogen per 1,000 square feet
- Phosphorous – None
- Potassium – ½ lb. of actual potassium per 1,000 square feet

At all other lower maintenance park sites, we rely on cultural practices such as proper mowing height, retention of clippings, and aeration to help maintain the turf in a healthy condition. This helps to reduce the amount of fertilizer and herbicide used throughout the City.

Along with following the guidelines set by the Michigan Dept. of Agriculture, the contractor is also instructed to avoid application of fertilizer and herbicides in the area adjacent to storm water catch basins as well as to stop the application of any materials within 50 feet of a body of water.

They are also required to remove any granular materials that are on impermeable surfaces. Various staff members of affected departments attend workshops sponsored by SEMCOG, Clinton River Watershed Council, MSU or other agencies. Staff is responsible for training their new and existing employees on these efforts.

The City's consultant reviewed the existing turf management contract and provided recommendations in 2008. The City has reduced its mowing frequency on right-of-way and medians and has set mowing heights to 3". The City will look into incorporating additional fertilizing (slow-release nitrogen fertilizers) and other recommendations into future contracts.

**1. Routine maintenance, maintenance schedules, and long-term inspection procedures of structural controls (i.e. storm drain catch basins, vegetated swales, infiltration basins, sedimentation basins, etc.).**

**Task VII-1.1: Inventory of all stormwater basins owned by the City.**

**Description:** Inventory of all storm water basins owned by the City to determine their location, design criteria, effectiveness, and condition. Per MDNRE's request, the City updated their stormwater map in 2006. Additional maps and information are available upon request.

**Responsibility:** City Departments of Engineering and Public Works

**Measurable Goal:** Map with locations of all basins, streams, and tributaries within the City limits.

**Schedule:** Complete; Ongoing

Existing Efforts: The storm sewer map was submitted to MDNRE with the Permit Application in 2008.

Future Efforts: As required by the Certificate of Coverage (CoC), the City will submit an updated storm sewer map (if necessary) by February 2011.

**Task VII-1.2: Inventory of all retention and detention basins within the City limits.**

**Description:** Inventory of all basins in the City to determine their location, design criteria, effectiveness, and condition. The City's consultant performed an inventory of all privately and publicly-owned basins and provided maps, and a report to the City of the status of the basins along with recommendations.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Map with locations of all basins, effectiveness, condition, and recommendations.

Number of basins inspected/inventoried.

**Schedule:** Completed; Ongoing

Existing Efforts: In 2007, the City’s consultant performed a City-wide detention basin inventory, which included data, photo documentation, and recommendations.

Future Efforts: The City is currently collaborating with MCPWO and neighboring subwatershed communities to apply for grant funding to rehabilitate two (2) City-owned basins by addressing soil erosion and goose control issues.

**Task VII-1.3: Develop inspection/cleanout/maintenance program for all City stormwater BMPs.**

**Description:** Develop an inspection, clean-out and maintenance program for City stormwater BMPs including routine maintenance, maintenance schedules, long-term inspection procedures for any controls installed or operated by the City such as vegetated swales, infiltration basins and sedimentation basins. The City currently has standard operating procedures for catch basin cleaning, ditching and culvert cleaning, detention/retention pond maintenance, etc. See Current and Future Efforts for details.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Maintenance records. Volumes of disposed materials in annual report.  
Number of  
BMPs cleaned/inspected by type.

**Schedule:** Ongoing

Existing Efforts: Information on catch basin cleaning, televising, and detention/retention pond maintenance is provided in the Annual Report.

Future Efforts: The City currently has not installed any non-structural stormwater BMPs (green roofs, bioswales/rain gardens, porous pavements, etc.). The City will continue its existing efforts.

**Task VII-1.4: Televising portions of storm water system that is underground as appropriate.**

**Description:** Video inspection of underground storm sewers where problems are suspected. The City currently televises systems where problems are suspected. If a complaint is received, the City then investigates either by smoke or dye testing, or televising.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Complaint and response records. Maintenance records. Number of feet of sewer  
televised.

**Schedule:** Ongoing

Existing Efforts: Televising of the storm and sanitary system is performed as needed. Information is provided in the Annual Report.

Future Efforts: The City will continue its existing efforts.

**Task VII-1.5: Evaluate the use of vegetated swales, infiltration islands, porous pavements, and other stormwater BMPs in new construction by the City.**

**Description:** Evaluate the feasibility of the use of vegetated swales, infiltration islands and other innovations to control storm water in new construction by the City.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Documentation of evaluation, conclusions, and recommendations.  
**Schedule:** Ongoing

Existing Efforts: No stormwater BMPs have been installed on City-owned property to date. The City is still considering utilizing stormwater BMPs on our properties.

Future Efforts: The City will consider reducing its mowing frequency and creating riparian buffers at their parks. The City will continue its existing efforts.

**2. *Municipal and municipally-owned roadway management to prevent pollution. This includes street sweeping, catch basin maintenance, and salt and sand management. In addition, concrete and asphalt wastewater cannot be discharged to the storm water system.***

**Task VII-2.1: Review, update, and implement a street and parking lot sweeping program.**

**Description:** Review existing program, update as appropriate and implement changes. The City maintains a street sweeping program for all roads within the City. Generally, City-owned parking lots are swept the same time area streets are swept, unless there is a specific complaint received from a City resident or employee. The City will also evaluate their pollution prevention/BMP practices during concrete or asphalt removal on City streets and sidewalks and provide updates in their annual report.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Complaint and response records. Maintenance records. Annual report of amount of waste removed and collected. Number of streets and parking lots swept.

**Schedule:** Ongoing

Existing Efforts: City staff attended the SEMCOG ‘Streets and Parking Lots’ workshop in 2007. Information on street and parking lot sweeping (amount of waste removed and collected; miles of streets swept) is provided in the Annual Report.

Future Efforts: The City will continue its existing efforts.

**Task VII-2.2: Evaluate reductions in runoff of Total Suspended Solids (TSS) from all City-owned paved surfaces to the maximum extent practicable.**

**Description:** Evaluate the TSS reductions achieved by evaluating pollution prevention activities (improved materials handling, street sweeping, catch basin cleaning, etc.).

**Measurable Goal:** Documentation of evaluation, conclusions, and recommendations.

**Schedule:** Begin by Fall 2010

Existing Efforts: None.

Future Efforts: The City will work with SEMCOG and other entities at determining the TSS loading information on an annual basis. Information will be provided in the Annual Report.

**Task VII-2.3: Evaluate storage, containment, and application of materials (sand, gravel, salt, oil, etc.) at the DPW yard.**

**Description:** Continue to evaluate storage, containment and application materials storage at the DPW facility. Ensure that runoff from these areas is handled and treated

Appropriately to reduce soil erosion, sedimentation, and contamination. The City hired RETAP to provide an environmental assessment of the DPW facility, which included a materials storage evaluation.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Correspondence records with RETAP engineers. Implementation efforts. Report

salt application records and amount of chemicals/oils recycled in annual report.

**Schedule:** Ongoing; RETAP performed an assessment in 2007.

Existing Efforts In 2007, RETAP performed an environmental assessment at the DPW facility. DPW staff are beginning to review the recommendations

The City considered utilizing a deicing alternative, beet juice, in conjunction with road salt, which is less toxic to the environment and requires less road salt than when used alone; however at this time, this alternative is too costly.

In 2008, the City purchased a new salt spreader and utilizes salt brine, which allows them to use less road salt.

Future Efforts: Information on salt use and storage will be provided in the Annual Report. The City will continue its existing efforts.

**Task VII-2.4: Implement a catch basin cleaning program (See Task 1.3).**

**3. *Ensure that all vehicle maintenance procedures do not impact storm water runoff. This includes attention paid to fuel handling, parts lubrication, parts degreasers, repairs and vehicle washing.***

**Task VII-3.1: Evaluation and correction of maintenance procedures and wash water management, including the use of floor drains, at all City facilities.**

**Description:** Evaluation of the vehicle maintenance procedures and wash water management, including the use of floor drains, at all City facilities. Correction or revision of policies and procedures as needed to protect surface and ground waters. The City hired RETAP to provide an environmental assessment of the DPW facility, which included maintenance procedures and wash water management.

**Responsibility:** City Department of Engineering, City's Consultant

**Measurable Goal:** Correspondence records with RETAP engineers

**Schedule:** Utilized RETAP for an assessment in Fall 2007; Begin Implementing recommendations by Fall 2008; Ongoing.

Existing Efforts: In 2007, RETAP performed an environmental assessment at the DPW facility. The City has reviewed its existing practices and has found these procedures are adequate.

Future Efforts: The City will continue its existing efforts.

**Task VII-3.2: Develop and implement a Storm Water Pollution Prevention Plan (SWPPP).**

**Description:** A SWPPP will be developed for the DPW facility, fire stations, police stations, and public parks and be signed by a certified storm water operator. The SWPPP will include locations of all these facilities; site maps for each facility; list of significant spills; routine inspection programs; housekeeping procedures, etc.

**Responsibility:** City Departments of Engineering and Public Works, City's Consultant

**Measurable Goal:** Report on Plan progress in Annual Report.

**Schedule:** Begin development and implementation by 2012.

Existing Efforts: None.

Future Efforts: A SWPPP will be developed and implemented by Spring 2012.

**Task VII-3.3: Train DPW staff in pollution prevention, good housekeeping, and stormwater management.**

**Description:** Provide training to DPW staff on pollution prevention and good housekeeping at City facilities and PPGHP in general. SEMCOG offers municipal training workshops for maintenance garages and storage operations, landscaping, streets and parking lots, stormwater structural controls, stormwater conveyance systems, and flood management control projects. The City has sent two representatives to the first workshop offered and will continue to send representatives as the workshops become available.

**Responsibility:** City Departments of Engineering and Public Works

**Measurable Goal:** Number of City employees attended. Training records.

**Schedule:** Ongoing

Existing Efforts: Various staff members of affected departments attend workshops sponsored by SEMCOG, Clinton River Watershed Council, MSU or other agencies. Two City representatives attended the 'Landscaping Practices' and 'Streets and Parking Lots' workshops in 2007. One representative attended the CRWC 'Lawn Care Seminar' and 'Fugitive Dust Management' Seminar in 2008.

Future Efforts: The City will continue its existing efforts.

**4. *Locate and label all storm sewers within the City properties.***

**Task VII-4.1: Inventory all catch basins and manholes in the City's storm conveyance system (See Task 1.1).**

**Task VII-4.2: Label or stencil existing manhole covers and catch basins, as well as manhole covers and catch basins in new construction.**

**Description:** Label manholes and catch basins to increase citizen awareness of the system and to minimize improper disposal. To date, 4,500 catch basins have been stenciled. The City plans to stencil 250 to 1,000 catch basins annually, depending on volunteer labor forces.

**Responsibility:** City Departments of Engineering and Public Works

**Measurable Goal:** Number of volunteers that participated. Number of new basins stenciled/labeled.

**Schedule:** Ongoing

Existing Efforts: Over 4,500 catch basins have been stenciled to date. Stenciling information is provided in the Annual Report.

Future Efforts: Metal labels corresponding to the outfall number assigned to the all major City-owned outfalls (installed after 2004) will be affixed to the outfall pipe. The City will continue its existing efforts.

**Task VII-4.3: Label or permanently mark all new City-owned outfall structures.**

**Description:** The City will have permanent markings reading, “Do not dump – storm drain” on all new catch basin inlets and covers.

**Responsibility:** City Departments of Engineering and Public Works

**Measurable Goal:** Number of volunteers that participated. Number of new basins stenciled/labeled.

**Schedule:** Ongoing

Existing Efforts: See Activity 4.2.

Future Efforts: See Activity 4.2.

**5. Assess the impacts on water quality of any new construction and flood management projects within the City properties.**

**Task VII-5.1: Evaluate the feasibility of reducing impervious surfaces in new construction by the City.**

**Description:** Evaluate the feasibility of reducing impervious surfaces in new construction by the City including the use of pervious paving, green roofs, etc.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Records of evaluation, conclusions, and recommendations.

**Schedule:** By 2010

Existing Efforts: No action has been taken to date.

Future Efforts: The City will evaluate the feasibility of reducing impervious surfaces in new construction by 2010.

**Task VII-5.2: Evaluate and update (if necessary) existing City ordinances and engineering design standards for their impact in protecting water quality.**

**Description:** Evaluate the feasibility of reducing impervious surfaces in new construction by the City including the use of pervious paving, green roofs, etc. The City reviewed all stormwater ordinances and engineering design standards in 2006. They were found adequate in protecting water quality.

**Responsibility:** City Department of Engineering

**Measurable Goal:** Records of evaluation, conclusions, and recommendations.

**Schedule:** Completed; Ongoing

Existing Efforts: The existing ordinances and standards were submitted to MDNRE with the 2008 Permit Application and were deemed adequate at protecting water quality.

Future Efforts: The City will re-evaluate its ordinances and standards periodically and revise as needed.

6. *Minimize the discharge of pollutants related to the storage, handling, and use of pesticides and fertilizers. This includes employee training and soil testing for the proper application of any soil amendments.*

**Task VII-6.1: Employee training regarding the storage, handling, use and disposal of fertilizers and pesticides.**

**Description:** Train DPW employees on the storage, handling, use and disposal of fertilizers and pesticides. The City sent two representatives to the MGIA Healthy Lawn Care Program workshop on January 2007. SEMCOG offers municipal training workshops for maintenance garages and storage operations, landscaping, streets and parking lots, stormwater structural controls, stormwater conveyance systems, and flood management control projects. The City has sent two representatives to the first workshop offered and will continue to send representatives as the workshops become available. The City will attend future workshops offered through MSU Extension, CRWC, etc. as they become available.

**Responsibility:** City Departments of Engineering and Public Works

**Measurable Goal:** Number of training workshops and number of employees attended.

**Schedule:** Ongoing

Existing Efforts: See Activity 3.3

Future Efforts: See Activity 3.3

**Task VII-6.2: Evaluate the use of low-phosphorus and slow-release nitrogen fertilizers on all City-owned properties (stating as such in their turf management contracts).**

**Description:** The City will require (within their contract) the use of low-phosphorus and slow-release nitrogen fertilizers which are endorsed by SOCWA and MGIA on all City-owned properties.

**Responsibility:** City Departments of Engineering and Public Works, City's Consultant

**Measurable Goal:** Documented purchase and use of fertilizers.

**Schedule:** Ongoing

Existing Efforts: The City's consultant reviewed the City's contract in January 2008 and provided recommendations regarding earth-friendly fertilizing. The City has reduced its mowing frequency on right-of-way and medians and has set mowing heights to 3". The City currently does not use phosphorus on their properties.

Future Efforts: The City will look into incorporating fertilizing (slow-release nitrogen fertilizers) and other recommendations into future contracts.

**Task VII-6.3: Review the current turf pesticide and fertilizer application contract and revise if necessary.**

**Description:** The City or its consultant will review the current turf maintenance contract to determine if it's sufficient in protecting water quality. The City will revise as necessary.

**Responsibility:** City Departments of Engineering and Public Works, City's Consultant

**Measurable Goal:** Annual report of changes made.

**Schedule:** Completed; Ongoing

Existing Efforts: The City's consultant reviewed the City's contract in January 2008 and provided recommendations regarding earth-friendly fertilizing (slow release nitrogen). The City has reduced its mowing frequency on right-of-way and medians and has set mowing heights to 3" and currently does not use phosphorus on their properties.

Future Efforts: The City will look into incorporating additional fertilizing (slow-release nitrogen fertilizers) and other recommendations into future contracts.

**Table 7-1: Summary of Pollution Prevention and Good Housekeeping Plan**

REQUIREMENT	SCHEDULE	TASK	MEASURABLE GOAL
Routine maintenance, maintenance schedules, and long-term inspection procedures of structural controls.	Completed; Ongoing	1.1 Inventory of all stormwater basins owned by the City.	Map with locations of all basins, streams, and tributaries within the City limits.
	Completed; Ongoing	1.2 Inventory of all retention and detention basins within the City limits.	Map with locations of all basins, effectiveness, condition, and recommendations. No. of basins inspected/inventoried.
Municipal and municipally-owned roadway management to prevent pollution. This includes street sweeping, catch basin maintenance, and salt and sand management. In addition, concrete and asphalt wastewater cannot be discharged to the stormwater system.	Ongoing	1.3 Develop inspection/cleanout/maintenance program for all City stormwater BMPs.	Maintenance records. Volumes of disposed materials. No. of BMPs inspected/cleaned by type.
	Ongoing	1.4 Televising portions of stormwater system that is underground as appropriate.	Complaint and response records. Maintenance records. No. of feet of sewer televised.
	Ongoing	1.5 Evaluate the use of vegetated swales, infiltration islands, porous pavements, and other stormwater BMPs in new construction by the City.	Documentation of evaluation, conclusions, and recommendations.
	Ongoing	2.1 Review, update, and implement a street sweeping and parking lot program.	Complaint and response records. Maintenance records. Amount of waste collected. Provide updates in annual report. No. of streets/parking lots swept.
	Ongoing	2.2 Evaluate reductions in runoff of TSS from all City-owned paved surfaces to the maximum extent practicable.	Documentation of evaluation, conclusions, and recommendations.
Ensure that all vehicle maintenance procedures do not impact stormwater runoff. This includes attention paid to fuel handling, parts lubrication, parts degreasers, repairs, and vehicle washing.	Assessment Completed; Implement recommendations by Fall 2008; Ongoing	2.3 Evaluate storage, containment, and application of materials.	Correspondence with RETIAP engineers. Implementation efforts.
	Ongoing	2.4 Implement a catch basin cleaning program.	Implementation efforts.
Locate and label all storm sewers within the City properties.	Ongoing	3.1 Evaluation and correction of maintenance procedures and wash water management, including the use of floor drains, at all City facilities.	No. of catch basins cleaned. Volumes of material removed.
	Assessment Completed; Implement recommendations by Fall 2008; Ongoing	3.2 Develop and implement a SWPPP.	Correspondence with RETIAP engineers. Implementation efforts.
	By Spring 2012	3.3 Train DPW staff in pollution prevention, good housekeeping, and stormwater management.	Report on Plan progress in Annual Report
	Ongoing	4.1 Inventory all catch basins and manholes in the City's storm conveyance system.	No. of City employees attended. Training records.
Assess the impacts on water quality of any new construction and flood management projects within the City properties.	Ongoing	4.2 Label or stencil existing manhole covers and catch basins, as well as manhole covers and catch basins in new construction.	Map with locations of all basin, streams, stenciled.
	Ongoing	4.3 Label/permanently mark and number all new City-owned outfall structures.	No. of structures labeled. No. of volunteers participated.
Minimize the discharge of pollutants related to the storage, handling, and use of pesticides and fertilizers. This includes employee training and soil testing for the proper application of any soil amendments.	By 2010	5.1 Evaluate the feasibility of reducing impervious surfaces in new construction by the City.	Records of evaluation, conclusions, and recommendations.
	Completed; Ongoing	5.2 Evaluate and update (if necessary) existing City ordinances and engineering design standards for their impact in protecting water quality.	Records of evaluation, conclusions, and recommendations.
	Ongoing	6.1 Employee training regarding the storage, handling, use and disposal of fertilizers and pesticides.	No. of training workshops and no. of employees attended.
	Ongoing	6.2 Evaluate the use of low-phosphorus and slow-release nitrogen fertilizers on all City-owned properties.	Documented purchase and use of fertilizers.

	Completed, Ongoing	6.3 Review the City's current turf pesticide and fertilizer contract and revise if necessary.	Annual report of changes made.
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## ***Section VIII - Summary Table***

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The City of Sterling Heights' comprehensive SWMP compiles the aspects of each of the six (6) minimum measures the City's Permit as described in Sections II through VII. The following table (Table 8.1) summarizes the tasks, measurable goals, and implementation schedules of each of the six (6) minimum measure programs.

**Table 8-1: SWMP Implementation Schedule by Year**

<b>Task #</b>	<b>Year/Tasks</b>
	<b>Ongoing</b>
II-1.1	Design and implement an education program for City field staff and general public on illicit discharge and illicit connection elimination.
II-1.2	Provide the public with information on how storm and sanitary sewer systems function and their effects on water bodies.
II-1.3	Provide information to public on how to recognize an illicit discharge.
II-1.4	Promote MDNRE Pollution Prevention and Waste Reduction Programs to local businesses.
II-2.1	Promote storm drain awareness.
II-2.2	Tributary signage.
II-2.3	Newsletter Articles, Local Cable, City Website.
II-3.1	Provide the public with information on household hazardous wastes and yard, travel trailer and vehicle maintenance wastes.
II-3.2	Provide the public with information regarding proper car care.
II-3.3	Promote the MDNRE Pollution Prevention Programs.
II-4.1	Provide the public with information on the proper use and disposal of yard chemicals.
II-4.2	Provide recommendations on earth-friendly fertilizing and vegetative buffers to the City and its landscape contractor.
II-4.3	Consider hosting or co-hosting a CRWC rain garden or related workshop.
II-5.1	Provide the public with information on community or ‘school’ car washes.
II-6.1	Provide the public with information on on-site septic systems.
II-7.1	Provide information on riparian management.
II-8.1	Promote and educate watershed stewardship in the community.
II-9.1	Provide information to residents and businesses on native vegetation benefits.
II-10.1	Provide information to commercial, industrial, and institutional entities on stormwater impacts.
III-1.1	Provide copies of the draft and final SWMP to the public and interested groups.
III-1.2	Hold an informational meeting to discuss the draft SWMP and seek input.
III-2.1	Develop a mailing and contact list for local stream and watershed protection organizations and local sporting and environmental groups
III-3.1	Develop a mailing and contact list for local stream and watershed protection organizations, local sporting and environmental groups.
III-3.2	Provide the target groups with draft copies of the SWMP using the mailing list and solicit comments on the Plan.
III-3.3	Contact the target groups to determine what programs they sponsor may satisfy the SWMP or permit requirements. Evaluate qualifying programs to determine those in which the City will participate or encourage participation.
III-3.4	Sponsor or co-sponsor a stream clean-up with the CRWC or similar group.
III-3.5	Co-sponsor a storm drain stenciling/marker program with local community group.
III-3.6	Work with CRWC to begin water quality monitoring with local schools.
III-3.7	Host or co-host a CRWC lawn care/landscaping workshop.
IV-1.1	Review City’s legal authority to implement IDEP program.
IV-1.2	Amend and adopt ordinance.
IV-2.1	Investigate the use of GPS during inspections to aid in mapping efforts.
IV-2.2	Field verification of known outfalls.
IV-2.3	Develop procedure to identify and record outfalls from new construction.
IV-3.1	Perform visual inspection and dry weather screening of all City storm outfalls.
IV-3.2	Trace illicit discharges and notify responsible party to correct.
IV-3.3	Follow-up enforcement action for non-correction.
IV-3.4	Provide training to appropriate City staff on illicit connections and discharges, failed OSDS, safety issues, and natural occurring phenomenon.
IV-4.1	Identify and record all OSDS sites.
IV-4.2	Enforce existing and revise City Ordinance.
IV-4.3	Review MCDH Program and Ordinance.
IV-4.4	Establish OSDS complaint reporting and tracking system for suspicious discharges.
IV-4.5	Evaluate the integrity of the sanitary sewers in the City.
IV-5.1	Coordination with MCPWO and MCHD.

IV-5.2	Coordination with MDNRE.
<b>Task #</b>	<b>Year/Tasks</b>
	<b>Ongoing (Continued)</b>
V-1.1	Prepare and adopt a stormwater master plan.
V-2.1	Adopt policies and ordinances or other regulatory mechanism to require appropriate post-construction BMPs.
V-2.2	Provide training for City field staff on P-CMP.
V-2.3	Prepare informational materials and conduct outreach for the development community.
V-2.4	Implement a post-construction inspection program.
V-3.1	Revise plan review procedures to include P-CMP for new development and redevelopment.
VI-1.1	Coordinate with MDNRE.
VI-2.1	Review the SESC program.
VI-2.2	Review and revise existing City ordinances as necessary to implement the CRCP.
VI-2.3	Review and revise the City's review process
VI-3.1	Establish an use a complaint, tracking, response, and investigation system.
VI-3.2	SESC Program tracking and reporting.
VI-4.1	Provide outreach and education to the construction community on SESC and CRCP.
VII-1.1	Inventory of all stormwater basins owned by the City.
VII-1.2	Inventory all retention and detention basins within the City limits.
VII-1.3	Develop inspection/cleanout/maintenance program for all City stormwater BMPs.
VII-1.4	Televising portions of the stormwater system that is underground as appropriate.
VII-1.5	Evaluate the use of vegetated swales, infiltration islands, porous pavements, and other stormwater BMPs in new construction by the City.
VII-2.1	Review, update, and implement a street sweeping and parking lot program.
VII-2.3	Implement a catch basin cleaning program.
VII-3.1	Evaluation and correction of maintenance procedures and wash water management, including the use of floor drains, at all City facilities.
VII-3.2	Train DPW staff in pollution prevention, good housekeeping, and stormwater management.
VII-3.3	Storm water management training for City field staff.
VII-4.1	Inventory all catch basins and manholes in the City's storm conveyance system.
VII-4.2	Label or stencil existing manhole covers and catch basins, as well as manhole covers and catch basins in new construction.
VII-4.3	Label/permanently mark and number all City-owned outfall structures.
VII-5.2	Evaluate and update (if necessary) existing City ordinances and engineering design standards for their impact in protecting water quality.
VII-6.1	Employee training regarding the storage, handling, use and disposal of fertilizers and pesticides Provide training to City field and facility staff on the handling and storage of fertilizers and pesticides.
VII-6.2	Evaluate the use of low-phosphorus and slow-release nitrogen fertilizers on all City-owned properties.
VII-6.3	Review the City's current turf pesticide and fertilizer contract and revise if necessary.
	<b>1<sup>st</sup> year (2009)</b>
	<b>2<sup>nd</sup> year (2010)</b>
III-2.2	Develop and distribute a survey form to the citizens of Sterling Heights to determine their awareness and opinion of storm water and watershed issues.
VII-2.2	Evaluate storage, containment, and application of materials.
VII-5.1	Evaluate means to reduce impervious surfaces in new construction by the City.
	<b>3<sup>rd</sup> year (2011)</b>
IV-2.3	Develop procedure to identify and record outfalls from new construction.
V-2.5	Develop a Long-Term Operations and Maintenance program.
V-3.1	Revise plan review procedures to include P-CMP for new development and redevelopment.
VI-4.1	Provide outreach and education to the construction community on SESC and CRCP.
	<b>4<sup>th</sup> year (2012)</b>

VII-3.2	Develop and implement a SWPPP.